



**The Maryland**

# **Medical Protocols**

**for Emergency Medical Services Providers**

Effective July 1, 2010

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**Maryland Institute for  
Emergency Medical Services Systems**



The complete “Maryland Medical Protocols for  
Emergency Medical Services Providers” is also avail-  
able on the Internet. Check out the MIEMSS website  
**[www.MIEMSS.org](http://www.MIEMSS.org)**.

**2010 PROTOCOL UPDATE SUMMARY  
MARYLAND MEDICAL PROTOCOLS FOR EMS PROVIDERS**

PROTOCOL TITLE	CURRENT PAGE #	LINE #	ORIGINAL	NEW INFORMATION
Contents	v	III.J.	J. Hyperkalemia	New text has been added. The new text reads: J. Hyperkalemia: Renal Dialysis/Failure or Crush Syndrome
Contents	vii	<b>Airway Management</b> Combitube		This text has been deleted as Combitube has been removed from the protocols.
Contents	ix	Pilot Protocol for Combitube		The pilot protocol for Combitube has been removed. Combitube is no longer an approved airway device.
General Information	17	I.G.		The protocol variation procedure has been revised.
General Information	19	I.H.		The inability to carry out physician order protocol has been revised.
GPC	26	Chart (moderate hypoxia)	Give 100% Oxygen Consider Assisting Ventilations	This text has been revised. The text now reads: Give 100% Oxygen, assisting ventilations.
GPC	27	Chart		The nasal cannula concentration has been changed. The new text reads: 24-44%
GPC	27	ILD.4.a)(2)(b)	(b) If patient is symptomatic with poor perfusion (unresponsive or responds only to painful stimuli) and pulse is greater than 60 bpm:	This text has been corrected. The new text reads: ..... and pulse is <b>less than</b> 60 bpm:
GPC	31	II.F.3.a)	Pediatric section of the treatment protocol will be used for children who have not reached their 15th birthday (trauma and medical).	New text has been added. The text now reads: Pediatric section of the treatment protocol will be used for children who have not reached their 15th birthday (trauma and medical), <b>except as otherwise stated in the treatment protocol.</b>
GPC	31	II.F.3.C	NEW	New text has been added and the remainder of the outline re-numbered. The new text reads: Providers should obtain on-line medical direction to administer other prescribed rescue medications not specifically mentioned in the Maryland Medical Protocols for EMS Providers (e.g. SoluCorcort for Adrenal Insufficiency). The rescue medication must be provided by the patient or caregiver and the label must have the patient's name and the amount of medication to be given.
GPC	31	ALERT	NEW	A new ALERT has been added. The new text reads: Do not administer oral medications (except glucose paste) to patients with an altered mental status.
GPC	32	II.G.5.	NEW	New text has been added to the outline. The new text reads: d) Provide patient trauma Decision Tree Category (A-D). e) Provide assigned patient priority (1 to 4). f) Pertinent patient signs and symptoms (e.g. HR, RR, BP, Pulse Ox, and GCS)
Altered Mental Status: Seizures	37	III.B.3.b)(2)	If patient is a known diabetic, glucose paste (10-15 grams) should be administered between the gum and cheek.	New text has been added. The new text reads: .....Consider single additional dose of glucose paste if not improved after 10 minutes.
Altered Mental Status: Seizures	37	ALERT (Bottom)	NEW	A new ALERT has been added. The new text reads: If patient is pregnant, continue with seizure protocol and use midazolam. Medical consultation required for pregnant patients who may require larger doses of midazolam to control seizures.
Altered Mental Status: Seizures	38	III.B.g)(2)	If patient is a known diabetic, glucose paste (10-15 grams) should be administered between the gum and cheek.	New text has been added. The new text reads: .....Consider single additional dose of glucose paste if not improved after 10 minutes.
Altered Mental Status: Unresponsive Person	39	III.C.3.b)	Administer glucose paste (10-15 grams) between the gum and cheek.	New text has been added. The new text reads: .....Consider single additional dose of glucose paste if not improved after 10 minutes.
Altered Mental Status: Unresponsive Person	40	III.C.3.j)	Administer glucose paste (10-15 grams) between the gum and cheek.	New text has been added. The new text reads: .....Consider single additional dose of glucose paste if not improved after 10 minutes.
Pediatric Bradycardia Algorithm	51	Pacer age-related rates box	NEW	The pacer age-related box has been added to the pediatric bradycardia algorithm for quick reference.
Pediatric Bradycardia Algorithm	51	Footnote (f)	(f) – Transcutaneous Pacing available for CRT-(f) & EMT-P only. Medical consultation required.	This text has been revised. Medical consultation is no longer a requirement in the pediatric bradycardia algorithm.
Cardiac Emergencies: Hyperkalemia	59	III.J.	Cardiac Emergencies: Hyperkalemia	New text has been added to the heading. The new text reads: Cardiac Emergencies: Hyperkalemia (Renal Dialysis/Failure or Crush Syndrome)
Cardiac Emergencies: Hyperkalemia	59	III.J.3.a)(1)	Suspected Hyperkalemia (e.g. crush syndrome) or renal dialysis patients	This text has been revised. The new text reads: (1) Suspected hyperkalemia patient
Cardiac Emergencies: Hyperkalemia	59	III.J.3.a)(1)(a)	NEW	a) Renal dialysis/failure with poor or non-functioning kidneys or
Cardiac Emergencies: Hyperkalemia	59	III.J.3.a)(1)(b)	NEW	b) Crush syndrome or patients with functional kidneys by history
Cardiac Emergencies: Hyperkalemia	59	III.J.3.f)	Initiate Bradycardia protocol.	New text has been added and the outline has been re-lettered. The new text reads: b)..... Consider sodium bicarbonate 50 mEq IV over 5 minutes.
Cardiac Emergencies: Hyperkalemia	59	III.J.3.h)	NEW	New text has been added and the remainder of the outline re-lettered. The new text reads: i) Consider/administer albuterol (high dose) via nebulizer 20 mg (if available).
Cardiac Emergencies: Hyperkalemia	59	ALERT	NEW	A new ALERT has been added. The new text reads: Flush IV with 5 mL of Lactated Ringer's between calcium and sodium bicarbonate administration.

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Cardiac Emergencies: Hyperkalemia	59	III.J.3.i)	NEW	New text has been added and the remainder of the outline re-lettered. The new text reads: (j) Crush Syndrome or patients with functional kidneys by history; consider/administer sodium bicarbonate 50 mEq SLOW IV over five minutes, then initiate drip of sodium bicarbonate 100 mEq in 1000 mL to run over 30-60 minutes. (Reserve for patients suspected of Crush Syndrome or with functional kidneys by history.)
Cardiac Emergencies: Hyperkalemia	60		NEW	New text has been added and the outline re-lettered. The new text reads: q) Consider/administer albuterol via nebulizer. (1) Patients 2 years of age or greater; administer albuterol 2.5 mg (2) Patients less than 2 years of age; administer albuterol 1.25 mg
Cardiac Emergencies: Hyperkalemia	60	ALERT	NEW	A new ALERT has been added. The new text reads: Flush IV with 5 mL of Lactated Ringer's between calcium and bicarbonate administration.
Cardiac Emergencies: Hyperkalemia	60		NEW	New text has been added and the outline re-lettered. The new text reads: (r) Crush Syndrome or patients with functional kidneys by history; consider/administer sodium bicarbonate 1 mEq/kg IV over five minutes. Maximum dose 50 mEq. (Reserve for patients suspected of crush syndrome or with functional kidneys by history.)
Cardiac Emergencies: ST Elevation Myocardial Infarction [STEMI]	65	ALERT-top of page		New text has been added to the ALERT. The new text reads: 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.
Cardiac Emergencies: ST Elevation Myocardial Infarction [STEMI]	65	III.M.3.c)		c) If patient meets one of the above condition sets for STEMI inclusion criteria, the patient shall be transported to the closest Primary STEMI Center unless the transport time is more than 30 minutes greater than the transport time to the closest STEMI Transfer Center or Emergency Department.
Cardiac Emergencies: ST Elevation Myocardial Infarction [STEMI]	65	III.M.3.d)		d) When indicated and based on the EMS provider's report, the Base Station physician at the receiving Primary STEMI Center will activate its Cardiac Intervention Team.
Cardiac Emergencies: ST Elevation Myocardial Infarction [STEMI]	66	III.M.3.g)		g) Patient who presents with inferior wall MI, clear lung sounds, and hypotension (90 systolic) (40% of inferior wall MI have right ventricular infarction) should be given a fluid bolus of 250-500 mL of Lactated Ringers. For additional bolus; perform medical consult.
Obstetrical/Gynecological Emergencies: Childbirth Algorithm	89	footnote (C)		Uterine massage is performed from the pubis toward the umbilicus only.
Pain Management	101			The pain management protocol has been revised.
Respiratory Distress: Allergic Reaction/anaphylaxis	103	III.HH.3.d)(3)		(3) Administer diphenhydramine 25 mg slow IVP or IM Additional doses of diphenhydramine require medical consultation.
Respiratory Distress: Allergic Reaction/anaphylaxis	103	III.HH.3.d)(4)	NEW	New text has been added and the remainder of the outline re-numbered. The new text reads: (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.
Respiratory Distress: Allergic Reaction/anaphylaxis	105	III.HH.j)(4)		The maximum single dose has been changed to 50 mg for moderate to severe distress.
Respiratory Distress: Allergic Reaction/anaphylaxis	105	III.HH.j)(5)	NEW	New text has been added and the remainder of the outline re-numbered. The new text reads: (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.

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Respiratory Distress: Asthma/COPD	106	III.II.3.f)	NEW	New text has been added and the remainder of the outline re-lettered. The new text reads: (f) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
Respiratory Distress: Asthma/COPD	106	III.II.3.h)	.....If available, continue inline nebulizations.	This text has been revised. The new text reads: .....Continue inline nebulizations.
Respiratory Distress: Asthma/COPD	107	III.II.3.(p)	NEW	New text has been added and the remainder of the outline re-lettered. The new text reads: (p) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
Respiratory Distress: Croup	109	III.II.3.d)	If the child is 8 years old or less...	The age has been changed to be consistent with other pediatric protocols. The new text reads: For children who have not reached their 15th birthday without known cardiac disease and are having respiratory distress...
Respiratory Distress: Pulmonary Edema/Congestive Heart Failure	112	III.KK.3.i)(3)(i)	give 1 dose of 0.4 mg NTG (Preparing CPAP)	New text has been added. The new text reads: give 1 dose of 0.4 mg NTG (Preparing CPAP and apply as soon as possible).
Respiratory Distress: Pulmonary Edema/Congestive Heart Failure	112	III.KK.3.j)(3)(ii)	give 1 dose of 0.8 mg NTG (Patient education CPAP)	This text has been revised. The new text reads: give 1 dose of 0.8 mg NTG and apply nitropaste.
Respiratory Distress: Pulmonary Edema/Congestive Heart Failure	112	III.KK.3.k)(3)(iii)	give 1 dose of 0.8 mg NTG (CPAP acclimatized patient)	The parenthetical text has been deleted.
Respiratory Distress: Pulmonary Edema/Congestive Heart Failure	112		NEW	A new ALERT has been added. The new text reads: Once CPAP is in place, the preferred therapy is CPAP over sublingual NTG and captopril.
Respiratory Distress: Pulmonary Edema/Congestive Heart Failure	113	III.KK.3.p	NEW	New text has been added and the remainder of the outline re-lettered. The new text reads: (p) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
Respiratory Distress: Pulmonary Edema/Congestive Heart Failure	113	III.KK.3.q	Consider furosemide: 0.5 - 1 mg/kg slow IVP/IO	This text has been revised for consistency. The text now reads: Consider furosemide: 1 mg/kg slow IVP/IO
Appendices	137		NEW	New text has been added to the glossary. The new text reads: 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®).
Appendices	138		NEW	Cricothyrotomy (needle or surgical) has been added to the glossary.
Appendices	140		NEW	New text has been added. The new text reads: Laryngectomy: The removal of the larynx and separation of the airway from the mouth, nose, and esophagus. Patients with a laryngectomy breathe through an opening in the neck called a stoma. Patients with a laryngectomy are not able to breathe or be intubated through the mouth or nose.
Appendices	141	PASG		This line has been deleted.
Appendices	143		NEW	New text has been added. The new text reads: 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.
Procedures, Medical Devices, and Medications For EMS and Commercial Services	144	Airway Management Combitube		Combitube has been removed from protocol. The new text reads: alternative airway device (e.g. EasyTube®)
Procedures, Medical Devices, and Medications For EMS and Commercial Services	146	Benzocaine		This text has been deleted. Benzocaine has been removed from the medication formulary.
Procedures, Medical Devices, and Medications For EMS and Commercial Services	147		NEW	New text has been added. The new text reads: Sodium Bicarbonate (infusion) EMT-B -, CRT-(I) MC, EMT-P MC
Appendices	154	IV.E.11.d)(1)		New text has been added to the paragraph. The new text reads: .....The only skill that will not be allowed is nasal or oral intubation.
Appendices	155		NEW (letter e)	New text has been added and the remainder of the outline re-lettered. The new text reads: e) Inappropriate care for an EMS/DNR Option A-- "Maximal (Restorative) Care Before Arrest, Then DNR" Nasal or Oral Intubation
Appendices	155	IV.E.11.e)(1)(b)(i)	Standard treatment (dressing, elevation, direct pressure, pressure points, cold packs, tourniquets, etc.).	The parenthetical text has been revised. The text now reads: (direct pressure with dressing, tourniquet).

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Appendices	155	IV.E.11.e)(1)(b)(ii)	No MAST/PASG trousers or IVs	This line has been deleted.
Appendices	156	IV.E.11.e)(2)(e)	(e) Intubation (Combitube, endotracheal, nasotracheal, or gastric tube)	The parenthetical text has been revised. The new text reads: (e).....(alternative airway device, endotracheal, nasotracheal, or gastric tube)
Appendices	156	IV.E.11.e)(2)(f)	Pneumatic anti-shock garment (PASG)	This line has been deleted.
Airway Management: Bag Valve Mask Ventilation	168	H.2.b)(2)(c)	(c) Cyanosis on 100% oxygen by non-rebreather mask	This text has been revised. The new text reads: Cyanosis or oxygen saturation less than 90% on 100% oxygen by non-rebreather with the exception of patients with chronic hypoxemia.
Airway Management: Bag Valve Mask Ventilation	169	H.2.g)	Child over 30 kg	This text has been revised. The text now reads: Child 30 kg or greater
Airway Management: Combitube	170			The Combitube procedure has been removed from protocol as it is no longer an approved device.
Airway Management: Latex-free dual lumen tube (e.g. EasyTube®)	170-3		NEW	The latex-free dual lumen tube is a new protocol. EasyTube® is the provided example in the procedure section.
Airway Management: Nasotracheal Intubation	172	H.5.c)(4)	Patient less than 14 years of age.	This text has been revised. The new text reads: Patients less than 12 years of age.
Airway Management: Nasotracheal Intubation	173	H.5.e)(1)	(1) Topical anesthesia (Benzocaine spray) should be applied to both nares to minimize discomfort.	Benzocaine has been replaced by Lidocaine. The new text reads: (1) Topical anesthesia (lidocaine 4% spray or gel) should be applied to both nares to minimize discomfort.
Airway Management: Needle Decompression Thoracostomy	174	H.6.b)(2)	Patients in traumatic arrest shall receive bilateral NDT. (May be performed without medical consultation.)	The revision for this text was inadvertently omitted during a previous update. The new text reads: If traumatic arrest is suspected due to multi-system blunt trauma, or due to penetrating neck, chest, or abdominal trauma, bilateral needle decompression should be performed. Once catheters are placed do not remove.
Airway Management: Orotracheal Intubation	177	H.8.e)(2)(e)	(e) .....(required for all intubated/combitube patients).	The parenthetical text has been revised. The new text reads: (e).....(required for all intubated patients).
Airway Management: Orotracheal Intubation	178	ALERT	Endotracheal Tube selection for a child should be based on the 16 plus child's age divided by four [(16 + year)/4 = tube size]. Age in the chart is a quick reference. One size larger and one size smaller should be allowed for individual variations. Use a length-based tape if available.	New text has been added to the ALERT. The new ALERT reads: Endotracheal Tube selection for a child should be based on the 16 plus child's age divided by four [(16 + year)/4 = tube size]. Uncuffed endotracheal tubes are recommended for children less than 8 years of age or less than 25 kg. Age in the chart is a quick reference. One size larger and one size smaller should be allowed for individual variations. Use a length-based tape if available.
Airway Management: Tracheostomy Change	179	H.9.d)	NEW	New text has been added to the outline. The new text reads: (3) Inability to maintain adequate chest rise and fall with assisted ventilations due to air leak around uncuffed tracheostomy tube.
Airway Management: Tracheostomy Change	179	ALERT	NEW	A new ALERT has been added. The new text reads: Patients greater than eight years of age who require assisted ventilations will need to have a cuffed tube inserted to prevent air leak around the tube and ensure adequate chest rise. If an appropriate sized cuffed tracheostomy tube is not available, then ALS providers may use an ET tube.
Airway Management: Tracheostomy Change	179	H.9.e)(6)(a)	Deflate the cuff, using a 10 cc syringe, if appropriate.	This line has been revised. The new text reads: If a double cannula tracheostomy tube is in place, attempt to change inner cannula first and reassess the patient to see if the obstruction is relieved. If the patient continues to have respiratory distress, change the entire tracheostomy tube. If cuffed, deflate using a 10 mL syringe.
Airway Management: Tracheostomy Change	180	H.9.e)(6)(f)	One provider maintains tube in place at the neck as second provider attempts to ventilate with BVM to tracheostomy.	New text has been added and the remainder of the outline re-lettered. The new text reads: (f) If cuffed tracheostomy tube is used, once the tube has been inserted, inflate the cuff with an appropriate amount of air to avoid air leak around the tube (1-3 mL for pediatric tubes and 5-10 mL for adult tubes).
Airway Management: Tracheostomy Change	180	H.9.e)(7)(i)	If ALS, attempt to insert a similar sized endotracheal tube into the stoma. Reassess the patient. Proceed with (6) f-g-h above.	New text has been added. The new text reads: If ALS, attempt to insert a similar sized endotracheal tube into the stoma. If cuffed endotracheal tube is used, inflate the cuff with an appropriate amount of air to avoid air leak around the tube (1-3 mL for pediatric tubes and 5-10 mL for adult tubes).
Electrical Therapy: Cardioversion	185	H.12.f)(3)	Administer midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with a maximum single dose 2 mg.	This text has been revised. The new text reads: Administer midazolam 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.
Electrical Therapy: External Transcutaneous Cardiac Pacing	188	H.14.c)		This text has been revised. The text now reads: .....Child (1 through 11 years): 100 beats per minute Adult (12 years and greater): 80 beats per minute
Electrical Therapy: External Transcutaneous Cardiac Pacing	188	H.14.e)(1)	Administer midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with a maximum single dose 2 mg.	This text has been revised. The new text reads: Administer midazolam 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.

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Medevac Utilization	198-1		NEW	The medevac utilization protocol is a new procedure.
BLS Pharmacology	205		NEW	A new Acetaminophen page has been added to the BLS pharmacology.
BLS Pharmacology	209	1.5.f(1)	Adult: Administer 10-15 grams of glucose paste between the gum and cheek.	New text has been added. The new text reads: .....Consider single additional dose of glucose paste if not improved after 10 minutes.
BLS Pharmacology	209	1.5.f(2)	Pediatric: Administer 10-15 grams of glucose paste between the gum and cheek; this may be accomplished through several small administrations.	New text has been added. The new text reads: .....Consider single additional dose of glucose paste if not improved after 10 minutes.
ALS Pharmacology	210-1		NEW	A new Acetaminophen page has been added to the ALS pharmacology.
ALS Pharmacology	213	J.3.c)	NEW	New text has been added and the outline updated. The new text reads: (2) Hyperkalemia
ALS Pharmacology	213	J.3.g)	(1) Adult: 2.5 mg (3mL) by nebulized aerosol connected to 6-8 lpm of oxygen; may repeat one time (2) Pediatric: May repeat one; connect to 6-8 lpm oxygen....	A new heading has been placed in the dosage section. The new text reads: Bronchospasm (1) Adult: 2.5 mg (3mL) by nebulized aerosol connected to 6-8 lpm of oxygen; may repeat one time (2) Pediatric: May repeat one time; connect to 6-8 lpm of oxygen....
ALS Pharmacology	213	J.3.g)(2)(a) &(b)	(a) Ages less than two years: 1.25 mg (1.5 mL) by nebulized aerosol (b) Age two or older: 2.5 mg (3 mL) by nebulized aerosol.	This text has been reversed for consistency. The text now reads: (a) Age two or older: 2.5 mg (3 mL) by nebulized aerosol. (b) Ages less than two years: 1.25 mg (1.5 mL) by nebulized aerosol
ALS Pharmacology	213		NEW	New text has been added to the outline. The new text reads: Hypokalemia (1) Adult: 20 mg (if available) by nebulized aerosol connected to 6-8 lpm of oxygen (2) Pediatric: (a) Age two or older: 2.5 mg (3 mL) by nebulized aerosol (b) Ages less than two years: 1.25 mg (1.5 mL) by nebulized aerosol
ALS Pharmacology	219	J.7.		This protocol has been deleted. Benzocaine has been removed from protocol.
ALS Pharmacology	223	Heading	Diazepam (Valium)	New text has been added to the heading. The text now reads: Diazepam (Valium) (for Chempack or Mark I Optional Protocol)
ALS Pharmacology	223	J.11.g)(1)	Adult: Administer 10 mg with autoinjector (CANA) or reconstituted vial.	Adult: Administer 10 mg
ALS Pharmacology	223	J.11.g)(2)	Pediatric: greater than 30 kg/66 lbs: Administer 10 mg with autoinjector (CANA) or 0.1 mg/kg from reconstituted vial.	Pediatric: greater than 30 kg/66 lbs: Administer 10 mg or 0.1 mg/kg maximum of 10 mg.
ALS Pharmacology	236	J.19.g)(3)(b)	If age related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO.	New text has been added to this line. The new text reads: If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. Fluid boluses for neonates and volume sensitive children are 10 mL/kg.
ALS Pharmacology	236	J.19.g)(3)(d)	Volume infusion for neonates and volume sensitive children 10 mL/kg; for infant and child 20 mL/kg. Fluid boluses for neonates and volume sensitive children are 10 mL/kg; for infants and children 20 mL/kg.	This text has been deleted and the remainder of the outline re-lettered.
ALS Pharmacology	238		NEW	New text has been added to the lidocaine protocol. The new text reads: (5) Adult with an IO infusion: To prevent or treat pain during an IO infusion in adult patients (40 kilograms or greater), administer 20-40 mg (1-2 mL) of 2% (preservative free) lidocaine IO.
ALS Pharmacology	238		NEW	New text has been added to the lidocaine protocol. The new text reads: (6) Pediatric with an IO infusion: To prevent or treat pain during an IO infusion in pediatric patients (39 kilograms or less), consult a pediatric base station.
ALS Pharmacology	238		NEW	New text has been added to the lidocaine protocol. The new text reads: (7) Nasal Pharyngeal Anesthesia (age 12 years and greater) Draw up 4 mL of lidocaine 4% (40 mg/mL) and using mucosal atomization device administer 2 mL per nares. The patient IV, gel, and intranasal dosing should not exceed 3 mg/kg.
ALS Pharmacology	239-1	J.21.g)(2)	Pediatric: 0.1 mg/kg slow IV push over one to two minutes, maximum single dose 2 mg.....	This text has been revised. The new text reads: 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.
ALS Pharmacology	247	J.28.g)(3)	(3) Pediatric: Administer 1 mEq/kg IVP/IO and repeated at 10-minute intervals of cardiac arrest; administration must be diluted (1:1).	(3) Pediatric: Administer 1 mEq/kg IVP/IO; for patients less than 1 year of age, must be diluted (1:1) with LR.

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ALS Pharmacology	247-1	J.28.g)	NEW	New text has been added to the dosage. The new text reads: Hyperkalemia (Reserve for patients with suspected crush syndrome or patients with functional kidneys by history) Adult: Consider/administer sodium bicarbonate 50 mEq SLOW over 5 minutes and then initiate drip of sodium bicarbonate 100 mEq in 1000 mL to run over 30-60 minutes Pediatric: Consider/administer sodium bicarbonate 1 mEq/kg over five minutes, for patients less than 1 year of age, must be diluted 1:1 with LR.
ALS Pharmacology	247-1	M.1.b)(2)	NEW	A new ALERT has been added. The new text reads: Flush IV with 5 mL of Lactated Ringer's between calcium and bicarbonate administration.
Pilot Program Rapid Sequence Intubation	253		Age less than 10	This text has been revised. The new text reads: (2) Age less than 12
Pilot Program Rapid Sequence Intubation	253	M.1.c)(6)(d)(i)	Combitube, Cricothyroidotomy equipment	This text has been revised. The text now reads: Alternative airway device, Cricothyroidotomy equipment
Pilot Program Rapid Sequence Intubation	254	M.1.d)(1)(b)	(b) May omit for GCS of 3-8	This line has been deleted.
Pilot Program Rapid Sequence Intubation	254	M.1.d)(1)		The order of medications has been changed. Etomidate is now listed first; followed by midazolam.
Pilot Program Rapid Sequence Intubation	254	M.1.d)(1) OR (a)	(a) May omit for GCS of 3-8	This line has been deleted.
Pilot Program Rapid Sequence Intubation	254	M.1.f)(5)	Insert Combitube (refer to Combitube Section).	This text has been revised. The new text reads: Insert an approved alternative airway device (refer to alternative airway device protocol).
Pilot Program Rapid Sequence Intubation	254	M.1.f)(7)	If significant resistance to ventilation occurs as succinylcholine wears off (4-5 minutes), or if patient exhibits difficulty in tolerating Combitube as succinylcholine wears off, refer to Ventilatory difficulty, Secondary to Bucking Protocol	This text has been revised. The new text reads: If significant resistance to ventilation occurs as succinylcholine wears off (4-5 minutes), or if patient exhibits difficulty in tolerating an approved alternative airway device as succinylcholine wears off, refer to Ventilatory Difficulty, Secondary to Bucking Protocol.
Pilot Program Rapid Sequence Intubation	254	M.1.g)	Insert Combitube (refer to Combitube Protocol).	This text has been revised. The new text reads: Insert an approved alternative airway device (refer to alternative airway device protocol).
Pilot Program Rapid Sequence Intubation	254	M.1.h)	If still unable to ventilate using Combitube, remove and perform cricothyroidotomy (refer to cricothyroidotomy Protocol).	This text has been revised. The new text reads: If still unable to ventilate using an alternative airway device, remove and perform cricothyroidotomy....
Pilot Program Rapid Sequence Intubation	255	M.2.a)	Patients successfully intubated with an endotracheal tube, Combitube (endotracheal or esophageal position is acceptable)....	This text has been revised. The new text reads: Patients successfully intubated with an endotracheal tube, an approved alternative airway device.....
Pilot Program Rapid Sequence Intubation	256		Pilot Protocol for Combitube	The pilot protocol for Combitube has been removed. Combitube is no longer an approved airway device.
Pilot Program Rapid Sequence Intubation	257	M.4.a)(1)		This text has been revised. The text now reads: ..... and an alternative airway device (if not contraindicated)
Pilot Program Rapid Sequence Intubation	258	ALERT	NEW	A new ALERT has been added. The new text reads: Only needle cricothyroidotomy should be performed for patients less than the age of 8 who require cricothyroidotomy.
Pilot Program Rapid Sequence Intubation	260	N.	(for children less than 10 years of age)	The parenthetical text has been revised. The new text reads: (For children less than 12 years of age)
Pilot Program Rapid Sequence Intubation	261	N.1.c)(6)(a)	(a) Intubation kit	New text has been added. The new text reads: (a) Intubation kit: Recommended to carry both cuffed and uncuffed ET tubes for patients less than 8 years of age or 25 kg.
Pilot Program Rapid Sequence Intubation	261	N.1.c)(6)(b)	(b) Bag Valve Mask (BVM)	This text has been revised. The new text reads: Bag Valve Mask (BVM) with manometer (Manometer may be part of the BVM or separate.)
Pilot Program Rapid Sequence Intubation	261	N.1.c)(6)(d)(i)	Combitube, Cricothyroidotomy equipment	This text has been revised. The text now reads: Alternative airway device, Cricothyroidotomy equipment
Pilot Program Rapid Sequence Intubation	261	N.1.d)(1)(b)	(b) May omit for GCS of 3-8	This line has been deleted.
Pilot Program Rapid Sequence Intubation	261	N.1.d)(1)		The order of medications has been changed. Etomidate is now listed first; followed by midazolam.
Pilot Program Rapid Sequence Intubation	261	N.1.d)(1) OR (a)	(a) May omit for GCS of 3-8	This line has been deleted.
Pilot Program Rapid Sequence Intubation	263	N.3.	Protocol for Needle Cricothyroidotomy	This text has been revised. The new text reads: Protocol for Cricothyroidotomy (Surgical for 8 years old or greater and Needle)
Pilot Program Rapid Sequence Intubation	263	N.3.c)	Needle Cricothyroidotomy	New text has been added and the remainder of the outline re-lettered. C) Surgical Cricothyroidotomy for 8 years old or greater. ....







## To All Health Care Providers in the State of Maryland:

Re: 2010 Revisions, updates, and additions to Maryland Medical Protocols for EMS Providers

EMS providers will be able to download the replacement pages from the MIEMSS website at [www.miemss.org](http://www.miemss.org). They will also be receiving a single copy of the 2010 pocket protocols which will have the core protocol changes for quick reference and review. The EMS Board has approved the following: Protocols Changes, Procedure Protocols, Optional Supplemental Protocol, Pilot Protocols, and Research Protocol for implementation on July 1, 2010. Prior to July 1, 2010 all EMS providers (BLS and ALS) must complete a protocol rollout session that will cover the new material. The major protocol additions, deletions, and changes are listed below, but there are terminologies, dosing, and age adjustments that will be highlighted during the educational roll-out.

### Protocol Changes

1. Hyperkalemia - Renal Dialysis/Failure or Crush Syndrome
2. New Medication or Concentration –
  - a. Acetaminophen for pain management
  - b. Lidocaine 4% nasal spray or gel - Nasal Pharyngeal Anesthesia (12 years and greater) for Nasotracheal Intubation with removal of Benzocaine from formulary
3. Emphasizing respiratory support
  - a. "Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer"
4. Modification of EMS/DNR-A
  - a. CPAP is allowed.
  - b. Removal of intubation as a skill for EMS/DNR-A patients in respiratory distress
    - i. The only skill that will not be allowed is nasal or oral intubation.
    - ii. Inappropriate Care for an EMS/DNR Option A - "Maximal (Restorative) Care Before Arrest, Then DNR (1) Nasal or Oral Intubation"
5. GPC – Treatment Section

"Providers may assist the patient or primary caregiver in administering the patient's prescribed rescue medication.

  - a. BLS providers may assist with the administration of the patient's albuterol MDI and sublingual nitroglycerin.
  - b. ALS providers may administer the patient's prescribed benzodiazepine for seizures, Factor VIII or IX for Hemophilia A or B, or re-establish IV access for continuation of an existing vasoactive medication.
  - c. Providers should obtain on-line medical direction to administer other prescribed rescue medications not specifically mentioned in the *Maryland Medical Protocols for EMS Providers* (e.g. Solucortef for Adrenal Insufficiency). The rescue medication must be provided by the patient or caregiver, and the label must have the patient's name and the amount of medication to be given.

ALERT: Do not administer oral medications (exception glucose paste) to patients with an altered mental status."
6. Adjust instruction "(c) - Uterine massage is performed with heel of hand applying firm pressure from the pubis toward the umbilicus only. This massage is continued until bleeding diminishes. RAPID TRANSPORT."
7. GPC Trauma Communications: (d, e, and f are new)
  5. Trauma Communications

The following information must be communicated to the appropriate Trauma Center and/or Local Hospital:

    - a) Patient's age(s), injuries, ETA;
    - b) Number of victims;
    - c) Detailed description of the incident.
    - d) Provide patient Trauma Decision Tree Category (A-D).
    - e) Provide assigned patient priority (1 to 4).
    - f) Pertinent patient signs and symptoms (e.g. HR, RR, BP, Pulse Ox and GCS)

#### Procedure Protocols

1. Latex-Free Dual Lumen Tube (e.g. EasyTube®)
2. Helicopter Utilization – Consolidation of current medevac request criteria with the addition of Optimal Landing Zone and Safety Guidance

#### Optional Supplemental Protocols

1. Neuroprotective Induced Hypothermia (Therapeutic) After Cardiac Arrest - Scene & Interfacility Transfer

#### Pilot Protocols

1. On-Scene Protocol and Alternative Dispatch Protocol During Declared Public Health Emergency for Pandemic Influenza
2. Video Laryngoscope/Glidescope® Ranger for Orotracheal Intubation
3. Modification of the Vaccination and Testing Protocol in response to the Governor's Executive Order, November 6, 2009 (in effect only as long as the Governor's Executive Order is active)

#### Research Protocol

1. RAMPART: Study comparing efficacy of IV Lorazepam to IM Midazolam for seizure management in adults.

Remember, it is the responsibility of each provider to review the 2010 material to ensure he/she is familiar with the revisions. If you have any questions regarding the update, please contact the Office of the State EMS Medical Director at 410-706-0880. Thank you for your hard work and dedication.

Richard L. Alcorta, M.D., FACEP  
State EMS Medical Director, MIEMSS

Robert Bass, M.D., FACEP  
Executive Director, MIEMSS

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## I. GENERAL INFORMATION

### A. GENERAL PROVISIONS

The goal of prehospital emergency medical services is to deliver a viable patient to appropriate definitive care as soon as possible. Optimal prehospital care results from a combination of careful patient assessment, essential prehospital emergency medical services, and appropriate medical consultation.

The Maryland Medical Protocols were developed to standardize the emergency patient care that EMS providers, through medical consultation, deliver at the scene of illness or injury and while transporting the patient to the closest appropriate hospital. These protocols will help EMS providers anticipate and be better prepared to give the emergency patient care ordered during the medical consultation.

Maryland has highly trained and dedicated basic and advanced life support personnel who may need on-line medical consultation only for complicated or extended resuscitative patient care. These protocols are a form of “standing orders” for emergency patient care intervention in a patient who has a life-threatening illness or injury. It remains the responsibility of the EMT-B, CRT-(I), or EMT-P to obtain on-line medical consultation when appropriate. If it is genuinely impossible or inappropriate (i.e., when rendering emergency care to a patient who has a life-threatening injury or medical condition) to obtain on-line medical consultation, the EMT-B/CRT-(I)/EMT-P may render emergency patient care in accordance with these protocols in an effort to save a patient’s life or limb. Whenever such emergency life-saving patient care is rendered, the EMT-B/CRT-(I)/EMT-P must document the treatment rendered and the reason on-line medical consultation could not be obtained on the Patient Care Report (PCR), the equivalent of the MAIS runsheet, and on an additional narrative. In addition, the “exceptional call” area on the PCR must be marked, and the provider must immediately notify the EMS Jurisdiction. The EMS Jurisdiction must notify the State EMS Medical Director within 5 days of the incident. This general provision applies throughout these protocols.

Requests for additions, deletions, or exceptions must be submitted through the State EMS Medical Director’s Office of the Maryland Institute for Emergency Medical Services Systems.



THE GENERAL PATIENT CARE SECTION AND THE ALGORITHMS MUST BE FOLLOWED IN THE SPECIFIC SEQUENCE NOTED.

FOR ALL OTHER TREATMENT PROTOCOLS, THE LETTER AND NUMERICAL OUTLINE FORMAT IS STRICTLY FOR RAPID AND UNIFORM REFERENCE AND DOES NOT IMPLY OR DIRECT A MANDATORY SEQUENCE FOR PATIENT CARE.



IF A FIRST RESPONDER IS DISPATCHED AS AN EMS UNIT, OR FOR PURPOSES RELATED TO MEDICAL ASSISTANCE, OXYGEN AND AED TREATMENT MAY BE UTILIZED, WHEN APPROPRIATE AND APPLICABLE, PROVIDED THE FIRST RESPONDER IS JURISDICTIONALLY AUTHORIZED TO USE AN AED AND/OR THE FIRST RESPONDER HAS BEEN EDUCATED AND TRAINED TO PROVIDE OXYGEN AND/OR AED THERAPY.

THE FIRST RESPONDER SHALL DOCUMENT ALL PATIENT CARE.

## **B. IMPORTANT NUMBERS**

- |  |           |  |
|--|-----------|--|
| 1. Commercial Ambulance Licensing and Regulation   | Office    | <b>(410) 706-8511</b><br><b>(888) 200-5015</b> |
|  | Fax       | <b>(410) 706-8552</b>                          |
| 2. Critical Incident Stress Management   |           | <b>(800) 648-3001</b>                          |
| 3. Office of Education, Licensure, & Certification   | Office    | <b>(800) 762-7157</b>                          |
|  | Fax       | <b>(410) 706-2367</b>                          |
| 4. Regional Programs   |           |  |
| a) Region I (Allegany & Garrett counties)  | Office    | <b>(301) 895-5934</b>                          |
|  | Fax       | <b>(301) 895-3618</b>                          |
| b) Region II (Washington & Frederick counties)   | Office    | <b>(301) 791-2366</b><br><b>(301) 416-7249</b> |
|  | Fax       | <b>(301) 791-9231</b>                          |
| c) Region III (Baltimore City, and Anne Arundel, Baltimore, Carroll, Harford, and Howard counties)                 | Office    | <b>(410) 706-3996</b>                          |
|  | Fax       | <b>(410) 706-8530</b>                          |
| d) Region IV (Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester counties) | Office    | <b>(410) 822-1799</b>                          |
|  | Toll Free | <b>(877) 676-9617</b>                          |
|  | Fax       | <b>(410) 822-0861</b>                          |
| e) Region V (Calvert, Charles, Montgomery, Prince George's, and St. Mary's counties)                               | Office    | <b>(301) 474-1485</b>                          |
|  | Toll Free | <b>(877) 498-5551</b>                          |
|  | Fax       | <b>(301) 513-5941</b>                          |
| 5. State EMS Medical Director  | Office    | <b>(410) 706-0880</b>                          |
|  | Fax       | <b>(410) 706-0853</b>                          |
| 6. SYSCOM (Administrative)   |           | <b>800-648-3001</b>                            |
| 7. EMRC  |           |  |
| a) Consult Line (Regions I-IV)   |           | <b>(800) 492-3805</b>                          |
| b) Consult Line (Region V)   |           | <b>(877) 840-4245</b>                          |

## IMPORTANT NUMBERS (Continued)



POISON INFORMATION CENTER RECOMMENDATIONS SHOULD BE SOLICITED IN CONJUNCTION WITH MEDICAL CONSULTATION, BUT MEDICATION ORDERS CAN ONLY BE ACCEPTED FROM AN APPROVED BASE STATION.

8. Poison Control Centers
  - a) Maryland Poison Center/University of Maryland School of Pharmacy, Baltimore **(800) 222-1222**
  - b) National Capital Poison Center, Washington, DC **(800) 222-1222**
9. In-Patient Hospice Facilities
  - a) Hospice of Baltimore–Gilchrist Center **(410) 512-8200**
  - b) Joseph Richey Hospice–Joseph Richey House **(410) 523-2150**
  - c) Stella Maris Hospice **(410) 560-9695**
  - d) Stella Maris Hospice at Mercy Hospital **(410) 332-9534**

### C. HEALTH CARE FACILITY CODES

Code	Health Care Facility Name
345	10th Street Medical Center, Ocean City, MD
346	26th Street Medical Center, Ocean City, MD
379	63rd Street Medical Center, Ocean City, MD
380	75th Street Medical Center, Ocean City, MD
347	93rd Street Medical Center, Ocean City, MD
409	126th Street Medical Center, Ocean City, MD
751	Alfred I. DuPont Hospital for Children (formerly Alfred I. DuPont Institute)
492	Alleghany General Hospital, Alleghany, PA (former facility code 422)
397	Altoona Rehabilitation Hospital
231	Andrew Rader Clinic, VA
221	Anne Arundel Medical Center (Base Station)
421	Anne Arundel Medical Primary Stroke Center
382	Anne Arundel Medical Park
550	Annie M. Warner Hospital
381	Atlantic General Hospital (Base Station)
581	Atlantic General Hospital Primary Stroke Center
590	Baltimore City Public Service Infirmary (former facility code 520)
222	Baltimore Washington Medical Center (Base Station)
422	Baltimore Washington Medical Primary Stroke Center
350	Bayhealth Medical Center, Kent Hospital (formerly Kent General)
359	Bayhealth Medical Center, Milford Hospital (formerly Milford Memorial Hospital)
234	Beebe Medical Center Millville Center, DE
358	Beebe Medical Center Sussex County, DE
208	Bon Secours Hospital
353	Bowie Health Center
235	Brooke Lane Psychiatric Center
236	Brunswick Medical Center
553	Bryn Mawr Hospital
752	Bryn Mawr Rehabilitation Hospital
754	Bryn Mawr Rehabilitation Hospital at Maryland General
771	Calvert County Nursing Home Center
266	Calvert Memorial Hospital (Base Station)
466	Calvert Memorial Hospital Primary Stroke Center
554	Carlisle Regional Medical Center, PA
555	Carpenter's Clinic
219	Carroll Hospital Center (Base Station)
755	Central Industrial Medical Center
276	Chambersburg Hospital, PA
284	Charlestown Area Medical Center
241	Chemtrec Chemical Manufacturers Association Chemical Transportation Emergency Center, Washington, DC
296	Chester River Hospital Center (formerly Kent & Queen Anne's Hospital) (Base Station)
243	Chestnut Lodge Hospital
225	Children's Hospital & Center for Reconstructive Surgery - Baltimore, MD

<b>Code</b>	<b>Health Care Facility Name</b>
756	Children's Hospital of Philadelphia, PA
317	Children's National Medical Center, DC (Pediatric Base Station)
818	Children's National Medical Center Neonatal Center - Wash., DC
717	Children's National Medical Center Pediatric Trauma Center - Wash., DC
718	Children's National Medical Center Pediatric Burn Center - Wash., DC
304	Christiana Care Health Systems, Christiana Hospital
299	Christiana Care Health Systems, Wilmington Hospital (formerly Wilmington Hospital)
341	City Hospital, Martinsburg, WV
291	Civista Medical Center (Base Station)
591	Civista Medical Primary Stroke Center
245	Columbia Hospital for Women Medical Center, Washington, DC
383	Columbia Medical Plan
757	Cooper Trauma Center, NJ
248	Crownsville State Hospital
252	Cullen Center
342	DC General Hospital
842	DC General Hospital Neonatal Center
293	Deer's Head State Hospital
556	Delaware Memorial Hospital, DE
256	DeWitt Army Hospital, VA
329	Doctor's Community Hospital (formerly Doctor's Hospital of P.G. Co.) (Base Station)
257	Dominion Hospital, VA
294	Dorchester General Hospital
310	Dover U.S. Air Force Clinic (formerly Dover U.S. Air Force Hospital)
302	DuPont Memorial Hospital
491	Eastern Neurological Rehabilitation Hospital (formerly facility code 421)
331	Eastern Shore State Hospital
557	Elizabethtown Children's Hospital
306	Ellsmere Veteran's Administration Hospital, DE
558	Emmitsburg Hospital
258	Finan Center
279	Fort Dietrick Medical Center
247	Fort Howard Veteran's Administration Hospital
522	Fort Washington Hospital (Base Station)
203	Franklin Square Hospital Center (Base Station)
503	Franklin Square Hospital Primary Stroke Center
239	Frederick Memorial Hospital (Base Station)
253	Freeman Hospital
286	Fulton County Medical Center, PA
322	Garrett County Memorial Hospital (Base Station)
580	Geisinger Medical Center, PA
335	George Washington University Hospital, DC
337	Georgetown University Hospital, DC
737	Georgetown University Hospital Eye Trauma Center, DC
240	Gettysburg Hospital, PA
759	Gladys Spellman Nursing Center
226	Good Samaritan Hospital of Maryland (Base Station)



<b>Code</b>	<b>Health Care Facility Name</b>
526	Good Samaritan Hospital Primary Stroke Center, MD
559	Grant Memorial Hospital
217	Greater Baltimore Medical Center (Base Station)
517	Greater Baltimore Medical Primary Stroke Center
817	Greater Baltimore Medical Center Neonatal Center
261	Greater Northeast Medical Center, DC (see also Northeast Georgetown #313)
316	Greater Southeast Community Hospital, DC
760	The Greenery
348	Groupe Memorial Hospital
263	Gundry Hospital
363	Hadley Memorial Hospital, DC
560	Hagerstown State Hospital
561	Hampshire Memorial Hospital, WV
242	Hanover Hospital, PA
211	Harbor Hospital Center (formerly South Baltimore General Hospital) (Base Station)
511	Harbor Hospital Primary Stroke Center
220	Harford Memorial Hospital (Base Station)
520	Harford Memorial Hospital Primary Stroke Center
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
244	Holy Cross Hospital (Base Station)
544	Holy Cross Hospital Primary Stroke Center
450	Hospice of Baltimore - Gilchrist Center - Baltimore, MD
268	Hospital for Sick Children, DC
223	Howard County General Hospital (Base Station)
523	Howard County General Hospital Primary Stroke Center
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
601	Johns Hopkins Bayview Adult Trauma Center
701	Johns Hopkins Bayview Adult Burn Unit
201	Johns Hopkins Bayview Medical Center (Base Station)
501	Johns Hopkins Bayview Medical Primary Stroke Center
801	Johns Hopkins Bayview Neonatal Center
901	Johns Hopkins Bayview Perinatal Center
761	Johns Hopkins Comprehensive Geriatric Center
766	Johns Hopkins Bayview Medical Center Transitional Care Unit
204	Johns Hopkins Hospital (Pediatric & Adult Base Station)

<b>Code</b>	<b>Health Care Facility Name</b>
504	Johns Hopkins Hospital Primary Stroke Center
604	Johns Hopkins Hospital Adult Trauma Center
705	Johns Hopkins Hospital Eye Trauma Center
706	Johns Hopkins Hospital Inpatient Rehabilitation Center
804	Johns Hopkins Hospital Neonatal Intensive Care Unit
704	Johns Hopkins Hospital Pediatric Trauma Center
707	Johns Hopkins Hospital Pediatric Burn Center, Baltimore, MD
904	Johns Hopkins Hospital Perinatal Center
451	Joseph Richey Hospice - Joseph Richey House, Baltimore, MD
274	Kennedy-Krieger Institute (formerly John F. Kennedy Institute for Handicapped Children)
227	Kernan Hospital
277	Keswick Home for the Incurables of Baltimore City
262	Kimbrough Army Hospital
563	Kings Daughters Hospital, WV
259	Kirk Army Hospital
403	Lancaster General Hospital, PA
564	Lancaster Osteopathic Hospital, PA
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
206	Maryland General Hospital (Base Station)
506	Maryland General Hospital Primary Stroke Center
281	Maryland Penitentiary Hospital
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
404	Memorial Hospital, PA
567	Memorial Osteopathic Hospital, PA
597	The Memorial Hospital at Easton, MD, Inc. Primary Stroke Center
207	Mercy Medical Center, Baltimore, MD (Base Station)
507	Mercy Medical Primary Stroke Center - Baltimore, MD
807	Mercy Medical Center, Neonatal Center - Baltimore, MD
907	Mercy Medical Center, Perinatal Center - Baltimore, MD
271	Monongalia General Hospital, WV
228	Montebello Center - Baltimore, MD
264	Montgomery General Hospital (Base Station)

<b>Code</b>	<b>Health Care Facility Name</b>
464	Montgomery General Hospital Primary Stroke Center
292	Mount Washington Pediatric Hospital
400	Myersdale Medical Center, PA
351	Nanticoke Memorial Hospital
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
355	National Naval Medical Center
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)
309	NRH Regional Rehabilitation @ Irving Street, Washington, DC (formerly National Rehabilitation Hospital)
408	Peninsula Regional Medical Center (Base Station)
454	Peninsula Regional Medical Center, Transitional Care Unit
508	Peninsula Regional Medical Primary Stroke Center
608	Peninsula Regional Medical Center, Trauma Center
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
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 (Base Station)
632	Prince George's Hospital Center Adult Trauma Center
832	Prince George's Hospital Center Neonatal Center
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 - Adult Trauma Center (Base Station)
734	R Adams Cowley Shock Trauma Center - Hyperbaric Unit
735	R Adams Cowley Shock Trauma Center - Neurotrauma Unit
570	Reading Medical Center
571	Riverside Hospital, DE
311	Riverside Hospital, VA
365	Rosewood Center
461	Ruby Hospital Morgantown, WV

<b>Code</b>	<b>Health Care Facility Name</b>
572	Sacred Heart Hospital, PA
573	Saint Agnes Burn Center, PA (formerly listed as a Delaware facility)
212	Saint Agnes Hospital (Base Station)
512	Saint Agnes Hospital Primary Stroke Center
812	Saint Agnes Hospital Neonatal Center
912	Saint Agnes Hospital Perinatal Center
366	Saint Elizabeth's Hospital, Washington, DC
303	Saint Francis Hospital, WV
460	Saint Francis Hospital, Wilmington, DE
213	Saint Joseph Hospital, MD (Base Station)
513	Saint Joseph Hospital Primary Stroke Center
405	Saint Joseph Hospital, PA
367	Saint Luke Institute
333	Saint Mary's Hospital (Base Station)
533	Saint Mary's Hospital Primary Stroke Center
455	Salisbury Genesis Center
265	Shady Grove Adventist Hospital (Base Station)
465	Shady Grove Adventist Hospital Primary Stroke Center
368	Sheppard & Enoch Pratt Hospital
294	Shore Health Systems, Dorchester General Hospital (formerly listed as Dorchester General Hospital) (Base Station)
297	Shore Health Systems, Easton Memorial Hospital (formerly listed as Easton Memorial Hospital) (Base Station)
324	Sibley Memorial Hospital, Washington, D.C.
750	Sinai Head Injury Rehabilitation Hospital
210	Sinai Hospital of Baltimore (Base Station)
510	Sinai Hospital of Baltimore Primary Stroke Center
610	Sinai Hospital of Baltimore Adult Trauma Center
810	Sinai Hospital of Baltimore Neonatal Center
910	Sinai Hospital of Baltimore Perinatal Center
770	Sinai Rehabilitation Hospital
772	Solomon's Nursing Home Center
360	Southern Chester County Medical Center, PA
343	Southern Maryland Hospital Center (Base Station)
543	Southern Maryland Hospital Primary Stroke Center
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 Association (Base Station)
549	Suburban Hospital Association Primary Stroke Center
649	Suburban Hospital Association Adult Trauma Center
763	Suburban Hospital, Inc., Skilled Nursing Facility
371	Tawes-Bland Bryant Nursing Center
574	Taylor Hospital, WV

<b>Code</b>	<b>Health Care Facility Name</b>
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
224	Upper Chesapeake Health System
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 (Base Station)
514	Union Memorial Hospital Primary Stroke Center
714	Union Memorial Hospital, Curtis Hand Center
215	University of Maryland Medical System (Base Station)
515	University of Maryland Medical System Primary Stroke Center
815	University of Maryland Medical System Neonatal Center
915	University of Maryland Medical System Perinatal Center
575	University of Pennsylvania Hospital
551	University of Pittsburgh Medical Center Bedford Memorial, PA
224	Upper Chesapeake Health System (formerly Fallston General Hospital) (Base Station)
524	Upper Chesapeake Health System Primary Stroke Center
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
250	Walter Reed Army Medical Center, DC
377	Walter Reed Hospital Annex
282	War Memorial Hospital, Berkeley Springs, WV
552	War Memorial Hospital, Berkeley Springs, WV (formerly Berkeley Springs Hospital, WV)
328	Washington Adventist Hospital (Base Station)
289	Washington County Health System, MD (Base Station)
589	Washington County Health System Primary Stroke Center
689	Washington County Health System, Adult Trauma Center
789	Washington County Health System, Comprehensive Inpatient Rehabilitation Services, MD
456	Washington County Health System, Psychiatric Unit
764	Washington County Health System, Skilled Nursing Facility, MD
327	Washington Hospital Center, DC
728	Washington Hospital Center, DC, Adult Trauma Center
727	Washington Hospital Center, DC, Burn Center
269	Waynesboro Hospital, Waynesboro, PA

<b>Code</b>	<b>Health Care Facility Name</b>
323	West Virginia University Hospital, WV
290	Western Maryland Center, MD
395	Western Maryland Regional Medical Center (Base Station) <b>(NEW '10)</b>
495	Western Maryland Regional Medical Center, Primary Stroke Center <b>(NEW '10)</b>
695	Western Maryland Regional Medical Center, Trauma Center <b>(NEW '10)</b>
776	Western Maryland Regional Medical Center, Psychiatric Unit <b>(NEW '10)</b>
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
<b>888</b>	<b>Other Facility</b>

## D. MARYLAND TRAUMA AND SPECIALTY REFERRAL CENTERS

### Trauma Centers

#### ***Primary Adult Resource Center***

- R Adams Cowley Shock Trauma Center, University of Maryland Medical System, Baltimore

#### ***Level I Trauma Center***

- Johns Hopkins Hospital Adult Trauma Center, Baltimore

#### ***Level II Trauma Centers***

- Johns Hopkins Bayview Medical Center, Baltimore
- Prince George's Hospital Center, Cheverly
- Sinai Hospital of Baltimore
- Suburban Hospital, Bethesda

#### ***Level III Trauma Centers***

- Western Maryland Regional Medical Center
- Peninsula Regional Medical Center, Salisbury
- Washington County Hospital, Hagerstown

### Specialty Referral Centers

#### ***Eye Trauma***

- Wilmer Eye Institute's Eye Emergency Service/Johns Hopkins Hospital, Baltimore

#### ***Hand/Extremity Trauma***

- The Curtis National Hand Center for Treatment of the Hand and Upper Extremity/Union Memorial Hospital, Baltimore

#### ***Hyperbaric Medicine***

- Hyperbaric Medicine Center/R Adams Cowley Shock Trauma Center/University of Maryland Medical System, Baltimore

#### ***Neurotrauma (Head and Spinal Cord Injuries)***

- Neurotrauma Center/R Adams Cowley Shock Trauma Center/University of Maryland Medical System, Baltimore

#### ***Pediatric Trauma***

- Pediatric Trauma Center/Johns Hopkins Children's Center, Baltimore
- Pediatric Trauma Center/Children's National Medical Center, Washington, DC

#### ***Burns***

- Baltimore Regional Burn Center/ Johns Hopkins Bayview Medical Center, Baltimore
- Burn Center/ Washington Hospital Center, Washington, DC
- Pediatric Burn Center/ Johns Hopkins Children's Center, Baltimore
- Pediatric Burn Center/ Children's National Medical Center, Washington, DC

## MARYLAND TRAUMA AND SPECIALTY REFERRAL CENTERS (Continued)

### Specialty Referral Centers

#### *Perinatal Referral Centers*

- Anne Arundel Medical Center, Annapolis
- Franklin Square Hospital Center, Baltimore
- Greater Baltimore Medical Center, Towson
- Holy Cross Hospital, Silver Spring
- Howard County General Hospital
- Johns Hopkins Bayview Medical Center, Baltimore
- Johns Hopkins Hospital, Baltimore
- Mercy Medical Center, Baltimore
- Prince George's Hospital Center, Cheverly
- St. Agnes Health Care, Baltimore
- St. Joseph Medical Center, Baltimore
- Shady Grove Adventist Hospital, Gaithersburg
- Sinai Hospital of Baltimore
- University of Maryland Medical System, Baltimore



**G. PROTOCOL VARIATION PROCEDURE (NEW '10):** If an error or variance occurs (i.e., any act or failure to act, in practice or judgment, involving patient care that is not consistent with established protocol, whether or not it results in any change in the patient's status or condition):

1. The EMS Provider must:
  - a) Notify the consulting physician via radio as soon as the error or variance is discovered, if prior to arrival at the receiving hospital,
  - b) Monitor the patient's condition very closely for any changes,
  - c) Notify the receiving physician upon arrival, and
  - d) Notify the local EMS jurisdiction or licensed commercial ambulance service and Program Medical Director within 24 hours of the incident.
  
2. The EMS Operational Program **Quality Assurance Officer** in accordance with COMAR 30.03.04.02 B(6) must:
  - a) Within **5 days** of being made aware of the incident, submit written notification of the incident to the:
    - i) Local EMS jurisdiction,
    - ii) Program Medical Director,
    - iii) MIEMSS Compliance Office, and
    - iv) State EMS Medical Director.
  - b) Within **14 days** of the written notification of the incident, initiate a Medical Review Committee QA investigation.
  - c) Within **30 days** of the written notification of the incident, forward to MIEMSS' Compliance Office and State EMS Medical Director, the written results of the Medical Review Committee QA investigation and recommendations.

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**H. INABILITY TO CARRY OUT PHYSICIAN ORDER (NEW '10):** Occasionally a situation may arise in which a physician's order cannot be carried out; e.g., the provider feels the administration of an ordered medication would endanger the patient, a medication is not available, or a physician's order is outside the protocol. If this occurs:

1. The EMS Provider must:
  - a) Immediately notify the consulting physician as to the reason the order cannot be carried out.
  - b) Document on the patient care report (MAIS, E-MAIS, etc.) what was ordered, the time it was ordered, and the reason the order could not be carried out.
  - c) As soon as practical following the call, notify the local EMS jurisdiction of the incident.
  
2. Public Service EMS Operational Programs must:
  - a) Within **5 days** of being made aware of the incident, submit written notification of the incident through the local EMS jurisdiction and Program Medical Director to the Regional Medical Director with the MIEMSS Regional EMS Administrator being notified at the discretion of the Regional Medical Director, and a copy to the State EMS Medical Director.
  - b) Shall within **14 days** of the written notification of the incident, initiate a QA investigation under the authority of the Medical Review Committee.
  - c) Shall within **30 days** of the written notification of the incident, forward to MIEMSS' Compliance Office and State EMS Medical Director written results of the Medical Review Committee QA investigation and recommendations.
  
3. Licensed Commercial Programs must:
  - a) Within **5 days** of being made aware of the incident, submit written notification of the incident through the commercial Program Medical Director to the Director of the State Office of Commercial Ambulance Licensing and Regulation and a copy to the State EMS Medical Director.
  - b) Shall within **14 days** of the written notification of the incident, initiate a QA investigation under the authority of the Medical Review Committee.
  - c) Shall within **30 days** of the written notification of the incident, forward to the Program Medical Director and to the Director of the State Office of Commercial Ambulance Licensing and Regulation and State EMS Medical Director written results of the Medical Review Committee QA investigation and recommendations.

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## 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

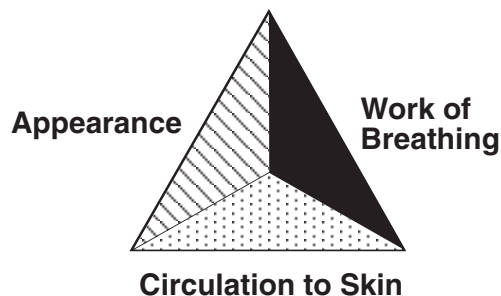
1. Determine the Mechanism of Injury (MOI)/Nature of Illness (NOI).
2. If appropriate, begin triage and initiate Mass Casualty Incident (MCI) procedures.

### 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.
  - (1) If patient's ventilations are not adequate, provide assistance with 100% oxygen using Bag-Valve-Mask (BVM). (The use of a manually activated positive pressure oxygen delivery device is allowed when a BVM is not available.)
  - (2) Consider pulse oximetry, if available.

Percent O <sub>2</sub> Saturation	Ranges	General Patient Care
95–100%	Normal	Give Oxygen as necessary
91–94%	Mild Hypoxia	Give Oxygen as necessary
86–90%	Moderate Hypoxia	Give 100% Oxygen Assisting Ventilations ( <b>NEW '10</b> )
≤ 85%	Severe Hypoxia	Give 100% Oxygen Assist Ventilations if necessary If indicated, Intubate
<b><i>False SPO<sub>2</sub> readings may occur in the following patients:</i></b> Hypothermic, Hypoperfusion (Shock), Carbon Monoxide Poisoning, Hemoglobin Abnormality, Anemic, and Vasoconstriction.		

- b) 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
  - (2) Who is manifesting a rapidly decreasing GCS **or**,

- (3) With on-line medical consultation.
- c) Administer oxygen as appropriate.
  - (1) Administer oxygen at 12-15 lpm NRB mask to all priority 1 patients (including COPD).
  - (2) Administer oxygen at 12-15 lpm NRB to all priority 2 patients (including COPD) experiencing cardiovascular, respiratory, or neurological compromise.
  - (3) Administer oxygen at 2-6 lpm by nasal cannula or 6-15 lpm mask delivery device to ALL other priority 2 patients and priority 3 patients with no history of COPD.
  - (4) Priority 3 patients, with a history of COPD or patients with chronic conditions, should receive their prescribed home dosage of oxygen. If patients are not on home oxygen, they should receive oxygen at 2-6 lpm nasal cannula or 6 lpm mask delivery device, if indicated.



NEVER WITHHOLD OXYGEN FROM A PATIENT IN RESPIRATORY DISTRESS!

DEVICE	FLOW RATE	CONCENTRATION
Nasal Cannula	2-6 lpm	24-44% (NEW '10)
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
  - a) Assess pulse.
    - (1) Patients less than 1 year of age:
      - (a) If pulse is absent, begin CPR and use manual defibrillator.
      - (b) If patient is symptomatic with poor perfusion (unresponsive or only responds 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 1 year of age or greater but who have not reached their 12<sup>th</sup> 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 (NEW '10):

- (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.
- (3) 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) Cervical Spine Immobilization
  - (1) The provider shall determine the appropriate device for use in spinal immobilizing the patient. Infant or child car seats may NOT be used as a spine immobilization device for the pediatric patient.
  - (2) If patient presents with a traumatic mechanism which could cause cervical spine injury and meets ANY of the following criteria, complete Spinal Immobilization (C-spine and back maintaining neutral alignment and padding when appropriate) should occur.
    - (a) History of Loss of Consciousness (LOC) or Unconscious?
    - (b) Disoriented or altered LOC?
    - (c) Suspected use of Drugs or Alcohol?
    - (d) Midline Cervical Tenderness or Pain?
    - (e) Focal Neurologic Deficit?
    - (f) Has a painful distracting injury that could mask cervical pain or injury?
    - (g) Child less than 8 years of age
  - (3) If NO to all of the above, transport as appropriate.



IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, PERFORM A COMPLETE SPINAL IMMOBILIZATION.

6. Exposure


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

7. Assign Clinical Priority

- a) Priority 1 — Critically ill or injured person requiring immediate attention; unstable patients with life-threatening injury or illness.
- b) Priority 2 — Less serious condition yet potentially life-threatening injury or illness, requiring emergency medical attention but not immediately endangering the patient's life.
- c) Priority 3 — Non-emergent condition, requiring medical attention but not on an emergency basis.
- d) Priority 4 — Does not require medical attention.
- e) In the event of a multiple casualty incident, the Simple Triage And Rapid Treatment (START and/or JumpSTART) technique will be instituted for rapid tagging and sorting of patients into priority categories for both treatment and transport.



## E. HISTORY AND PHYSICAL EXAMINATION/ASSESSMENT

1. Conduct a Focused Examination/Detailed Examination/Ongoing Assessment.
2. Collect and transport documentation related to patient's history (example: Emergency Information Form, Medic Alert, EMS DNR, or jurisdictional form).
3.  Obtain an EKG when appropriate.

## F. TREATMENT PROTOCOLS

1. Refer to **ALL** appropriate protocols.
2. Patients who have had an impaled electric conductive device used on them will be transported to the nearest appropriate facility without dart removal (Exception Tactical EMS).
3. Providers may assist the patient or primary caregiver in administering the patient's prescribed rescue medication.
  - a) BLS providers may assist with the administration of the patient's albuterol MDI and sublingual nitroglycerin.
  - b) ALS providers may administer the patient's prescribed benzodiazepine for seizures, Factor VIII or IX for Hemophilia A or B, or re-establish IV access for continuation of an existing vasoactive medication.
  - c) Providers should obtain on-line medical direction to administer other prescribed rescue medications not specifically mentioned in the *Maryland Medical Protocols for EMS Providers* (e.g. Solucortef for Adrenal Insufficiency). The rescue medication must be provided by the patient or caregiver and the label must have the patient's name and the amount of medication to be given. **(NEW '10)**



DO NOT ADMINISTER ORAL MEDICATIONS (EXCEPT GLUCOSE PASTE) TO PATIENTS WITH AN ALTERED MENTAL STATUS. **(NEW '10)**



4. For pediatric patients:
  - a) Pediatric section of the treatment protocol will be used for children who have **not** reached their 15<sup>th</sup> birthday (trauma and medical), except as otherwise stated in the treatment protocol. **(NEW '10)**
  - b) Medication dosing:
    - (1) Pediatric doses apply to patients weighing less than 50 kg.
    - (2) For pediatric patients equal to or greater than 50 kg, utilize adult dosing.
  - c) The developmental age of the infant/child must be considered in the communication and evaluation for treatment.
  - d) Destination consideration:

For those patients who are 15 years of age or older who receive specialized care at a pediatric facility, consider medical consultation with a pediatric base station for patient destination.
  - e) Infants and children must be properly restrained prior to and during transport.
  - f) When appropriate, family members should remain with pediatric patients.

## G. COMMUNICATIONS

1. All Priority 1 patients require on-line medical consultation.
2. All Priority 2 patients who have persistent symptoms or need further therapeutic intervention(s) require on-line medical consultation.
3. Notification ("information only call" that can be through EOC or EMS communication system following local standard operating procedures) should be made to the receiving hospital for Priority 2 or Priority 3 patients, whose symptoms have resolved and whose vital signs are within normal limits.



ON-LINE MEDICAL CONSULTATION MAY BE OBTAINED AT ANY TIME FOR ANY PATIENT, IF DESIRED BY THE PREHOSPITAL EMS PROVIDER, PEDIATRIC AND SPECIALTY CONSULTATION IS ENCOURAGED FOR TRAUMA AND MEDICAL PATIENTS. CONSULTATION WITH PEDIATRIC AND SPECIALTY CENTERS SHALL OCCUR SIMULTANEOUSLY WITH A BASE STATION CONSULT.

4. If medical consultation is genuinely unavailable, or if the time necessary to initiate consultation significantly compromises patient care, the provider shall proceed with additional protocol directed care, so long as transport will not be significantly delayed. "Exceptional Call" must be indicated on the Patient Care Report (PCR).
5. Trauma Communications (**NEW '10**)  
The following information must be communicated to the appropriate Trauma Center and/or Local Hospital:
  - a) Patient's age(s), injuries, ETA;
  - b) Number of victims;
  - c) Detailed description of the incident.
  - d) Provide patient Trauma Decision Tree Category (A-D).
  - e) Provide assigned patient priority (1 to 4).
  - f) Pertinent patient signs and symptoms (e.g. HR, RR, BP, Pulse Ox and GCS)
6. Mass Casualty Incident (MCI) Communications
  - a) When a local jurisdiction declares an MCI, it is extremely important to maximize patient care resources and reserve EMS communications for emergent situations. Except for extraordinary care interventions, EMS providers may perform all skills and administer medications within protocol, during a declared MCI. When the MCI condition is instituted, the Exceptional Call box must be checked on the PCR.
  - b) During an MCI, the EMS Officer-in-Charge (OIC) shall designate an EMS Communicator who shall establish appropriate communications.
7. Communications with and through EMRC/SYSCOM are recorded. In addition, as part of the quality assurance and quality improvement process, communications with hospitals are frequently recorded. Therefore, you should assume that all your communications among EMS providers, hospitals, public safety communications centers, and EMSC/SYSCOM are being recorded.

## H. REASSESSMENT

1. Reassess unstable patients frequently (recommended every 5 minutes).
2. Reassess stable patients at a minimum of every 15 minutes.

## I. DISPOSITION

1. Destination
  - a) Priority 1 patients shall be triaged according to Maryland Medical Protocols to the closest appropriate hospital-based emergency department, designated trauma or designated specialty referral center. Critically unstable patients in need of immediate life-saving interventions that cannot be provided in the field shall, with the approval of EMS System medical consultation, be diverted to the closest facility (including freestanding medical facility) capable of immediately providing those interventions.
  - b) Priority 2 patients shall be triaged according to the Maryland Medical Protocols to the closest appropriate hospital-based emergency department, designated trauma or designated specialty referral center unless otherwise directed by EMS System medical consultation.
  - c) Stable priority 3 or 4 patients who do not need a time critical intervention may also be transported to the local emergency department or freestanding medical facility.
2. Mode of transport (air, land, water, etc.)
  - a) Medevac patients with indications for specialty referral center should be flown to the appropriate type of specialty center if not more than 10-15 minutes further than the closest trauma center. (Patients with an airway, breathing, or circulatory status who would be jeopardized by going an additional 10-15 minutes should go to the closest trauma center.)
  - b) Consider utilization of a helicopter when the patient's condition warrants transport to a trauma or specialty referral center and the use of a helicopter would result in a clinically significant reduction in time compared with driving to a trauma/specialty center.



ALL REQUESTS FOR SCENE HELICOPTER TRANSPORTS SHALL BE MADE THROUGH SYSCOM. FOR TRAUMA DECISION TREE CATEGORY "C" OR "D", RECEIVING TRAUMA CENTER MEDICAL CONSULTATION REQUIRED WHEN CONSIDERING WHETHER HELICOPTER TRANSPORT IS OF CLINICAL BENEFIT.

- c) If the time of arrival at the trauma or specialty referral center via ground unit is less than 30 minutes, there will generally not be a benefit in using the helicopter, especially for Trauma Decision Tree classes "C" and "D".
- d) Refer to the trauma decision tree when considering use of aeromedical transport. Provide SYSCOM with the patient's Category (A, B, C, or D).
- e) On-line medical direction should be obtained from the local trauma center and the specialty referral center when transport to the specialty center would require more than 10-15 minutes additional transport time.
  - (1) Pediatric Trauma Patients: Indications as per the pediatric section of the trauma protocols.
  - (2) Spinal Trauma Patients: Indications as per spinal trauma protocol.

- (3) Burn Patients: Indications as per burn protocol. Special note: Isolated burn patients without airway injury or other associated trauma should normally be flown to a burn center, regardless of the location of the closest trauma center.
- (4) Hand Injury Patients: Indications as per hand protocol. Special note: Medevac patients with appropriate indications for hand center referral should normally be flown to the hand center, regardless of the location of the closest trauma center.

3. Status

Evaluate the need for emergent versus non-emergent transportation.



DO NOT WAIT ON-SCENE FOR ADVANCED LIFE SUPPORT. ATTEMPT TO RENDEZVOUS EN ROUTE TO THE HOSPITAL.

**J. TRANSFER OF CARE/RENDEZVOUS AND TRANSITION OF PATIENT CARE ALS TO BLS**

The ALS provider-patient relationship is established when the ALS provider initiates patient assessment and

- 1. ALS medication(s)\* is/are administered or
- 2. ALS procedure(s)\* is/are performed or
- 3. Upon ALS provider assessment of the patient there is potential risk of deterioration.

\* Based on the medication or procedure as listed in the protocol pages 144-147

ALS providers may only terminate their EMS provider-patient relationship when they are assured that the patient will continue to receive care at the same or greater levels, or when they have documented with on-line medical direction that the patient's condition has improved and that patient care may be transferred safely to an EMS Provider with a lower scope of practice.

**BLS providers have the right to decline the transition of patient care. When consensus between the providers cannot be gained, ALS shall get on-line medical direction.**

Providers will relay assessment findings and treatment provided to the individual(s) assuming responsibility for the patient(s).

**K. DOCUMENTATION**

A Patient Care Report (PCR) will be completed for each incident/patient as per local jurisdictional and State requirements.

**L. CONFIDENTIALITY**

Patient confidentiality must be maintained at all times.

**M. PROFESSIONAL CONDUCT**

All patients should be treated with dignity and respect in a calm and reassuring manner.

## 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. **(NEW '10)**



---

c) Initiate IV LR KVO.

d) Use glucometer and treat accordingly.

e)  Consider midazolam (Paramedic may perform without consult for patients with active seizures.)  
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 is in status, consider IO administration of midazolam  
If suspected severe nerve agent exposure, providers may administer midazolam 5 mg IM or diazepam (CANA) without medical consultation.



IF PATIENT IS PREGNANT, CONTINUE WITH SEIZURE PROTOCOL AND USE MIDAZOLAM. MEDICAL CONSULTATION REQUIRED FOR PREGNANT PATIENTS WHO MAY REQUIRE LARGER DOSES OF MIDAZOLAM TO CONTROL SEIZURES. **(NEW '10)**

## ALTERED MENTAL STATUS: SEIZURES (Continued)




- f) If the patient is still seizing:
  - (1) DO NOT RESTRAIN.
  - (2) Protect from further injury.
  - (3) Consider underlying cause of seizure.
- g) 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. **(NEW '10)**



- 
- h) Initiate IV/IO.
  - i) Use glucometer and treat accordingly.
  - j) Administer fluid bolus, if appropriate  
20 mL/kg of LR IV/IO



FOR A CHILD ACTIVELY SEIZING, ADMINISTER MIDAZOLAM IM AND RESERVE IO FOR LIFE-THREATENING ILLNESS.

- k) The paramedic may assist patients with the administration of their prescribed benzodiazepine.
- l)  Consider midazolam for seizures lasting greater than 10 minutes (Paramedic may perform without consult for patients with active seizures.)
  - 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes
  - Maximum total dose 5 mg
  - If IV unavailable, administer 0.2 mg/kg IM
  - Maximum single dose 5 mg
  - Additional doses up to a maximum total dose 5 mg require medical consultation for all providers.
  - If patient is in status, consider IO administration of midazolam.
  - If suspected severe nerve agent exposure, providers may administer midazolam as above or diazepam (CANA) without medical consultation.

4. Continue General Patient Care.

## C. ALTERED MENTAL STATUS: UNRESPONSIVE PERSON

1. Initiate General Patient Care.

2. Presentation

Patients may exhibit confusion, focal motor sensory deficit, unusual behavior, unresponsiveness to verbal or painful stimulus.



ALCOHOL CAN CAUSE ALTERED MENTAL STATUS BUT IS NOT COMMONLY A CAUSE OF TOTAL UNRESPONSIVENESS TO PAIN.



3. Treatment

a) Obtain pulse oximetry, if available.

b) Administer glucose paste (10-15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes. **(NEW '10)**




---


c) Initiate IV LR fluid therapy 20 mL/kg bolus.  
Titrate to a systolic pressure of 100 mm Hg.

d) Consider obtaining blood sample using closed system.

e) **If patient has constricted pupils and respiratory depression or is unresponsive and the provider strongly suspects a narcotic overdose,**  
Administer naloxone  
0.4 - 2 mg SLOW IVP/IO/IM/Intranasal (If delivery device is available)  
Titrate to adequate respiratory effort.

f) Use glucometer and treat accordingly.

g)  Consider an additional dose of naloxone.

h)  Consider additional fluid administration  
Maximum 2,000 mL without medical consultation.

## ALTERED MENTAL STATUS: UNRESPONSIVE PERSON (Continued)



- i) Obtain pulse oximetry if available.
- j) Administer glucose paste (10-15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes. **(NEW '10)**



- 
- k) Initiate IV/IO KVO.
    - (1) 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.  
**OR**  
For volume-sensitive children administer initial fluid bolus of 10 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 10 mL/kg LR IV/IO.

Volume-sensitive children include: neonates (0-28 days), children with congenital heart disease, chronic lung disease, or chronic renal failure.

- (2) Consider obtaining blood sample using closed system.
- l) Use glucometer and treat accordingly.
- m) **If patient has constricted pupils and respiratory depression or is unresponsive and the provider strongly suspects a narcotic overdose,**  
Administer naloxone  
0.1 mg/kg SLOW IVP/IO/IM/Intranasal (If delivery device is available)  
Maximum dose 0.4-2 mg



- n) Consider repeating naloxone.



- o) Third and subsequent fluid boluses at 20 mL/kg IV/IO except in volume-sensitive children, then bolus at 10 mL /kg.

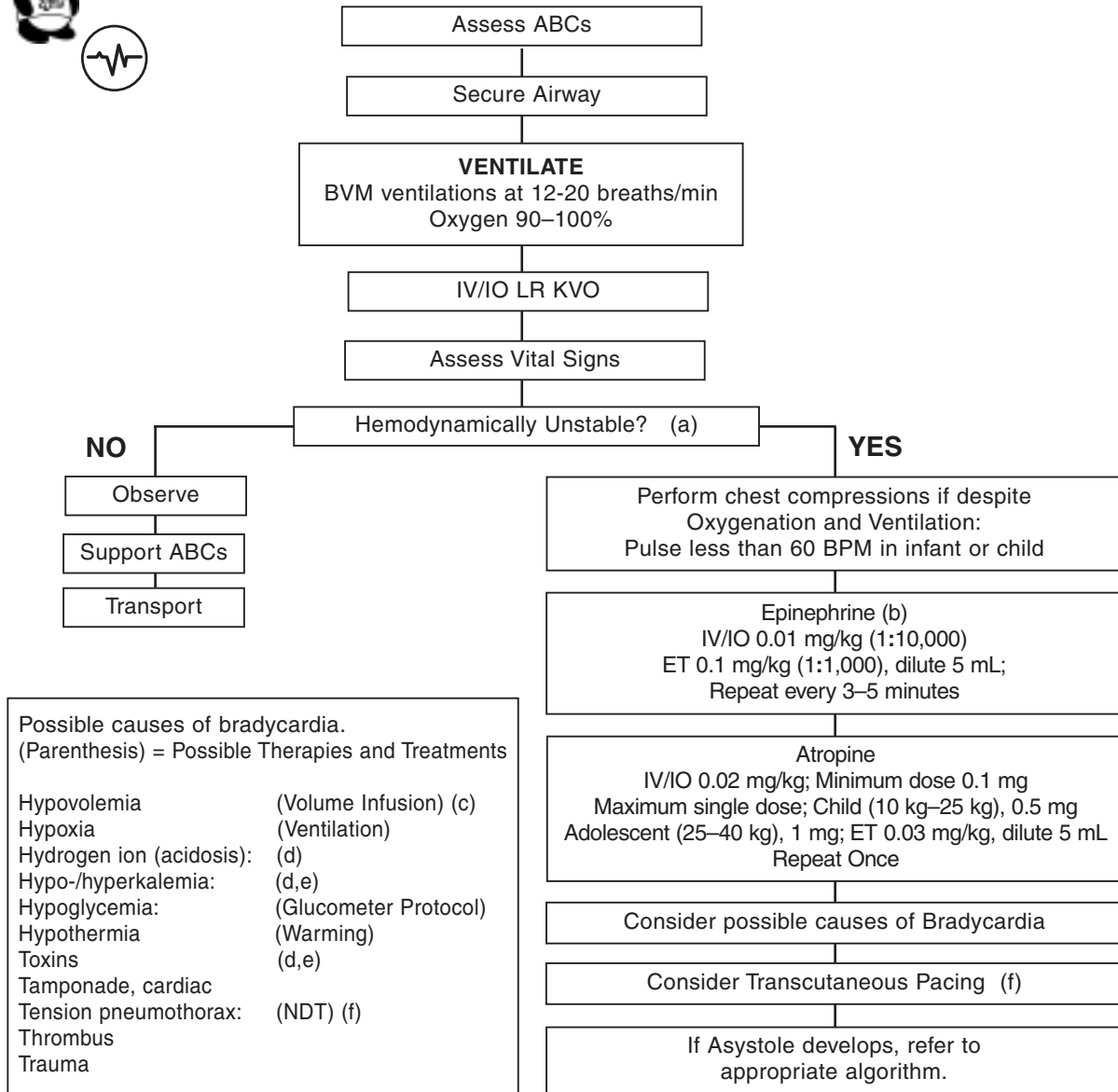
- 4. Continue General Patient Care.





5.

### PEDIATRIC BRADYCARDIA ALGORITHM



Possible causes of bradycardia.  
(Parenthesis) = Possible Therapies and Treatments

Hypovolemia	(Volume Infusion) (c)
Hypoxia	(Ventilation)
Hydrogen ion (acidosis):	(d)
Hypo-/hyperkalemia:	(d,e)
Hypoglycemia:	(Glucometer Protocol)
Hypothermia	(Warming)
Toxins	(d,e)
Tamponade, cardiac	
Tension pneumothorax:	(NDT) (f)
Thrombus	
Trauma	

**Pacer Age-Related Rates (NEW '10) (f)**

Start pacemaker at age appropriate heart rate:  
 Infant (less than 1 year): 120 beats per minute  
 Child (1 through 11 years): 100 beats per minute  
 Adult (12 years and greater): 80 beats per minute

(a) - Hemodynamically unstable is defined as a systolic blood pressure less than 60 in neonates (patients less than 28 days old), less than 70 in infants (patients less than 1 year of age), and less than [70 + (2 x years) = systolic BP] for patients greater than 1 year of age.

- (b) - Neonates (0-28 days), Epinephrine ET 0.03 mg/kg (1:10,000) dilute with 1 mL.
- (c) - Volume infusion for neonates and volume sensitive children 10 mL/kg; for infant and child 20 mL/kg.
- (d) - Sodium Bicarbonate, 1mEq/kg with medical consultation. See Sodium Bicarbonate.
- (e) - Calcium Chloride, 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min). Max dose 1 gram.
- (f) - Transcutaneous Pacing available for CRT-(I) & EMT-P only. **(NEW '10)**

## H. CARDIAC EMERGENCIES: CARDIAC ARREST

1. Initiate General Patient Care.
2. Presentation  
Patient must be unconscious, apneic, and pulseless.



EARLY DEFIBRILLATION IS A PRIORITY IN WITNESSED ARREST. FOR PATIENTS IN UNWITNESSED ARREST 5 CYCLES OF CPR SHOULD BE COMPLETED PRIOR TO DEFIBRILLATION.



3. Treatment
  - a) Perform CPR.
  - b) Utilize AED as appropriate.
  - c) Transport
    - (1) If no shock indicated, transport immediately.
    - (2) If shock indicated, defibrillate and transport ASAP.



- 
- d) Identify rhythm and treat according to appropriate algorithm.



- e) Perform CPR.
- f) Utilize AED as appropriate.



DO NOT USE AED FOR PATIENTS WHO ARE LESS THAN 1 YEAR OF AGE. USE ONLY PEDIATRIC AED FOR PATIENTS 1 TO 8 YEARS OF AGE.

- g) Transport
  - (1) If no shock indicated, transport immediately.
  - (2) If shock indicated, defibrillate and transport ASAP.



- 
- h) Identify rhythm and treat according to appropriate algorithm.




## J. CARDIAC EMERGENCIES: HYPERKALEMIA (RENAL DIALYSIS/FAILURE OR CRUSH SYNDROME) (NEW '10)

1. Initiate General Patient Care.
2. Presentation  
Certain conditions may produce an elevated serum potassium level that can cause hemodynamic complications.
3. Treatment
  - a) Patients must meet the following criteria:
    - (1) Suspected hyperkalemia patient **(NEW '10)**
      - (a) Renal dialysis/failure with poor or non-functioning kidneys or
      - (b) Crush syndrome or patients with functional kidneys by history**AND**
    - (2) Hemodynamically unstable renal dialysis patients or patients suspected of having an elevated potassium with bradycardia and wide QRS complexes.




- b) Place patient in position of comfort.
- c) Assess and treat for shock, if indicated.
- d) Constantly monitor airway and reassess vital signs every 5 minutes.



- 
- e) Initiate IV LR KVO.
  - f) Initiate Bradycardia protocol.
  - g)  Consider calcium chloride 0.5-1 grams slow IVP over 3-5 minutes. Maximum dose 1 gram or 10 mL.
  - h)  Consider sodium bicarbonate 50 mEq IV over 5 minutes. **(NEW '10)**
  - i)  Consider/ administer albuterol (high dose) via nebulizer 20 mg (if available) **(NEW '10)**



FLUSH IV WITH 5 ML OF LACTATED RINGER'S BETWEEN CALCIUM AND SODIUM BICARBONATE ADMINISTRATION **(NEW '10)**



- j) Crush syndrome or patients with functional kidneys by history  
 Consider/ administer sodium bicarbonate 50 mEq SLOW IV over 5 minutes and then initiate drip of sodium bicarbonate 100 mEq in 1000 mL to run over 30-60 minutes. (Reserve for patient suspected of crush syndrome or patients with functional kidneys by history.) **(NEW '10)**

## CARDIAC EMERGENCIES: HYPERKALEMIA (Continued)




- k) Place patient in position of comfort.
- l) Assess and treat for shock, if indicated.
- m) Constantly monitor airway and reassess vital signs every 5 minutes.



- 
- n) Initiate IV LR KVO.
  - o) Initiate Bradycardia protocol.
  - p)  Administer calcium chloride 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min)  
Maximum dose 1 gram or 10 mL.
  - q)  Consider/administer albuterol via nebulizer
    - (1) For patients 2 years of age or greater, administer albuterol 2.5 mg
    - (2) For patients less than 2 years of age, administer albuterol 1.25 mg.**(NEW '10)**



FLUSH IV WITH 5 ML OF LACTATED RINGER'S BETWEEN CALCIUM AND BICARBONATE ADMINISTRATION. **(NEW '10)**

- r) Crush syndrome or patients with functional kidneys by history
  -  Consider/administer sodium bicarbonate 1 mEq/kg IV over 5 minutes.  
Maximum dose 50 mEq. (Reserve for patient suspected of Crush syndrome or patients with functional kidneys by history.)  
**(NEW '10)**

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 AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH OR DIFFICULTY BREATHING. **(NEW '10)**

### Inclusion Criteria:

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

- a) 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

- b) 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)

### OR

- c) **New Left** Bundle Branch Block: If patient has in his/her possession a previous ECG with narrow QRS to demonstrate that the wide complex is a new change



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.

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 I 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 Intervention Center by ground as long as the transport time is not more than 30 minutes greater than transport to the nearest ED. **(NEW '10)**
  - d) When indicated and based on the EMS provider's report, the Base Station physician at the receiving Cardiac Intervention Center will activate its Cardiac Intervention Team. **(NEW '10)**

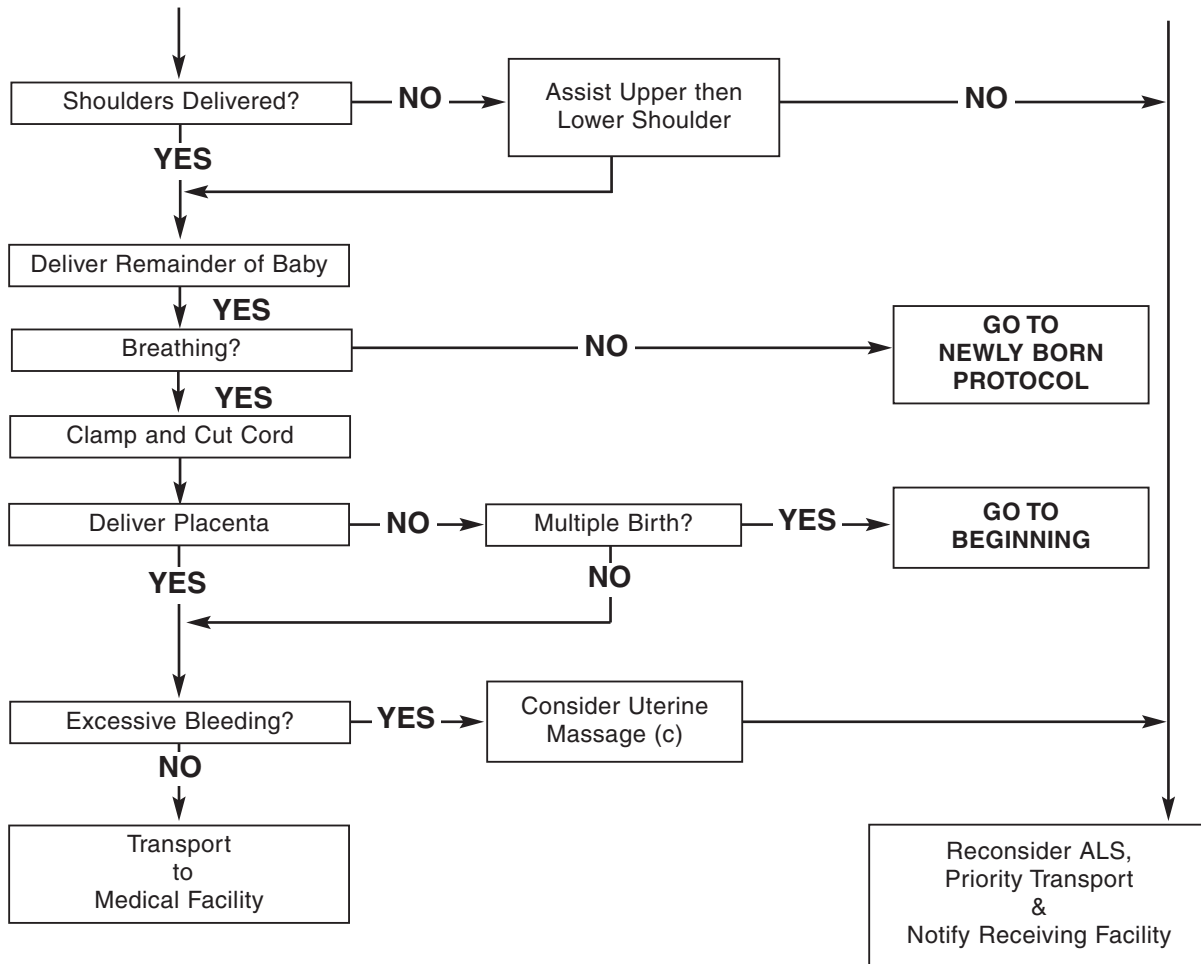
## CARDIAC EMERGENCIES: ST ELEVATION MYOCARDIAL INFARCTION [STEMI] (Continued)

- e) The receiving Emergency Department physician will determine if the patient can bypass the Emergency Department and go directly to the cardiac catheterization lab to meet the cardiac interventional team.
- f) If patient does not have ECG ST elevations greater than 1mm in two contiguous leads, the patient shall be transported to the closest appropriate facility.
- g) Patient who presents with inferior wall MI (perform right side V4r to rule out right ventricular involvement- if ST elevation present in V4r withhold nitrates), clear lung sounds, and hypotension (90 systolic) (40% of inferior wall MI have right ventricular infarction) should be given a fluid bolus of 250-500 mL of Lactated Ringer's. For additional bolus, perform medical consult. **(NEW '10)**




CONSULT A PEDIATRIC BASE STATION FOR CHILDREN WHO HAVE **NOT** REACHED THEIR 15<sup>TH</sup> BIRTHDAY WITH ST ELEVATIONS.

## OBSTETRICAL/ GYNECOLOGICAL EMERGENCIES (Continued)



(a) - Keep presenting part of baby off the cord. Monitor and attempt to maintain the pulse in the cord.

(b) - Position of mother: 

(c) - Uterine massage is performed with the heel of the hand applying firm pressure from the pubis toward the umbilicus only. This massage is continued until bleeding diminishes. Transport rapidly. **(NEW '10)**

(d) - Go to Seizure Protocol: Consider midazolam.

4. Continue General Patient Care.

## AA. FUTURE PROTOCOL DEVELOPMENT

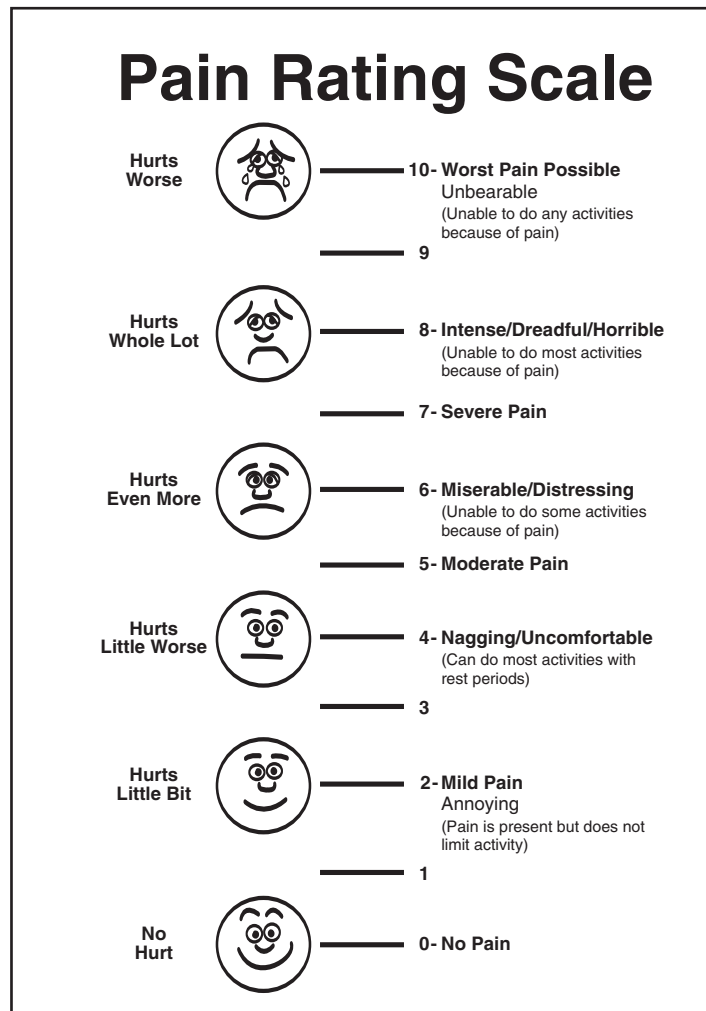
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## GG. PAIN MANAGEMENT (NEW '10)



1. Initiate General Patient Care.
2. Presentation  
Pain may be present in many different conditions. Management of pain in the field can help to reduce suffering, make transport easier, and allow the emergency department personnel to initiate specific treatment sooner. Use of certain drugs for analgesia (reduction of pain) may also interfere with diagnostic procedures in the emergency department, and their use in such circumstances must be judicious, with medical control consulted when necessary.
3. Treatment Indications
  - a) Measure level of pain. Ask adults to rate their pain on a scale from 0 (**no pain**) to 10 (**worst pain imaginable**). Young children can be asked to rate their pain using the **FACES** scale, which provides 5 levels of pain perception.



## PAIN MANAGEMENT (Continued)



- b) Allow patient to remain in position of comfort unless contraindicated.
- c) Monitor airway and vital signs every 5 minutes for unstable patients
- d) Mild pain
  - (1) Indications for pain management
    - (a) Isolated musculoskeletal injuries such as sprains and strains
    - (b) Pain related to childhood illnesses such as headache, ear infection, and pharyngitis
  - (2) Contraindications for pain management with acetaminophen
    - (a) Head injury
    - (b) Hypotension
    - (c) Administration of acetaminophen or medications containing acetaminophen within the previous four hours
    - (d) Inability to swallow or take medications by mouth
    - (e) Respiratory distress
    - (f) Persistent vomiting
    - (g) Known or suspected liver disease
    - (h) Allergy to acetaminophen
  - (3) Administer acetaminophen to patients ages 3 years and above judged to be in mild to moderate discomfort (2-5 on FACES scale) by child or parent.
    - (a) Standard unit dosing of liquid preparation:
      - (1) Less than 3 years of age: Not indicated
      - (2) 3-5 years: Unit dose 160 mg/5 mL
      - (3) 6-9 years: Unit dose 325 mg/10.15 mL
  - (4) 10 years & above: Administer TWO Unit doses of 325 mg/10.15 mL each for total of 650 mg/20.3 mL
    - (a) Obtain on-line medical direction for appropriate dosing for patients who are significantly underweight or overweight.



ADMINISTRATION OF ACETAMINOPHEN FOR MILD TO MODERATE PAIN DOES NOT ELIMINATE THE NEED FOR TRANSPORT OF THE PATIENT TO THE HOSPITAL TO RECEIVE A COMPREHENSIVE EVALUATION OF THE CAUSE OF HIS/HER PAIN AND APPROPRIATE DEFINITIVE TREATMENT.



- 
- e) Moderate to severe pain
    - (1) Indications for pain management
      - (a) Acute myocardial infarction
      - (b) Burns
      - (c) Isolated injuries requiring pain relief such as suspected fractures or dislocations
      - (d) Acute sickle cell pain crisis
      - (e) Abdominal pain with consult
      - (f) EMS/DNR Palliative Care Protocol (Option A or B)

## PAIN MANAGEMENT (Continued)

- (2) Contraindications for pain management with morphine
  - (a) Head injury
  - (b) Hypotension
  - (c) Sensitivity to morphine, codeine, or percodan
  - (d) Allergy to morphine
- (3) Administer morphine intravenously or intramuscularly



(a) Adult:

- (1) AMI: Administer 2-5 mg slow IVP followed by 1 mg every 5 minutes to a maximum of 10 mg or until pain is relieved
- (2) Isolated injury (including burns, frostbite, eye trauma): Administer 2-10 mg slow IVP at 1-2 mg/min increments to 10 mg or until pain is relieved (Paramedic may perform without consult). For doses above 10 mg, contact medical direction

**OR**

- (3) May also be administered IM dose 5-15 mg based on patient weight.



(b) 0.1mg/kg IVP/IO/IM (slow 1-2 mg/min).  
Maximum dose of 5 mg.


4. Repeat - Measure level of pain and monitor the patient's level of pain during subsequent treatment and transport.
5. Transport
6. Continue General Patient Care

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## 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 the 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 auto-injector or patient's prescribed albuterol.
  - b) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.
  - c)  Consider additional doses of Epinephrine auto-injector or prescribed albuterol.



- 
- 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) Initiate IV LR fluid therapy 20 mL/kg bolus.  
Titrate to a systolic pressure of 100 mm Hg.
    - (3) Administer diphenhydramine  
50 mg slow IVP or IM **(NEW '10)**  
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. **(NEW '10)**
    - (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 auto-injector or patient's prescribed albuterol.
- h) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.
- i)  Consider additional doses of Epinephrine auto-injector or albuterol.




- 
- 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) Initiate IV/IO.




## RESPIRATORY DISTRESS: ALLERGIC REACTION /ANAPHYLAXIS (Continued)



- (3) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid challenge 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 **(NEW '10)**  
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. **(NEW '10)**
- (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 the patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed albuterol or prescribed Epinephrine auto-injector.

b)  Use of the EMS services Epinephrine auto-injector requires medical consultation.

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

d)  Consider additional doses of patient's prescribed albuterol or Epinephrine auto-injector.



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e) Initiate IV LR KVO (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, CPAP, or BVM while receiving medication via nebulizer. **(NEW '10)**

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 continuous positive airway pressure (CPAP) if patients continue to deteriorate in spite of above nebulized treatments. Continue inline nebulizations. **(NEW '10)**


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



## RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)




- l)  Consider additional doses of epinephrine, albuterol, or terbutaline.

- m) 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 auto-injector or patient's prescribed albuterol.



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

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

- o)  Consider additional doses of patient's prescribed albuterol or Epinephrine auto-injector.



- p) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer. **(NEW '10)**

- q) 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.


- r) 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.

- s) 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.

- t)  Consider additional doses of albuterol or epinephrine.

- u) Consider initiating an IV/IO of LR KVO.

4. Continue General Patient Care.

## JJ. RESPIRATORY DISTRESS: CROUP



1. Initiate General Patient Care.
2. Presentation  
Pediatric Respiratory Distress with Stridor (Suspected Croup) "Barking Cough and Audible Stridor"

Severe "Priority 1" –Patient is unable to speak or cry, has a decreased level of consciousness, bradycardia or tachycardia, and hypertension or hypotension.

Moderate "Priority 2" –Slow onset of respiratory distress with barking cough, fever, and audible stridor.



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) Initiate IV/IO LR KVO. **Do not withhold nebulized epinephrine if IV is not easily obtainable. Establish IV/IO access after appropriate airway management has been done.**

## RESPIRATORY DISTRESS: CROUP (Continued)



- d) For children who have not reached their 15<sup>th</sup> birthday without known cardiac disease and are having respiratory distress with audible stridor believed to be caused by croup, administer 3 mL of normal saline via nebulizer for 3-5 minutes. (Note: if inhaled normal saline decreases the patient's level of distress symptoms, continue this therapy en route to the appropriate receiving facility.) **(NEW '10)**
- e)  If no change in patient's condition, then administer 2.5 mL of epinephrine 1:1,000 via nebulizer. For priority one patients, a second dose of 2.5 mL may be administered with medical consultation.

### AND

- f) If respiratory distress is so severe that respiratory arrest is imminent, administer 0.01mg/kg of epinephrine 1:1,000 IM (max single dose of 0.5 mg) first.
- g) 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.

## **KK. RESPIRATORY DISTRESS: PULMONARY EDEMA /CONGESTIVE HEART FAILURE**

1. Initiate General Patient Care.

2. Presentation

Accurate diagnosis of congestive heart failure (CHF)/acute pulmonary edema (APE) as the cause of respiratory distress can be challenging. The most accurate identification of CHF/APE is made using the medical history, risk factors, medications and physical exam with interpretation of blood pressure.

CHF/APE is difficult to distinguish, at times, from other respiratory causes. Using the factors listed above can help identify CHF/APE. Factors most associated with a short of breath patient having CHF include: **a history of CHF**, exam features **of jugular venous distension and ECG evidence of Atrial Fibrillation**. The patient with CHF also typically may have a history of **cardiac disease** (Coronary Artery Disease or MI) and/or **hypertension**. Hypertension is usually poorly controlled. CHF patients are commonly on anti-hypertensive and cardiac medicines. **Orthopnea** (use of additional pillows to prop the head up during sleep), **Dyspnea on Exertion** and **Paroxysmal Nocturnal Dyspnea** (PND) (an attack of severe shortness of breath while sleeping that causes the patient to have to sit-up or stand to breathe) are symptoms associated with CHF/APE. Blood pressure is frequently elevated, usually greater than 160/100 but not uncommonly greater than 180/120.

COPD patients, by comparison, usually have histories of respiratory illness but not of cardiac disease. They are commonly on respiratory medicines (inhalers) but not on cardiac medicines. COPD patients usually do not have orthopnea or PND and their blood pressures are typically not elevated.

EMS providers should strongly consider CHF/APE in patients possessing the factors above, presenting with acute respiratory distress, tachypnea, hypoxia, rales or wheezing and marked hypertension, even in the absence of peripheral edema.

Geriatric patients demonstrating marked hypertension in association with shortness of breath/respiratory distress and wheezing (in the absence of asthma or infection) strongly suggests CHF/APE.

Acute Respiratory Distress from CHF may range from mild to severe life-threatening cases of Acute Pulmonary Edema. This classification is for patients with Systolic BP greater than 110 mm Hg.

## RESPIRATORY DISTRESS: PULMONARY EDEMA /CONGESTIVE HEART FAILURE (Continued)

- (1) **Asymptomatic** – dyspnea on exertion but no symptoms at rest
- (2) **Mild** – mild dyspnea at rest, despite O<sub>2</sub> treatment. Able to speak in full sentences.
- (3) **Moderate** – moderate dyspnea. O<sub>2</sub> saturation less than 93% on oxygen. Systolic BP usually greater than 150. Unable to speak in full sentences. Normal mental status.
- (4) **Severe** – severe dyspnea, respiratory failure, hypoxia (O<sub>2</sub> saturation less than 90% on oxygen), diaphoresis, Systolic BP commonly greater than 180. One word sentences, altered consciousness.



3. Treatment – The goals of treatment are to reduce the pressure of blood returning to the heart (preload) and the resistance that the left ventricle must pump against (after load). The most effective and safe medication for these goals is nitroglycerin (NTG). When Captopril (an Angiotensin Converting Enzyme Inhibitor (ACEI) is administered along with NTG the benefit is in addition to the benefit realized with nitroglycerin.



- a) Position patient in high Fowler's position.

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- b) Rate the patient's difficulty breathing on a scale where 0 is 'no trouble breathing' and 10 is 'the worst trouble breathing.'
- c) Continuous positive airway pressure (CPAP) should be considered for moderate dyspnea and must be implemented in severe dyspnea. (Use early; administer 3 doses of NTG while setting up, acclimatizing the patient and applying CPAP).



PERFORM 12-LEAD ECG (IF AVAILABLE) AND IN THE FACE OF INFERIOR WALL WITH POSTERIOR WALL EXTENSION MI, CONSIDER LOWERING THE SECOND DOSING OF NTG.

- d) If patient **has** a prescription or previous history of nitroglycerin use, administer nitroglycerin per dosing below. May be repeated if symptoms persist, and BP is greater than 90 mm Hg, and pulse is greater than 60 bpm, to a maximum dose of 4 mg. If BP drops below 90 mm Hg, treat with medical fluid bolus(es) [initial bolus 250 – 500 cc; may repeat x 1].
- e) 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 below.
- f) Initiate IV LR KVO.
- g) If IV cannot be established, nitroglycerin may be administered with medical consultation.

## RESPIRATORY DISTRESS: PULMONARY EDEMA /CONGESTIVE HEART FAILURE (Continued)

- h) Identify rhythm and treat according to appropriate algorithm.
- i) Nitroglycerin
  - (1) **Asymptomatic (dyspnea on exertion, not at rest)** – apply oxygen per GPC to maintain O<sub>2</sub> saturation greater than 93%
  - (2) **Mild symptoms (mild dyspnea at rest, despite O<sub>2</sub> treatment; able to speak full sentences)** – administer low dose NTG 0.4 mg SL at 3 – 5 minute intervals.
  - (3) **Moderate symptoms (moderate dyspnea; O<sub>2</sub> saturation less than 93% on O<sub>2</sub>; unable to speak full sentences; normal mental status; SBP will generally be greater than 150 mm Hg) –High Dose NTG (Assess BP before each administration.)**

### High Dose NTG (Assess BP before each administration)

#### CPAP nitroglycerin dose (Dose at 3-5 minute intervals.)

- (i) give 1 dose of 0.4 mg NTG (Preparing CPAP and apply as soon as possible) **(NEW '10)**
- (ii) give 1 dose of 0.8 mg NTG and apply nitropaste **(NEW '10)**
- (iii) give 1 dose of 0.8 mg NTG **(NEW '10)**
- (iv) complete dose=2.0 mg
- (v) Then follow with captopril (SBP is equal to or greater than 110)




ONCE CPAP IS IN PLACE, THE PREFERRED THERAPY IS CPAP OVER SUBLINGUAL NTG AND CAPTOPRIL. **(NEW '10)**

#### CPAP Not Tolerated - nitroglycerin dose (Dose at 3-5 minute intervals.)

- (i) give 1 dose of 0.4 mg NTG
  - (ii) give 1 dose of 0.8 mg NTG
  - (iii) give 1 dose of 0.8 mg NTG
  - (iv) give 1 dose of 0.8 mg NTG
  - (v) give 1 dose of 0.8 mg NTG
  - (vi) give 1 dose of 0.8 mg NTG
  - (vii) complete dose = 4.4 mg
  - (viii) Then follow with captopril (SBP is equal to or greater than 110); and apply Nitroglycerin paste.
- (4) **Severe symptoms (O<sub>2</sub> saturation less than 90% [hypoxia]; one word sentences, altered sensorium, diaphoresis; SBP will generally be greater than 180 mm Hg) –**  
Treat as in i)(3) above.
- j) Consider additional nitroglycerin  
low or high dose based upon symptoms of shortness of breath (rating scale) and blood pressure (goal: reduce Mean Arterial Pressure by 15 – 20%)


## RESPIRATORY DISTRESS: PULMONARY EDEMA /CONGESTIVE HEART FAILURE (Continued)

- (1) Administer captopril 25 mg SL for moderate and severe symptoms so long as SBP is equal to or greater than 110 after nitroglycerin administration.
- (2) Nitroglycerin paste – for patients with moderate or severe symptoms and SBP greater than 110, administer NTG paste 1 inch topically following at least 3 doses of NTG SL (0.4, 0.8 & 0.8).
- (3) Re-evaluate the patient's subjective trouble breathing with using the 0 to 10 scale, vital signs.

k)  Consider furosemide 0.5 - 1 mg/kg slow IVP.







IF BLOOD PRESSURE LOW: CONSIDER MEDICAL FLUID BOLUS(ES) FOLLOWED BY DOPAMINE.

l)  Consider dopamine 2-20 mcg/kg/min.  
Titrate to systolic BP 100 mm Hg or medical consultation directed BP.  
IV infusion pump preferred.



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

- m) Position patient in semi-Fowler's position.
- n) Initiate IV LR KVO.
- o) Identify rhythm and treat according to appropriate algorithm.
- p) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer. **(NEW '10)**
- q)  Consider albuterol:  
For children less than 2 years, albuterol 1.25 mg  
For children greater than or equal to 2 years, albuterol 2.5 mg
- r)  Consider furosemide:  
1 mg/kg slow IVP/IO **(NEW '10)**
- s)  Consider morphine:  
0.1 mg/kg slow IVP/IO/IM (1-2 mg/min)  
Maximum dose 5 mg
- t)  Consider dopamine:  
2-20 mcg/kg/min  
Titrate to pediatric medical consultation directed BP.  
IV infusion pump preferred.

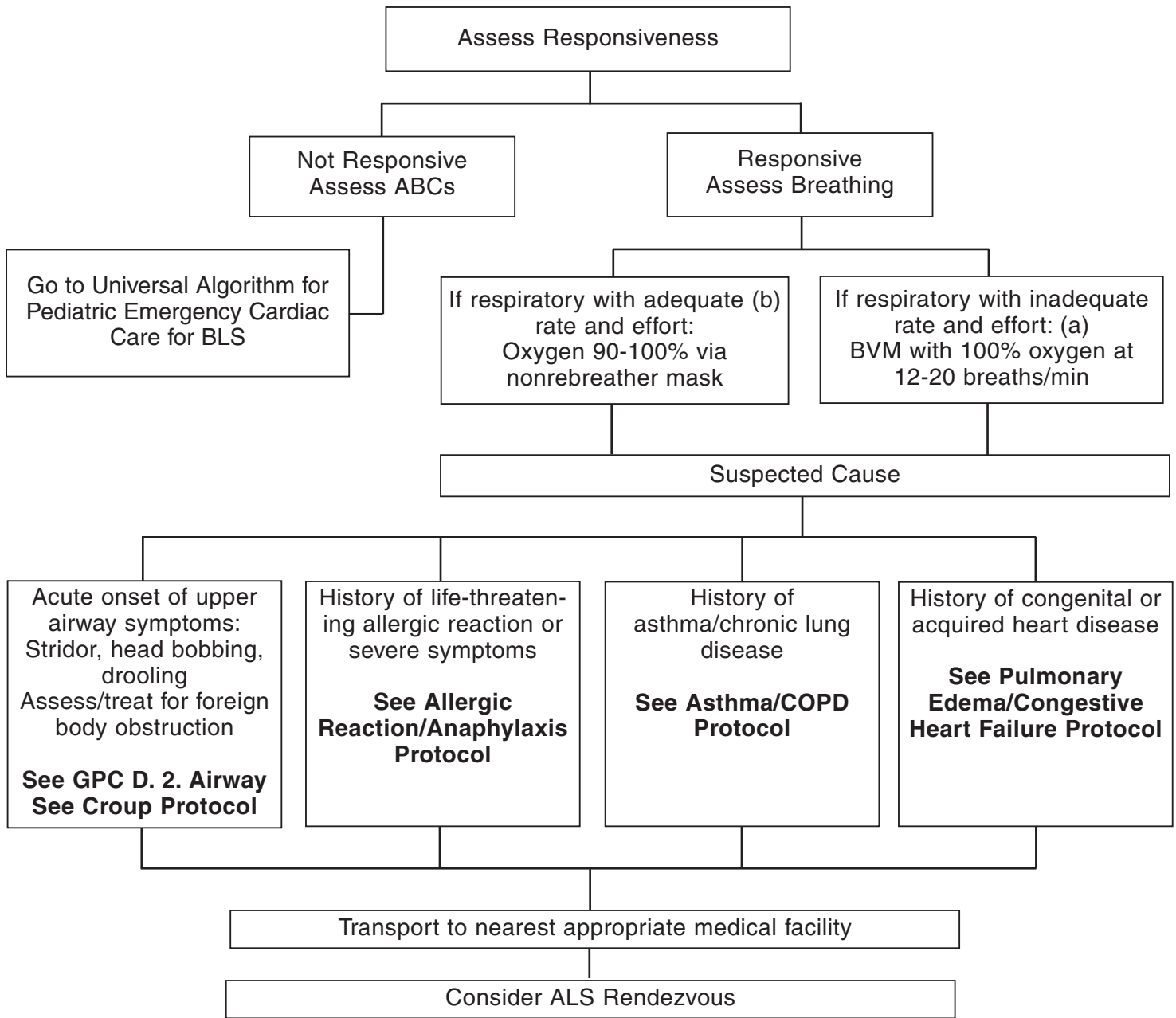
4. Continue General Patient Care.

5. Consider transport to the pediatric specialty center that follows patient.



6.

### UNIVERSAL ALGORITHM FOR PEDIATRIC RESPIRATORY DISTRESS FOR BLS



(a) Inadequate RR: Infant less than 20, Child less than 16, Adolescent less than 12.  
 Inadequate effort: Poor chest rise, shallow respirations/poor air movement, cyanosis, severe retractions, paradoxical breathing.

(b) For Children with chronic lung disease or congenital heart disease: Maintain or increase home oxygen to maintain patient's target saturations.



## IV. APPENDICES

### A. GLOSSARY

**AED:** Automated External Defibrillation.

**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®) **(NEW '10)**

**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. 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).

**Basic:** Emergency Medical Technician-Basic.

**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.

**COPD:** Chronic Obstructive Pulmonary Disease (i.e., 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. **(NEW '10)**

**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.

**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 & 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.

**EMS:** Emergency Medical Services.

**EMT-B:** Emergency Medical Technician - Basic.

**EMT-P:** Emergency Medical Technician - Paramedic.

**EOC:** Emergency Operations Center.

**Erythema:** Redness or inflammation of the skin or mucous membranes that is the result of dilatation and congestion of superficial capillaries.

**ETA:** Estimated Time of Arrival.

**Extrapyramidal:** Pertaining to tissues and structures outside of the cerebrospinal pyramidal tracts of the brain that are associated with movement of the body, excluding stimulation from the motor neurons, the motor cortex, and the corticospinal and corticobulbar tracts. 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).

**Fluid Bolus:** The administration of a fluid dose as rapidly as possible, usually over five to twenty minutes, to a patient with clinical signs of shock.

**Fluid Challenge:** The administration of fluid dose usually over thirty to sixty minutes to a patient that is dehydrated and has low urine output.

**FR:** First Responder.

**GCS:** Glasgow Coma Scale. A tool to evaluate injury and illness severity.

**Gm:** Gram. The symbol for a metric unit of mass and weight equal to 1000 milligrams.

**Hemodynamically Stable:** When a patient’s vital signs (including pulse oximeter or ECG if available) are all within normal for the patient’s age range, the patient does not have active bleeding, and there are no signs of distress (skin conditions or capillary refill are normal) as observed over time.

**Hemodynamically Unstable:** When a patient exhibits any of the following: abnormal vitals signs for age range (including pulse oximeter or ECG if available), active bleeding, or there are signs of distress (skin conditions or capillary refill are abnormal).

**HTN:** Hypertension.

**Hypoxia:** Too little oxygen in the cells.

**IM:** Intramuscular injection.

**IV:** Intravenous line or administration of medication through IV.

**IVP:** Intravenous push.

**J:** Joules or watts/seconds of electrical energy for defibrillation or cardioversion.

**JVD:** Jugular vein (external) distention.

**kg:** Kilogram metric measure of weight equal to 1000 grams. 1 kg = 2.2 pounds.

**KVO:** Keep vein open. A slow IV flow rate.

**Laryngectomy:** The removal of the larynx and separation of the airway from the mouth, nose, and esophagus. Patients with a laryngectomy breathe through an opening in the neck called a stoma. Patients with a laryngectomy are not able to breathe or be intubated through the mouth or nose. **(NEW '10)**

**Lividity:** Venous pooling in dependent body parts.

**LOC:** Level of consciousness.

**LR:** Lactated Ringer's. A type of isotonic IV solution.

**MAIS:** Maryland Ambulance Information System for recording confidential patient care data (a patient care report).

**MCI:** Mass Casualty Incident. Occurs when the number of victims exceeds the number of medical personnel or resources immediately available and is declared by the local jurisdiction.

**Meconium:** The first feces of an infant.

**Medical Consultation:** With an atmosphere of courtesy and respect, direct voice/data communication between a provider and an EMS base-station physician, or a jurisdictionally affiliated physician, or with an "on-scene physician." This communication is bi-directional and provides the provider with medical direction while providing the physician or the receiving hospital with valuable information on the patient.

**Medical Protocol:** A guideline for the provision of patient care.

**mL:** Milliliter. The symbol for a metric measure of volume.

**MOI:** Mechanism of Injury.

**NDT:** Needle Decompression Thoracostomy.

**Near Drowning:** A short duration of submersion under water with possible short-term loss of consciousness.

**Neonatal (also neonate):** A term that describes an infant from birth through the first 28 days of life.

**Newly Born (also called newborn):** A term that describes an infant during the first few hours after birth.

**NOI:** Nature of Illness.

**Notification:** Is an “information only call” directly to the receiving hospital through the jurisdictional EOC or EMS communication system not requiring medical consultation and may follow local standing operational procedures.

**NRB:** Non-rebreather mask.

**NTG:** Nitroglycerin.

**Nurse Practitioner:** A nurse practitioner is an individual who has been licensed as a Registered Nurse and certified as a Nurse Practitioner by the Maryland Board of Nursing. This does not include individuals who are only Registered Nurses or Licensed Practical Nurses.

**OIC:** Officer in Charge.

**On-Line Medical Direction:** Is the direct voice/data communication between a provider and an EMS base station physician or a jurisdictionally affiliated physician, or with an “on-scene physician.” This communication is bi-directional and provides the provider with medical direction while providing the physician or receiving hospital with valuable information on the patient. This exchange can take place on-scene, over a telecommunications device, or in the hospital setting.

**On-Scene Physician:** On-Scene physician may be the patient’s identified private physician or a bystander physician who is physically on location. Care rendered or orders given by the on-scene physician should be documented, including the identification of the physician. All on-scene medical direction shall be consistent with the Maryland Medical Protocols for EMS Providers. Any medical procedure which is not consistent with the protocols shall only be rendered by the on-scene physician who shall accompany the patient to the hospital. Any extraordinary care by EMS providers pursuant to the protocols may be approved only by the EMS base station physician or a system medical director. (based on COMAR 30.02.03.02A)

**OPQRST:** Used to recall pertinent questions (**O**nset, **P**rovocation, **Q**uality, **R**adiation, **S**everity, **T**ime) to ask when obtaining a patient history for medical emergencies.

**Optional Supplemental Program (OSP):** A voluntary jurisdictional program which requires MIEMSS approval.

**Pallor:** An unnatural paleness or absence of color in the skin.

**PCM:** Patient Controlled Medications. A medication delivery system under a patient's control.

**PCR:** Patient Care Report (equivalent to MAIS) document used to record pertinent patient information regarding assessment, treatment, and transport. This is a confidential medical record.

**PDOA:** Presumed dead on arrival.

**Pilot Program (PP):** A program designed to test a new project or procedure in order to determine its effect on EMS. Requires MIEMSS approval and reporting all uses to MIEMSS.

**Plethora:** A term applied to the beefy red coloration of a newborn.

**PMD:** Program Medical Director.

**PO:** By mouth.

**PPE:** Personal Protective Equipment.

**Provider:** Includes EMT-Basic, CRT-(I), and EMT-Paramedic.

**Pulse Oximetry:** A non-invasive measurement of arterial oxygen saturation using infrared absorption frequencies.

**PVC:** Premature ventricular contraction.

**Recovery Position:** The position (patient flat on left lateral side) or placement of patients to reduce risk of aspiration.

**RMD:** Regional Medical Director.

**SAFER:** **S**tabilize, **A**ssess and acknowledge, **F**acilitate, **E**ncourage, and **R**ecover OR **R**eferral.

**SAMPLE:** Used to aid in obtaining pertinent patient history. S = Symptoms and signs patient is exhibiting, A = patient Allergies, M = patient Medications (prescription & non-prescription), P = Past medical history, L = what and when was the patient's Last oral intake, E = Events prior to arrival, or simply, the history of the current emergency.

**SC:** Subcutaneously.

**Sign:** Any objective evidence or indication of illness, disease, or physical disturbance of patient's condition.

**SL:** Sublingual. Under the tongue.

**SMOI:** Significant Mechanism Of Injury.

**SOP:** Standard Operational Procedure. Defined by local jurisdiction or region.

**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 EMTs may be called upon to respond (for example: ill and/or injured patients, hazardous materials incidents, fires, mass casualty incidents, etc.)

**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. **(NEW '10)**

**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 the adult's daily needs (Digest of Criminal Law).

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

<b>PROCEDURE</b>	<b>EMT-B</b>	<b>CRT-(I)</b>	<b>EMT-P</b>
<b>ADMINISTRATION OF MEDICATIONS</b>			
Oral, Sublingual, IM (auto-injector)	SO	SO	SO
SC, IM, IV, Rectal, Nebulizer, Intranasal	–	SO	SO
Intraosseous	–	SO	SO
Intradermal PPD (Public Safety Personnel only)	–	–	OSP
<b>AIRWAY MANAGEMENT</b>			
Alternative Airway Device (e.g. EasyTube®) (NEW '10)	–	SO	SO
Carbon Dioxide Detector (ALS required)	SO	SO	SO
Capnograph (not required)	–	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
Orotracheal Intubation	–	SO	SO
Needle Decompression Thoracostomy (NDT)	–	SO/MC	SO/MC
Pulse Oximeter (ALS required)	SO	SO	SO
Suction	SO	SO	SO
Ventilator	–	–	OSP
<b>CHEMICAL RESTRAINT</b>	–	–	MC
<b>ELECTROCARDIOGRAM</b>			
Standard Limb Leads	–	SO	SO
12 Lead	PP	SO	SO
<b>ELECTRICAL THERAPY</b>			
Automated External Defibrillator	SO	SO	SO
Cardioversion	–	SO	SO
Defibrillation	–	SO	SO
Transcutaneous Cardiac Pacing	–	SO	SO
<b>GLUCOMETER</b>	OSP	SO	SO
<b>INTRAVENOUS THERAPY</b>			
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
<b>SKELETAL STABILIZATION/IMMOBILIZATION</b>	SO	SO	SO
<b>SOFT TISSUE INJURY &amp; BLEEDING MANAGEMENT</b>	SO	SO	SO
<b>VASOVAGAL MANEUVER</b>			
Valsalva maneuver	–	SO	SO

**SO** Standing Order  
**OSP** Optional Supplemental Program

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



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

<b>DEVICE</b>	<b>EMT-B</b>	<b>CRT-(I)</b>	<b>EMT-P</b>
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
<b>PICC</b> —peripherally inserted central catheter or <b>CVA</b> —central venous access line, capped only.	SO	SO	SO
<b>PICC</b> —peripherally inserted central catheter or <b>CVA</b> —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 <sub>2</sub> (Out Patient/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

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

<b>MEDICATIONS</b>	<b>EMT-B CRT-(I) EMT-P</b>		
Activated Charcoal (Without Sorbitol)	MC	MC	MC
Adenosine	-	MC	SO
Albuterol Unit Dose Inhaler (Patient's Prescribed)	SO/MC	SO/MC	SO/MC
Albuterol Sulfate Nebulizer	-	SO/MC	SO/MC
Aspirin	-	SO	SO
Atropine Sulfate	-	SO/MC	SO/MC
Atrovent	-	SO	SO
Calcium Chloride (10% Solution)	-	MC	MC
Captopril (Capoten)	-	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	SO/MC	SO	SO
Epinephrine Nebulizer	-	MC	MC
Epinephrine 1:10,000/1:1,000	-	SO	SO
Etomidate (Amidate)	-	-	PP
Furosemide	-	MC	MC
Glucagon	-	SO/MC	SO/MC
Glycoprotein IIb/IIIa	-	-	OSP
Haldol	-	-	MC
Hemophilia Blood Factor (VIII or IX)	-	SO	SO
Heparin (Inter-facility transport only)	-	-	OSP
Lidocaine	-	SO	SO
MARK I/Duodote (Atropine & 2 PAM)	OSP	OSP	OSP
Midazolam (Versed)	-	MC	SO/MC
Morphine Sulfate	-	MC	SO/MC
Morphine Sulfate (Infusion)	-	-	MC
Naloxone (IV and intranasal)	-	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
Oral Glucose	SO	SO	SO
Oxygen	SO	SO	SO
Purified Protein Derivative (Public Safety Personnel only)	-	-	OSP
Saline (Nebulized)	-	SO	SO

**SO** Standing Order

**OSP** Optional Supplemental Program

**MC** Medical Consultation Required

**PP** Pilot Program

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

<b>MEDICATIONS</b>	<b>EMT-B</b>	<b>CRT-(I)</b>	<b>EMT-P</b>
Sodium Bicarbonate	–	<b>MC</b>	<b>MC</b>
Sodium Bicarbonate (Infusion) <b>(NEW '10)</b>	–	<b>MC</b>	<b>MC</b>
Succinylcholine (Anectine)	–	–	<b>PP</b>
Terbutaline Sulfate	–	<b>SO</b>	<b>SO</b>
Vaccines (Hepatitis and Influenza) (Public Safety Personnel only)	–	–	<b>OSP</b>
Vecuronium (Norcuron)	–	–	<b>PP</b>

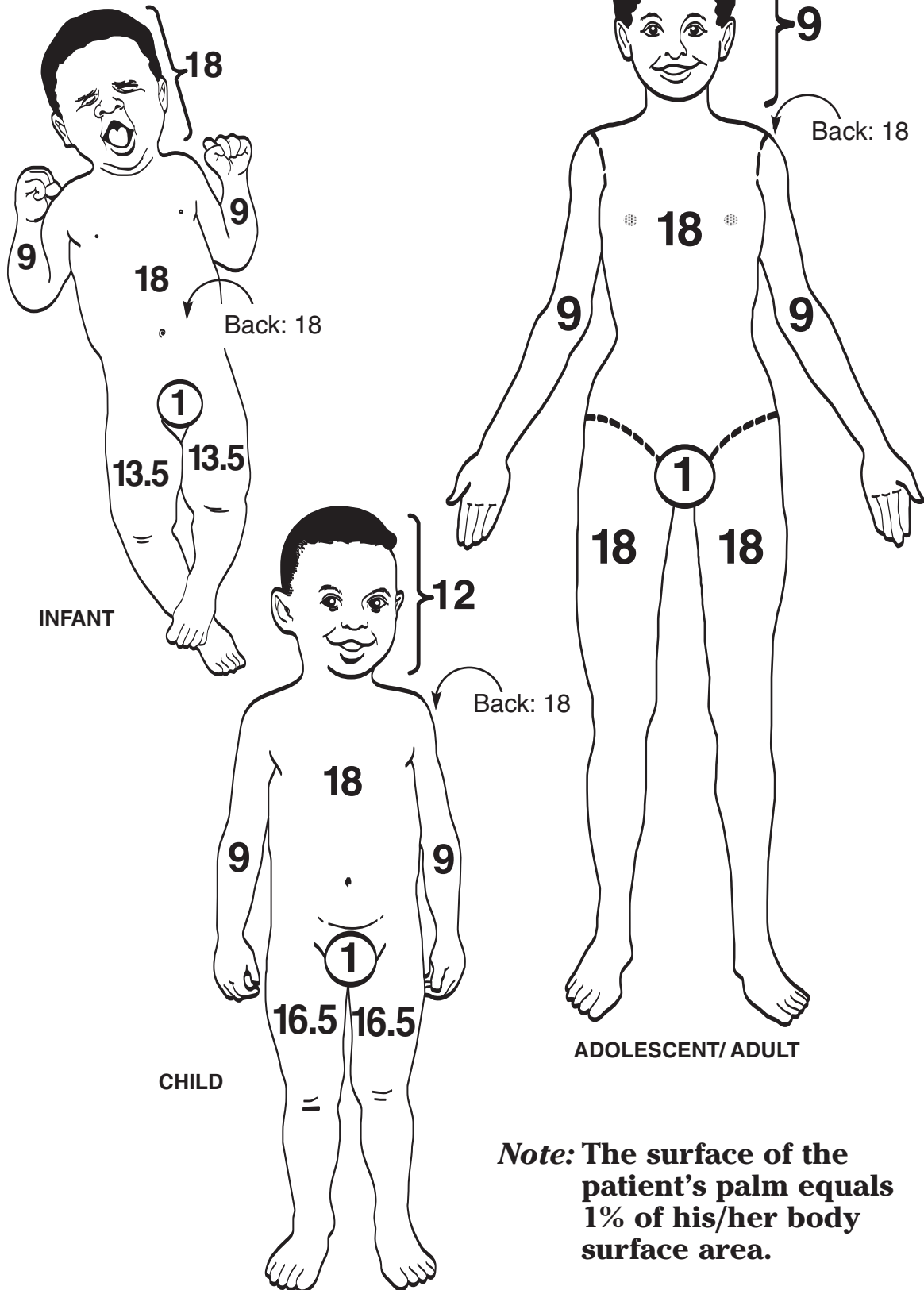
**SO** Standing Order

**OSP** Optional Supplemental Program

**MC** Medical Consultation Required

**PP** Pilot Program

C. RULE OF NINES



## EMS/DNR (Continued)

- b) In addition to other immunity that may be provided for in law, the Health Care Decisions Act provides the following specific immunity in cases involving the provision, withdrawal, or withholding of care which may be life-sustaining in nature:
- (1) EMS providers are not subject to criminal prosecution or civil liability or deemed to have engaged in unprofessional conduct as determined by the appropriate licensing, registering, or certifying authority as a result of **withholding or withdrawing** any health care **under authorization** obtained in accordance with the Health Care Decisions Act. See HG (5-609(a)(1).
  - (2) EMS providers **providing, withholding, or withdrawing** treatment under authorization obtained under the Health Care Decisions Act do not incur liability arising out of any claim to the extent the claim is based on **lack of consent or authorization** for the action.  
See HG (5-609(a)(2).
  - (3) EMS providers **providing** treatment because they reasonably believe that an EMS/DNR order, other than a bracelet, is not valid, do not incur liability arising out of any claim to the extent the claim is based on **lack of consent or authorization** for the action.  
See HG (5-608(d).

### 11. EMS/DNR MEDICAL PROTOCOLS (pg. 29 ch. T)

- a) DISPATCH
- (1) Option B EMS/DNR patients (7/98 version) or patients with older version EMS/DNR orders (pg. 22 ch K) only require a BLS response. Once the on scene BLS provider has determined the need for additional pain control, an ALS Rendezvous may be requested. Medevac requests are not appropriate for these patients.
  - (2) Option A EMS/DNR patients (7/98 version) who are not in arrest may require a range of responses from BLS through the highest echelon of response available. This will depend on the information available to dispatch and the service requested. The response complement in these cases will be dictated by local standard operating procedures (SOP).
  - (3) If a dispatch center is unclear whether the DNR order is an EMS/DNR order or is unclear about the pre-arrest patient care option selected (A or B), the dispatch center shall dispatch the appropriate resources based on the information available.
  - (4) In the absence of knowledge to the contrary, information from medical professionals at a health care facility about the EMS/DNR status of a patient may be presumed to be reliable.

## EMS/DNR (Continued)

### b) PERFORM LIMITED PATIENT ASSESSMENT

Vital signs:

- (1) Check for absence of a palpable pulse.
- (2) Check for absence of spontaneous respirations in an unresponsive patient.
- (3) Check for a valid EMS/DNR Order form, vinyl bracelet insert worn either on the wrist, as a necklace, or pinned to clothing, or for a metal emblem (bracelet or necklace).

### c) RESUSCITATE/DO NOT RESUSCITATE CRITERIA

- (1) If an EMS /DNR Order is not present, revoked, or otherwise void, the EMS provider shall treat and, if necessary, transport the patient.
- (2) If an EMS/DNR Order is not present, but the EMS provider believes that resuscitation or further resuscitation is futile, they may contact on-line medical direction to consult regarding “physician-directed termination of unsuccessful non-traumatic resuscitation in the field.”
- (3) If a valid EMS/DNR order is found and the patient is in cardiac or respiratory arrest, no resuscitative measures shall be initiated.
- (4) If the patient is conscious and able to communicate that he/she revokes the EMS/DNR orally directly to EMS providers, EMS providers shall treat and, if necessary, transport the patient.
- (5) If the EMS/DNR patient (Option A or B) arrests, withhold or withdraw further resuscitation and provide support to the family and caregivers. Consider notifying appropriate personnel.

### d) MAXIMAL (RESTORATIVE) CARE PROTOCOL

- (1) When Option A - “Maximal (Restorative) Care Before Arrest, Then DNR” is selected on an EMS/DNR Order, the patient shall receive the full scope of restorative interventions permissible under the Maryland EMS Medical Protocols (including Continuous Positive Airway Pressure (CPAP), cardiac monitoring, synchronized cardioversion for pulse-**present** ventricular or supraventricular tachycardia, cardiac pacing for pulse-**present** symptomatic bradycardia, insertion of IVs, and drug therapy), in an attempt to forestall cardiac or respiratory arrest. The only skill that will not be allowed is nasal or oral intubation. **(NEW '10)**
- (2) This option was requested primarily by long-term care facilities for their patients who are on DNR orders for potentially prolonged periods of time. Many of these patients are less concerned about palliation of pain and more concerned about the quality of life after a stroke or heart attack. The primary medical conditions seen in the field necessitating this option have been the desire to administer Lasix for pulmonary edema, dextrose for diabetic emergencies, and epinephrine for anaphylactic reactions in patients who, upon arrest, are not to be resuscitated.

## EMS/DNR (Continued)


- (3) If, despite these efforts, the patient becomes pulseless or stops breathing spontaneously, EMS providers shall then withhold or withdraw cardiopulmonary resuscitation including, but not limited to, no CPR, no cardiac pacing, no defibrillation, withdrawal of active ventilatory assistance upon cardiac arrest, and withholding or withdrawal of drug therapy (i.e., chemical resuscitation).
- e) Inappropriate care for an EMS/DNR Option A - "Maximal (Restorative) Care Before Arrest, Then DNR"
  - (1) Nasal or oral intubation (**NEW '10**)



IF MAXIMAL CARE IS SELECTED AND THE PATIENT'S CONDITION REQUIRES ALS, AN ALS UNIT SHOULD BE REQUESTED IF FEASIBLE GIVEN THE LOCATION OF THE INCIDENT RELATIVE TO THE NEAREST APPROPRIATE FACILITY AND THE AVAILABILITY OF AN ALS UNIT, AND ITS ABILITY TO ARRIVE OR RENDEZVOUS IN A MEDICALLY APPROPRIATE PERIOD OF TIME.

- f) PALLIATIVE CARE PROTOCOL (For Option B)
  - (1) **Supportive Care for Control of Signs and Symptoms**
    - (a) Respiratory distress
      - (i) Open the airway using non-invasive means (e.g., chin lift, jaw thrust, finger sweep, nasopharyngeal airway, oropharyngeal airway, and Heimlich maneuver, **but** no laryngoscopy, no Magill forceps, no cricothyroidotomy, and no tracheostomy).
      - (ii) Administer O<sub>2</sub> as follows:
        - a. If the patient is not on a ventilator and would benefit from oxygen therapy, provide passive oxygen via nasal cannula or non-rebreather mask (but no positive pressure oxygen via ambu bag, demand valve, or ventilator).
        - b. If the patient is found on an outpatient ventilator and is not in cardiac arrest, maintain ventilatory support during transport to the hospital.
        - c. If the patient is found on an outpatient ventilator and is in cardiac arrest, contact on-line medical direction to consult about disconnecting the ventilator.
      - (iii) Maintain an open airway by non-invasive means (e.g., chin lift, jaw thrust, finger sweep, nasopharyngeal airway, oropharyngeal airway, and Heimlich maneuver, **but** no laryngoscope, no Magill forceps, no cricothyroidotomy, and no tracheostomy).
      - (iv) Suction as necessary.
      - (v) Position for comfort.
    - (b) External bleeding
      - (i) Standard treatment (direct pressure with dressing, tourniquet).
      - (ii) No IVs.

## EMS/DNR (Continued)

- (c) Immobilize fractures using skills and devices that minimize pain.
  - (d) Uncontrolled pain or other symptoms (e.g., severe nausea)
    - (i) Allow patient, family, or health care providers (other than the prehospital provider) to administer patient's prescribed medications. Such health care providers administering medication will not have to accompany the patient to the hospital.
    - (ii) Patient controlled analgesia (PCA) systems for pain medication delivery and other patient-controlled medication (PCM) systems shall be left in place in DNR patients and monitored to the extent possible according to the provider's level of certification or licensure.
    -  (iii) For the patient with significant pain, and/or, pain with a prolonged transport, morphine may be administered.
  - (e) Existing IV lines may be in place and, if so, shall be monitored to the extent possible according to the provider's level of certification and licensure.
- (2) Inappropriate Care for a Palliative Care Patient**
- (a) Cardiac monitoring, including 12-lead EKG, pacing, cardioversion, and defibrillation
  - (b) Initiation of IV therapy (except when directed by online physician for morphine administration for pain control as in 1 (d) (iii))
  - (c) EMS-Initiated Medications (except oxygen and morphine administration for pain control as in 1 (d) (iii))
  - (d) CPR
  - (e) Intubation (alternative airway device, endotracheal, nasotracheal, or gastric tube) **(NEW '10)**
  - (f) Active ventilatory assistance, unless on an outpatient ventilator (pg. 32 ch. 5)
- g) TRANSPORT
- (1) Upon request of the patient, family, or caregivers and in lieu of transport to a hospital-based emergency department, EMS providers may transport Option B EMS/DNR patients who require transportation for pain control or symptom management or respite care to a specified inpatient hospice facility.
  - (2) A current list of those facilities is available from the MIEMSS Program Development Office (410) 706-4367 (4DNR). The receiving status of a particular facility can be ascertained from EMRC (24 hours a day) by EMS radio, EMSTEL, or red phone, or by calling 1 (800) 492-3805.



- (7) Use latex-safe sterile gloves. Using the non-dominant hand, palpate the area over the port to stabilize the port and locate the center.
- (8) With other hand, insert the non-coring needle into the center of the port with firm, steady pressure until you feel the needle reach the back of the port. Do not rock the non-coring needle back and forth in the port.
- (9) Aspirate 5mL of blood and/or heparinized solution and discard. If unable to aspirate blood, verify needle position by gently pushing the needle farther against the backstop of the port. If you are still unable to aspirate blood or fluid, contact MEDICAL CONSULTATION prior to use.
- (10) Flush with 5mL NS/RL while assessing for swelling at the site. **Be sure there are no air bubbles in the syringe or tubing.** Do not force flush if resistance is met. Verify the non-coring needle position by gently pushing the needle further against the backstop of the port, and attempt to flush again.
- (11) After assessing patency, clamp the tubing, and remove the syringe.
- (12) Apply needleless injection cap, if available, and cleanse with alcohol.
- (13) IV fluids, tubing and connectors must be assembled and primed in the cleanest area possible with **all air eliminated** prior to connecting to the patient.
- (14) Attach the completely flushed IV line, unclamp the needle tubing, and begin infusion of fluid/medication. NOTE: IV fluids may not infuse by gravity.
- (15) Secure the non-coring needle with sterile 2x2 or 4x4 and tape or occlusive dressing, being careful not to tape over the insertion site.
- (16) Tape or loop extension tubing to outside of dressing.

**f) PROCEDURE: TUNNELED AND NON-TUNNELLED LINES**

**TUNNELED LINES** (ie Hickman®, Groshong®, Broviac®, Cook®)

A tunneled central line is a catheter that is inserted under the skin of the chest, and the tip of the catheter is in a large vein just above the heart. A tunneled catheter has a cuff below the skin that the soft tissue grows into, reducing the risk of dislodgement and infection. These can be single or multiple-lumen catheters.

**NON-TUNNELLED LINES: PICC and MLC** (i.e. Cook®, Neo-PICC®)

A PICC (Peripherally inserted central catheter) line is a thin catheter which is inserted into one of the large veins, usually in the arm near the bend of the elbow, but may be in the neck or a lower extremity, and is threaded in a large vein just above the heart. A MLC (Mid-line catheter) is a thin peripheral catheter that is inserted into a large vein in the elbow, and ends in the vein before the shoulder. Both of these catheters have a very small lumen and are considered “low volume lines” and not appropriate for volume resuscitation.

- (1) Explain the procedure to the patient whenever possible.
- (2) Obtain assistance as needed.
- (3) Position the patient supine.
- (4) Using a 10 mL syringe or larger, draw up 5 mL flushes with NS/RL. **Be sure there are no air bubbles in the syringe.** Attach a stopcock if available.

**NOTE:** 10mL syringes are used because they have lower pressure when flushing fluids than smaller volume syringes (1 mL, 3 mL, or 5mL). The smaller volume syringes may deliver enough pressure to break the catheter.

- (5) Use sterile latex-safe gloves.
- (6) If multiple lumens or ports, determine from patient/family which catheter is most appropriate for use, if possible, or refer to the EIF Form. This is usually the **white** port.
- (7) Clean the existing cap on catheter with alcohol for 30 seconds.
- (8) Clamp all lines with special clamps that do not have teeth that might damage the catheter.
- (9) Access the appropriate catheter port with a 10 mL syringe.
- (10) Unclamp the catheter line to be accessed and aspirate 5 mL of blood/heparinized solution and discard to confirm placement and access patency. Delete this step if less than 2Fr PICC catheter, as this may damage the catheter (the lumen is very small and the catheter wall may collapse and any blood in the catheter will form a clot).  
**NOTE:** Contact MEDICAL CONSULTATION if unable to aspirate blood/fluid, or less than 2Fr catheter.
- (11) Reclamp the catheter any time you are changing lines or syringes. Remember that regular clamps may damage the central line tubing.
- (12) Attach the flush syringe and unclamp.
- (13) Flush with 5 mL NS/RL. **Be sure there are no air bubbles in the syringe or tubing.**
- (14) Clamp this line again with the special clamp.



## 2. AIRWAY MANAGEMENT: BAG VALVE MASK VENTILATION

### a) PURPOSE

- (1) Bag-valve-mask ventilation (BVM) is the technique of providing rescue breathing for patients with inadequate respiratory effort or cardiac arrest. Patients in respiratory failure may respond to BVM ventilation and not require endotracheal intubation.
- (2) A BVM may also be used to administer inhaled medications for patients with severe respiratory failure.

### b) INDICATIONS

- (1) Inadequate respiratory rate
  - (a) Adult less than 8
  - (b) Adolescent less than 12
  - (c) Child less than 16
  - (d) Infant/Toddler less than 20
- (2) Inadequate respiratory effort
  - (a) Absent or diminished breath sounds
  - (b) Paradoxical breathing (chest and abdomen moving in opposite directions)
  - (c) Cyanosis or oxygen saturation less than 90% on 100% oxygen by nonrebreather with the exception of patients with chronic hypoxemia **(NEW '10)**
- (3) Symptomatic Bradycardia
  - (a) Adult Heart rate less than 60
  - (b) Child Heart rate less than 80
  - (c) Infant Heart rate less than 100
- (4) Cardiac arrest
- (5) Altered mental status  
Glasgow coma scale 8 or less

### c) CONTRAINDICATIONS

None

### d) POTENTIAL ADVERSE EFFECTS / COMPLICATIONS

- (1) Gastric distension
- (2) Vomiting
- (3) Increased intracranial pressure as a result of increased vagal stimulation if mask applied over the patient's eyes

**e) PRECAUTIONS**

- (1) Have suction available since vomiting may occur.
- (2) Use an appropriate size airway adjunct with BVM.
- (3) Use an appropriate size mask to avoid pressure over the eyes (pediatric patient), which may cause vagal stimulation.
- (4) For single provider BVM use the "E-C clamp" technique to achieve an adequate seal and avoid pressure on the soft tissues of the face or neck: Place the third, fourth, and fifth fingers along the jaw to provide a chin lift (forming an E); use the thumb and index finger to hold the mask on the child's face (forming a C).
- (5) If the patient does not have adequate chest rise and breath sounds with BVM, consider the following interventions:
  - (a) Use 2-hand jaw lift and oral airway to relieve tongue obstruction.
  - (b) Use a larger bag to increase the volume of air delivered into the patient.
  - (c) Evaluate and treat the patient for gastric distension.  
Providers may manually decompress the stomach and/or open an existing gastric tube or button.

**f) SUGGESTED SIZES FOR RESUSCITATION MASKS**

Age	Mask Size
Premature infants	Neonatal
Newborn to 1 year	Infant
1 – 4 years	Toddler
4 – 10 years	Pediatric
10 – 14 years	Small adult
Adult	Adult

**g) SUGGESTED SIZES FOR RESUSCITATION BAGS**

Age/Weight	Bag Size
Newborn to 3 months	Neonatal 450-500 mL
Child less than 30 kg	Pediatric 750 mL
Child 30 kg or greater ( <b>NEW '10</b> )	Adult 1000-1200 mL
Adult	Adult 1000-1200 mL

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The protocol for Combitube has been removed. Combitube is no longer an approved airway device. **(NEW '10)**

**3A. AIRWAY MANAGEMENT: LATEX FREE DUAL LUMEN TUBE (E.G. EASYTUBE®)  
(NEW '10)**



**1. INDICATION**

Inability to place an endotracheal tube in a patient who has no gag reflex (including patients who cannot be intubated following the administration of succinylcholine).

**2. CONTRAINDICATIONS**

- (1) Responsive patients with an intact gag reflex
- (2) Patients under 35.5 inches (90 cm)
- (3) Known esophageal disease or ingestion of caustic substances

**3. PROCEDURE**

- (1) Inspect all components of the EasyTube® for damage.
- (2) Select appropriate size EasyTube®
  - (a) EasyTube® 28 Fr (Small): Patients 35-51 inches (90-130 cm) in height
  - (b) EasyTube® 41 Fr (Large): Patients over 51 inches (130 cm) in height
- (3) Test cuffs and lubricate with water soluble jelly.
- (4) Maintain cervical immobilization (if indicated) and lift tongue and jaw upward with one hand.
- (5) Insert EasyTube® to the indicated depth; **DO NOT FORCE.**
- (6) Inflate cuffs.
- (7) Ventilate through primary tube #1 and evaluate lung ventilation (breath sounds, gastric sounds, chest rise, end tidal carbon dioxide, oxygen saturation).
- (8) If lung ventilation is absent, immediately ventilate through secondary tube (#2) and re-evaluate (breath sounds, gastric sounds, chest rise, end tidal carbon dioxide, oxygen saturation).
- (9) If no lung ventilation, then deflate the cuff #1, withdraw EasyTube® 2-3 cm, re-inflate cuff, and reevaluate ventilation through tube #1 (as in #7 and #8 of this section).
- (10) Once effective ventilation is confirmed, continue to monitor oxygen saturation and ventilate to desired end tidal carbon dioxide level.
- (11) If unable to achieve adequate ventilation using EasyTube®, remove device, reinsert, and attempt again. If unable to ventilate, re-attempt bag valve mask ventilation, consider obstructed airway maneuvers (if not yet performed), and refer to cricothyroidotomy protocol.

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#### **4. AIRWAY MANAGEMENT: GASTRIC TUBE**

##### **a) PURPOSE**

A naso/orogastric tube is passed to relieve the gastric distension or pressure in an effort to reduce the risk of aspiration and increase the intrathoracic volume.

##### **b) INDICATIONS**

- (1) All pediatric intubated patients
- (2) Intubated adult patients exhibiting signs and symptoms of gastric distension that compromise ventilation or circulation.
- (3) Although there are other indications for the use of gastric tubes (i.e., gastric lavage and feeding), none appear to be appropriate for use in the prehospital phase of treatment in Maryland.

##### **c) CONTRAINDICATIONS**

- (1) History of esophageal varices
- (2) Esophageal or gastric surgery within the past 6 weeks
- (3) Anatomical deformity complicating nasal passage of the tube (nasogastric)
- (4) Suspected basilar skull fracture

##### **d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS**

- (1) Tracheal intubation with gastric tube
- (2) Epistaxis
- (3) Coiling or knotting of tube in the stomach or esophagus
- (4) Trauma to the nose, esophagus, or stomach
- (5) Triggering vomiting
- (6) Intracranial placement of gastric tube in patients with unidentified skull fractures

##### **e) PRECAUTIONS**

Have suction available since vomiting may be induced.





## EMT-P ONLY

### 5. AIRWAY MANAGEMENT: NASOTRACHEAL INTUBATION

#### a) PURPOSE

Nasal intubation is the technique of passing an endotracheal tube through the nose and pharynx into the trachea. This is done without using a laryngoscope to visualize the vocal cords (blind technique). The procedure is limited to breathing patients in whom oral intubation is difficult.

#### b) INDICATIONS

- (1) Use is primarily for hypoxemic CHF and COPD patients and is allowed for closed head injury patients with clenched teeth
- (2) An oxygen saturation of less than or equal to 90% in a patient on 100% oxygen by face mask and respiratory distress
- (3) A respiratory rate of 8 or less per minute or 35 or greater per minute,
- (4) A Glasgow Coma Score of 8 or less, **or**
- (5) Loss of gag reflex

#### c) CONTRAINDICATIONS

- (1) Patient receiving anticoagulants, such as coumadin (warfarin)
- (2) Patient with upper airway hemorrhage, significant mid-facial trauma, or laryngeal trauma
- (3) Patient with cerebral spinal fluid leakage or evidence of basilar skull fracture
- (4) Patient less than 12 years of age (**NEW '10**)


#### d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Epistaxis
- (2) Intubation of the esophagus
- (3) Trauma to the oral pharynx, vocal cords, esophagus, or trachea
- (4) Right mainstem bronchus intubation
- (5) Vomiting
- (6) Increased intracranial pressure, as result of increased vagal stimulation



- (7) Pneumothorax/tension pneumothorax from high pressure ventilation or underlying pre-existing trauma
- (8) Intracranial tube placement through basal skull fracture

**e) PRECAUTIONS**

- (1) Topical anesthesia (lidocaine 4% spray or gel) should be applied to both nares to minimize discomfort. **(NEW '10)**
- (2) Confirmation of ET placement
  - (a) Utilization of the beck airway airflow monitor [BAAM] device when available
  - (b) Auscultation of all lung fields to confirm air exchange
  - (c) Auscultation of the epigastrium to deny disturbance of gastric fluids upon ventilation
  - (d) Observation of bilateral expansion of the thorax
  - (e) End tidal CO<sub>2</sub> detection device required. At a minimum, use colorimetric devices.
  - (f) The esophageal detection device
  - (g) Documentation of tube depth at the nares
  - (h) Other clinical signs of improved perfusion and ventilation (i.e. pupillary response, skin color, etc.)
- (3)  Nasal intubation may require facilitation with sedation. When hypovolemia is unlikely, morphine or midazolam, or a combination of both may be given by direct medical consultation to achieve mild sedation.



## CRT-(I) & EMT-P ONLY

### 6. AIRWAY MANAGEMENT: NEEDLE DECOMPRESSION THORACOSTOMY (NDT)

#### a) PURPOSE

Needle Decompression Thoracostomy is a procedure of introducing a needle/catheter (with flutter valve attached) into the pleural space of the chest to provide temporary relief for the patient suffering from a tension pneumothorax.

#### b) INDICATIONS



MEDICAL CONSULTATION REQUIRED UNLESS THE DELAY WOULD COMPROMISE PATIENT CARE

- (1) Patients who are assessed to have a life-threatening tension pneumothorax in extremis with diminished/absent lung sounds, hypotension, and/or arrest.
- (2) If traumatic arrest is suspected due to multi-system blunt trauma, or due to penetrating neck, chest, or abdominal trauma, bilateral needle decompression should be performed. Once catheters are placed, **do not remove**.
- (3) Allowable Site: Second intercostal space anterior midclavicular line

#### c) CONTRAINDICATIONS

- (1) Patients with suspected simple pneumothorax
- (2) Patients whose tension pneumothorax can be relieved by the removal of an occlusive dressing from an open chest wound

#### d) POTENTIAL ADVERSE EFFECTS / COMPLICATIONS

- (1) Intercostal vascular or nerve injury
- (2) Pneumo/hemothorax
- (3) Direct damage to the lung
- (4) Pericardial/cardiac injury
- (5) Infection

#### e) PRECAUTIONS

- (1) Reassessment of catheter patency
- (2) Second decompression may need to be performed if evidence of reaccumulation, catheter occlusion, or dislocation is evident.

- (2) Confirmation of ET placement

As it has been determined that no single method of assessment is 100% reliable, the position of the endotracheal tube must be assessed to be properly in the trachea by all means available to the EMS provider. The following methods may be used to confirm proper placement of the endotracheal tube

  - (a) Visualization of the ET Tube protruding adequately past the vocal cords and into the trachea
  - (b) Auscultation of all lung fields to confirm adequate air exchange
  - (c) Auscultation of the epigastrium to deny disturbance of the gastric fluids upon ventilation
  - (d) Observation of the bilateral expansion of the thorax
  - (e) End Tidal CO<sub>2</sub> detection device. At a minimum, utilize colorimetric devices (required for all intubated patients). **(NEW '10)**
  - (f) The esophageal detection device
  - (g) Documentation of tube depth at the lip
  - (h) Other clinical signs of improved perfusion and ventilation (i.e. pupillary response, skin color, etc.)
- (3) Once initial placement is confirmed
  - (a) The tube must be adequately secured
  - (b) The patient must be prepared for transport in such a fashion as to minimize movement of the head and neck. This may include the use of a long backboard, and cervical collar, or other means of stabilization of the head and neck.
- (4) Placement of the tube should be verified by all means possible (as in "(2)" above) and as often as possible as part of the providers' ongoing assessments. It has been further noted that flexion of the neck can cause 3-5 cm displacement of the ET Tube dislodging the tube from the trachea. At a minimum this reconfirmation should occur
  - (a) Once the patient is prepared for transport,
  - (b) Anytime the patient is moved,
  - (c) Anytime dislodgment of the tube is suspected, and
  - (d) When responsibility for care is transferred to any other provider.
- (5) During routine reporting procedures, documentation of proper placement should include which methods were utilized and at which points, in the care of the patient, verification was accomplished.
- (6) Maintain neutral alignment of head and neck with cervical stabilization when intubating trauma patients.
- (7) The Blind Digital method may be utilized for intubation of a patient in whom hyperextension of the cervical spine may be contraindicated. It may also benefit patients with severe facial trauma. However, it must be emphasized that this can be a difficult procedure, and the provider must be certain that the patient cannot bite.

f) **SUGGESTED SIZES FOR ENDOTRACHEAL TUBES AND SUCTION CATHETERS**

## Equipment Sizes

AGE	ORAL AIRWAY	BAG VALVE MASK	ETT SIZE	ETT BLADE	SUCTION CATHETER	GASTRIC TUBE
PREMATURE	0	NEONATAL	2.5–3.0	0	6F	5F
NEWBORN	0	NEONATAL	3.0–3.5	0–1	6F	5–8F
3 mo.	1	INFANT	3.5	1	6–8F	5–8F
6 mo.	1	INFANT	3.5–4.0	1	8F	8F
1 yr.	1	INFANT	4.0	1	8F	8F
2 yrs.	2	CHILD	4.0–4.5	1–2	8–10F	8–10F
3 yrs.	2	CHILD	4.5	2	10F	10F
4 yrs.	3	CHILD	4.5–5.0	2	10F	10–12F
6 yrs.	4	CHILD	5.0–5.5	2	10F	12–14F
8 yrs.	4	CHILD	5.5–6.0	2	10–12F	14F
10 yrs.	5	CHILD	5.5–6.5	3	12F	14F
12 yrs.	5	ADULT SMALL	6.5–7.0	3	12F	14–18F
14 yrs.	5	ADULT	6.5–7.5	3	12–14F	16–18F
ADULT	5	ADULT	7.0–10.0	4	12–14F	16–18F



ENDOTRACHEAL TUBE SELECTION FOR A CHILD SHOULD BE BASED ON THE 16 PLUS CHILD'S AGE DIVIDED BY FOUR [  $(16 + \text{YEAR}) / 4 = \text{TUBE SIZE}$  ].

UNCUFFED ENDOTRACHEAL TUBES ARE RECOMMENDED FOR CHILDREN LESS THAN 8 YEARS OF AGE OR LESS THAN 25 KG.

AGE IN THE CHART IS A QUICK REFERENCE. ONE SIZE LARGER AND ONE SIZE SMALLER SHOULD BE ALLOWED FOR INDIVIDUAL VARIATIONS. USE A LENGTH-BASED TAPE IF AVAILABLE. **(NEW '10)**

## 9. AIRWAY MANAGEMENT: TRACHEOSTOMY CHANGE



### a) PURPOSE

Changing a tracheostomy tube may be required to re-establish a patent airway in patients who present with respiratory distress secondary to tracheostomy tube occlusion or obstruction that has not been relieved through suctioning.

### b) INDICATIONS

- (1) Inability to ventilate with BVM
- (2) Ineffective spontaneous ventilations (poor chest rise, decreased breath sounds bilaterally)
- (3) Hypoxia, cyanosis, or decreased O<sub>2</sub> saturation levels, not relieved by suctioning
- (4) Increased work of breathing
- (5) Altered mental status secondary to hypoxia

### c) CONTRAINDICATIONS

None

### d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Inability to re-insert a tracheostomy tube
- (2) Edema at stoma site
- (3) Inability to maintain adequate chest rise and fall with assisted ventilations due to air leak around uncuffed tracheostomy tube. **(NEW '10)**



PATIENTS GREATER THAN EIGHT YEARS OF AGE WHO REQUIRE ASSISTED VENTILATIONS WILL NEED TO HAVE A CUFFED TUBE INSERTED TO PREVENT AIR LEAK AROUND THE TUBE AND ENSURE ADEQUATE CHEST RISE. IF AN APPROPRIATE SIZED CUFFED TRACHEOSTOMY TUBE IS NOT AVAILABLE, THEN ALS PROVIDERS MAY USE AN ET TUBE. **(NEW '10)**

### e) PROCEDURE

- (1) Two providers or provider and trained family member
- (2) Use latex-safe sterile gloves and equipment.
- (3) Position patient with the head and neck hyperextended to expose the tracheostomy site.
- (4) Explain procedure to patient/family.
- (5) Have new tracheostomy tube nearby.
- (6) To remove the tracheostomy tube:
  - (a) If a double cannula tracheostomy tube is in place, attempt to change inner cannula first and reassess the patient to see if the obstruction is relieved. If the patient continues to have respiratory distress, change the entire tracheostomy tube. If cuffed, deflate using a 10 mL syringe. **(NEW '10)**
  - (b) Carefully cut the tracheostomy ties.

- (c) Remove the tracheostomy tube, outward and backward towards the chest.
  - (d) Lubricate the new tracheostomy tube with Surgilube or saline/water.
  - (e) Insert new tracheostomy tube into stoma, inward and downward towards the lungs.
- NOTE: STOP IF YOU MEET RESISTANCE** (see (7) next page).
- (f) If cuffed tracheostomy tube is used, once the tube has been inserted, inflate the cuff with an appropriate amount of air to avoid air leak around the tube (1-3 mL for pediatric tubes and 5-10 mL for adult tubes). **(NEW '10)**
  - (g) Reassess the patient.
  - (h) With good chest rise and fall and improved skin color, secure the tracheostomy tube with ties or Velcro at the back of the neck, so only one fingertip fits between the neck and the ties.
- (7) If you meet resistance inserting the tracheostomy tube, do NOT force the tube into the stoma. Request ALS rendezvous, if appropriate. Assess the patient:
- (a) Reposition the patient, hyperextend the neck area.
  - (b) Re-oxygenate using BVM to stoma site, with infant mask and appropriate size reservoir bag for the patient's size. Assess for chest rise and fall.
  - (c) If inadequate rise and fall of the chest, AND the patient has not had a Laryngectomy, attempt BVM orally while placing an occlusive dressing over the stoma site. If a laryngectomy patient, you will only be able to ventilate with BVM at the stoma site.
  - (d) Attempt to insert a half-size smaller tracheostomy tube after lubricating with Surgilube or saline/water.
  - (e) Proceed with (6) f-g-h above.
  - (f) If you meet resistance, reassess the patient. Re-oxygenate as needed.
  - (g) Insert a suction catheter through the tracheostomy tube, and use the suction catheter as a guide to insert the tracheostomy tube.
  - (h) Proceed with (6) f-g-h above.
  - (i) If ALS, attempt to insert a similar sized endotracheal tube into the stoma. If cuffed endotracheal tube is used, inflate the cuff with an appropriate amount of air to avoid air leak around the tube (1-3 mL for pediatric tubes and 5-10 mL for adult tubes). **(NEW '10)**
  - (j) If ALS and unable to insert the ET tube into the stoma, AND the patient has not had a laryngectomy, attempt to intubate orally and apply an occlusive dressing over the stoma site.
  - (k) If you continue to have problems, **STOP**, consult the base station and continue BVM ventilations orally, or BVM to tracheostomy site ventilations if a laryngectomy patient, while en route to the closest appropriate hospital.

**d) CONTRAINDICATIONS**


Tachydysrhythmias due to digitalis toxicity

**e) POTENTIAL ADVERSE EFFECTS/ COMPLICATIONS**


An unsynchronized shock can result in ventricular fibrillation.

**f) PRECAUTIONS**

(1) If the calculated joules setting is lower than the cardioversion device is able to deliver, use the lowest joules setting possible or obtain medical consultation.

(2)  Administer midazolam 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)

(3)  Administer midazolam 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. **(NEW '10)**







### 13. ELECTRICAL THERAPY: DEFIBRILLATION

#### a) PURPOSE

Defibrillation involves the delivery of non-synchronized direct electric current (mono or biphasic) to the myocardium of a patient exhibiting ventricular fibrillation or ventricular tachycardia without palpable pulses/blood pressure. The objective of defibrillation is to depolarize the entire myocardium, which, it is hoped, will result in allowing a single reliable pacemaker site to assume pacemaker control at a rate capable of producing an adequate cardiac output.

#### b) INDICATIONS FOR TREATMENT

- (1) Ventricular fibrillation
- (2) Ventricular tachycardia without palpable pulse or BP

#### c) DOSAGE

- (1) Adult
  - (a) Initial delivered energy monophasic 360 J or biphasic 120-200 J
  - (b) Subsequent delivered energy monophasic 360 J or biphasic increasing joules setting if device allows
- (2) Pediatric
  - (a) Initial delivered energy 2 J/kg (monophasic or biphasic)
  - (b) Subsequent delivered energy 4 J/kg (monophasic or biphasic)

#### d) CONTRAINDICATIONS

None

#### e) POTENTIAL ADVERSE EFFECTS / COMPLICATIONS

- (1) Burns to the skin
- (2) Deactivation of patient's implanted pacemaker

#### f) PRECAUTIONS

- (1) Patients who are fully digitalized may require less than the normal recommended delivered energy.
- (2) 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.





## CRT-(I) & EMT-P ONLY

### 14. ELECTRICAL THERAPY: EXTERNAL TRANSCUTANEOUS CARDIAC PACING


#### a) PURPOSE

Non-invasive cardiac pacing, also referred to as external or transcutaneous pacing, involves the temporary application of externally applied electrodes to deliver an adjustable electrical impulse directly across an intact chest wall for the purpose of rhythmically stimulating the myocardium to increase the mechanical heart rate.

#### b) INDICATIONS

- (1) It is indicated for the treatment of hemodynamically compromised patients in settings where cardiac output is compromised due either to the complete failure of cardiac rhythm or to an insufficient rate of the patient's intrinsic pacemaker.
- (2) Bradycardia. (ECG other than second-degree Mobitz Type II or third-degree AV Block.)
- (3) Second-degree Mobitz Type II and third-degree AV block with a systolic BP of less than 80 mmHg, or 80-100 mm Hg with shock-like signs or symptoms.  
 In the presence of Mobitz II and third-degree AV block, medical consultation is required for atropine administration.
- (4)  Pacing may be indicated in certain instances in which the heart rate is 60-75 BPM and shock-like symptoms persist. Pacing in these instances requires medical consultation from a physician.
- (5) Patients who experience provider-witnessed cardiopulmonary arrest and who present with asystole, or patients whose ECG converts to asystole while the ECG is being monitored.
- (6) Prompt application of the transcutaneous cardiac pacemaker is appropriate prior to the administration of epinephrine and atropine when a patient converts to asystole as a primary rhythm during ECG monitoring by a CRT-(I) or EMT-P.



- (7)  Pediatric patients with profound symptomatic bradycardia unresponsive to optimal airway management, oxygenation, epinephrine, and atropine.

**c) DOSAGE**

Start pacemaker at age appropriate heart rate:  
 Infant (less than 1 year): 120 beats per minute  
 Child (1 through 11 years): 100 beats per minute **(NEW '10)**  
 Adult (12 years and greater): 80 beats per minute

Start milliamperes (m.a.) as low as possible and gradually increase m.a. until palpable pulse confirm capture or 200 m.a.



CONTINUE CHEST COMPRESSIONS FOR PEDIATRIC PATIENTS WHO REMAIN POORLY PERFUSED DESPITE PACEMAKER CAPTURE.

**d) CONTRAINDICATIONS**

- (1) Non-witnessed cardiopulmonary arrest with asystole
- (2) Patient not meeting blood pressure criteria

**e) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS**

- (1) Patient may experience mild to moderate discomfort.

If patient is conscious and has adequate blood pressure consider:



Morphine 1-2 mg/min IVP (Paramedic may administer without consult).

**OR**

Midazolam 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)



Administer midazolam 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. **(NEW '10)**

- (2) Musculoskeletal twitching in upper torso may occur during pacing.

**f) PRECAUTIONS**

When properly applied, chest compressions can be performed directly over the insulated electrodes while the pacer is operating.

## 20. MEDEVAC UTILIZATION (NEW '10)

### a) PURPOSE

Summarize Medevac utilization protocol indications, contraindications, principles for consideration of Medevac request, Medevac request process, standardized Medevac request dataset, optimal landing zone setup and safety recommendations when interacting with helicopters.

### b) INDICATIONS FOR “MEDEVAC REQUEST”

The following indications must meet the specific criteria of the indicated protocol(s)

- (1) Trauma Category A, B, C\*, D\*
- (2) Specialty Category
  - (a) Burn
  - (b) Hand \*
  - (c) Eye
  - (d) Head
  - (e) Spinal
- (3) Medical Category
  - (a) Stroke
  - (b) STEMI
  - (c) Hyperbaric (CO, Toxic Inhalation, or SCUBA)
- (4) Consult Approved Critical/ Unstable (Time critical illness or disease requiring specialized care)\*

All of the above requests containing an asterisk (\*) (adult or pediatric) require acceptance at the Trauma/ Medical/ Specialty Center for Medevac authorization before SYSCOM can launch the helicopter.

### c) PRINCIPLES FOR CONSIDERATION OF MEDEVAC TRANSPORT MEETING ABOVE INDICATIONS:

- (1) Priority I Patients (critically ill or injured person requiring immediate attention: unstable patients with life-threatening injury or illness)
  - (a) Consider air transportation if the patient will **ARRIVE** at the appropriate receiving facility more quickly than could be accomplished by ground transportation.
  - (b) The provider should consider all of the following:
    - (i) Time for helicopter response
    - (ii) Patient turnover (loading time)
    - (iii) Flight time to appropriate facility
    - (iv) Weather conditions
- (2) Priority II Patients (less serious condition yet potentially life-threatening injury or illness, requiring emergency medical attention but not immediately endangering the patient's life)

Consider Medevac transport if drive time is greater than 30 minutes.

**Special Consideration:**

**Consider Medevac transport if ground transport greater than 60 minutes to a trauma or specialty center would deplete limited EMS resources in the community.**

**d) CONTRAINDICATION FOR MEDEVAC REQUEST**

EMS/DNR-B patients are not candidates for field Medevac transport.



ALL REQUESTS FOR SCENE HELICOPTER TRANSPORTS SHALL BE MADE THROUGH SYSCOM.

**e) FORMAL REQUEST PROCESS**

The Systems Communications Center (SYSCOM) at MIEMSS serves as the communications center for the dispatching and management of Maryland's public safety helicopter resources. This mission is accomplished through the partnership between jurisdictional 911 call-centers and SYSCOM operations at MIEMSS. All helicopter requests must be routed through SYSCOM. The Medevac Request Data form is designed to provide a consistent standard by which SYSCOM receives "request" information. Considering the variety in the types of requests received by SYSCOM (e.g. Medevac, Search-and-Rescue, Law Enforcement tracking) the information requested will vary, depending on the nature of the request. The county communications centers and the EMS providers that make the request should be familiar with the Medevac Data Request form to provide essential data to SYSCOM for prompt dispatch of the requested helicopter support.

EMS provider and 911 center Medevac request process:

- (1) Decision made to request Medevac based on indication and principles above (if 911 center has enough information from phone interrogation of call, and trauma indications meet Trauma Decision Tree Category A or B, the 911 center operator does not have to wait for EMS provider to arrive on scene to make Medevac request)
- (2) If indicated, consultation with trauma/specialty center for physician authorization to use Medevac for transport and acceptance of the patient
- (3) Essential information gathered to complete the Medevac Data Request form (most of this is handled by 911 center)
- (4) Contact SYSCOM for formal Medevac request.
- (5) Select and secure landing zone following optimal landing zone setup and safety tips.

## Medevac Data Request Form

### ***Maryland Helicopter Dispatch Request***

1	Identify Call Origin & Operator ID
2	Identify Request Type: <b>Medevac, Search &amp; Rescue, Airborne Law Enforcement</b>
3	Jurisdictional Incident Number & 911 Dispatch Time

### ***Medevac Dispatch***

1	Incident Type
2	Incident Location: Community & Site
3	Landing Zone
4	ADC Map Page/Grid OR Lat/Lon
5	Primary Condition
6	Severity, Category & Priority
7	Adult or Pediatric or Estimated Age?
8	Multiple Patients?
9	ALS Unit & LZ Contact Info
10	Additional Relevant Information

### ***Search & Rescue Dispatch***

1	Incident Type
2	Incident Location: Community & Site
3	ADC Map Grid OR Lat/Lon Info for LZ
4	Primary Target Description
5	Time Last Observed
6	Ground Contact Unit
7	Additional Relevant Information

### ***Airborne Law Enforcement Dispatch***

1	Incident Type:
2	Incident Location: Community & Site
3	ADC Map Grid OR Lat/Lon Info for LZ
4	Primary Target
5	Time Last Observed
6	Ground Contact Unit
7	Additional Relevant Information

## HELICOPTER SAFETY

### OPTIMAL LANDING ZONE (LZ) SETUP

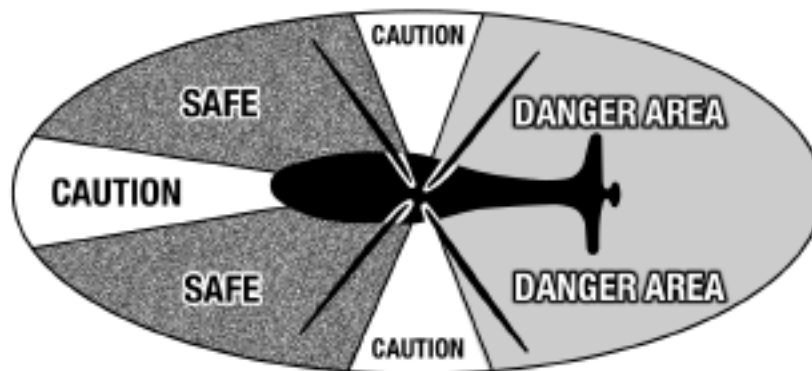
- **100 x 100 foot area close to the incident scene and free from obstructions is the best selection.**  
(In mass casualty incident, increase to 165 x 165 foot area if possible to allow for large aircraft.)
- ✓ The landing zone should be a flat surface that is firm, free of overhead obstructions, and free of any debris that can blow up into the rotor system. The maximum allowable slope is 10 degrees.
- ✓ Obstacles such as wires, poles, signs, etc. can be difficult to see from the aircraft. If wires are present at or near the scene, this information must be relayed to the flight crew prior to landing.
- ✓ Advise the flight crew on overhead radio contact if there are any obstructions in the area, obstructions at the edge of the LZ, or any obstructions in-line with the departure or approach path.
- ✓ If the roadway is too narrow, or numerous trees or other obstacles are present, another area must be selected as an alternate LZ and checked for obstacles and other unsafe conditions. After the LZ Officer has evaluated all areas, the best unobstructed landing site must be secured, and the flight crew advised of any unsafe conditions they may encounter during the landing.
  - **NOTE:** In determining landing zones, be aware that helicopter take-offs and landings can be done in a vertical manner; however, these landings limit the pilot's visibility of the LZ. Increased power requirements on the helicopter may eliminate land-back areas should an engine malfunction occur, making the approach slower, causing extended periods of rotor wash.

### ADDITIONAL LANDING ZONE TIPS

- ✓ The LZ Officer should walk the area on both sides of the LZ and check for hazards. During night operations, walk the LZ with a flashlight that is directed up and down to detect wires in and around the LZ.
- ✓ 45-Degree Test- The LZ Officer should stand in the middle of the LZ with one arm extended at a 45-degree angle in front of him/her. Any objects at or above this line are obstacles and need to be reported to the incoming aircraft. This test is done for the full 360 degrees.
- ✓ All traffic must be stopped in both directions of the roadway, even on multi-lane highways or interstates. Do not allow traffic to use the roadway until after the aircraft has departed. Traffic should be stopped at least 200 feet in both directions from the landing zone.
- ✓ Do not recommend landing zones that contain loose material such as gravel. The rotor wash will cause stones or gravel to become airborne, striking personnel and/or damaging vehicles.

- ✓ Do not use flares or cones to mark the landing zone: they will become airborne during the landing. (Weighted cones/lights that are designed for aircraft operations are generally acceptable.)
- ✓ The pilot is the final authority when selecting an LZ. On some occasions, the pilot may not choose to utilize the ground personnel's suggested LZ and choose an alternate LZ. This decision is usually based on information that is unknown to the ground personnel (e.g. wind, aircraft performance limitations, etc.).

#### APPROACHING THE AIRCRAFT



*Personnel should only approach MSP aircraft under the following conditions:*

- ✓ Hearing and eye protection shall be utilized at all times when approaching the aircraft.
- ✓ Only when accompanied by an MSP flight crew member to the aircraft.
  - Response personnel are usually limited to four when loading patients. The Trooper/Flight Paramedic will provide additional guidance prior to these personnel approaching the aircraft.
- ✓ In an emergency situation when it becomes necessary to render assistance or rescue occupants of the helicopter. In such cases:

**DO NOT APPROACH THE AIRCRAFT UNLESS THE MAIN ROTOR HAS STOPPED!**

- ✓ Only approach the aircraft from the Safe Zone (see diagram).
  - Never approach the aircraft from the rear areas due to the hazards existing from the tail rotor.

**REMAIN CLEAR OF THE REAR AND TAIL ROTOR AT ALL TIMES!**

- If it becomes necessary to go from one side of the aircraft to the other, this will be done by walking around the front of the aircraft; however, do not walk under the rotor blades.



- Personnel shall not wear hats and loose clothing when approaching the aircraft. Do not lift anything above shoulder height (e.g. IV bags).
- ✓ If the aircraft has landed on a slope or hill, care must be taken when approaching the aircraft from the downhill side. Uphill side approaches should be avoided, as the main rotor blade is spinning and is lower to the ground on one side of the aircraft. The Trooper/Flight Paramedic will provide additional guidance in this situation.
- ✓ Never bring the patient to the aircraft prior to advising the Trooper/Flight Paramedic of the patient's information. Very high noise levels found in the general proximity of the aircraft make communication and patient turnover impossible.
- ✓ If debris gets in the eyes and it impairs the vision, do not continue to approach or egress from the aircraft. Personnel will immediately "take a knee," and the Trooper/Flight Paramedic will provide assistance.

#### MISCELLANEOUS SAFETY TIPS

##### **Aircraft Doors**

- ✓ Personnel should not attempt to open or close any aircraft doors. If a person is in the aircraft, he/she should remain inside until the flight crew member opens the door, thus preventing damage to the door and greatly reducing the risk of an aircraft door opening inadvertently in flight.

##### **Vehicles**

- ✓ No vehicles or personnel shall be permitted within 200 feet of the aircraft.
- ✓ Do not direct spotlights onto the landing area or at the aircraft, but keep vehicle's emergency lights displayed until the aircraft is overhead. Once the LZ has been confirmed and verified by the flight crew, vehicle lighting can be reduced to running lights or parking lights for night vision purposes.

## I. BLS PHARMACOLOGY



### 1. ACETAMINOPHEN (NEW '10)

#### a) Indications

Patients ages 3 years and above judged to be in mild to moderate discomfort (e.g. 2-5 on FACES scale).

#### b) Adverse Effects

Not clinically significant

#### c) Precautions

Administration of acetaminophen for mild to moderate pain does not eliminate the need for transport of the patient to the hospital to receive a comprehensive evaluation of the cause of the pain and appropriate definitive treatment.

#### d) Contraindications

- (1) Head Injury
- (2) Hypotension
- (3) Administration of acetaminophen or medications containing acetaminophen within the previous four hours



MANY COMMON COLD PREPARATIONS CONTAIN ACETAMINOPHEN.

- (4) Inability to swallow or take medications by mouth
- (5) Respiratory distress
- (6) Persistent vomiting
- (7) Known or suspected liver disease (including patients suspected of current alcohol ingestion)
- (8) Allergy to acetaminophen

#### e) Preparations Use Unit Dose Only

(DO NOT USE MULTIDOSE BOTTLE)

- (1) Unit dose 160 mg/5 mL
- (2) Unit dose 325 mg/10.15 mL

#### f) Dosage

- (1) Less than 3 years of age: Not indicated
- (2) 3-5 years: Unit dose 160 mg/5 mL
- (3) 6-9 years: Unit dose 325 mg/10.15 mL
- (4) 10 years & above: Administer TWO Unit doses of 325 mg/10.15 mL each for total of 650 mg/20.3 mL
- (5) Obtain on-line medical direction for appropriate dosing for patients who are significantly underweight or overweight.



## 2. ACTIVATED CHARCOAL (WITHOUT SORBITOL)

### a) Indications

Poisoning by mouth

### b) Adverse Effects

May indirectly induce vomiting and cause nausea

### c) Precautions

Does not absorb all drugs and toxic substances

### d) Contraindications

- (1) Altered mental status
- (2) Patients who have received an emetic

### e) Preparations

- (1) 25 grams/125 mL bottle
- (2) 50 grams/250 mL bottle

### f) Dosage

- (1) Adult: Administer 1 gram/kg
- (2) Pediatric: Administer 1 gram/kg



POISON INFORMATION CENTER RECOMMENDATIONS SHOULD BE SOLICITED IN CONJUNCTION WITH MEDICAL CONSULTATION, BUT MEDICATION ORDERS CAN ONLY BE ACCEPTED FROM AN APPROVED BASE STATION OR CONSULTATION CENTER.



## 6. ORAL GLUCOSE

### a) Indications

- (1) Altered mental status with known diabetic history
- (2) Unconscious for an unknown reason

### b) Adverse Effects

Not clinically significant

### c) Precautions

Patient without gag reflex may aspirate.

### d) Contraindications

Not clinically significant

### e) Preparations

10-15 grams of glucose (contained in 24, 30, or 37.5 gram tube)

### f) Dosage

- (1) Adult: Administer 10-15 grams of glucose paste between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes. **(NEW '10)**
- (2) Pediatric: Administer 10-15 grams of glucose paste between the gum and cheek; this may be accomplished through several small administrations. Consider single additional dose of glucose paste if not improved after 10 minutes. **(NEW '10)**



## 7. OXYGEN

### a) Indications

All medical and trauma patients

### b) Adverse Effects

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

### c) 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-rebreather face masks must be supplied with a minimum 12 lpm.

### d) Contraindications

None

### e) Dosage

- (1) Adult: Administer 12–15 lpm with 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.

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%

## J. ALS PHARMACOLOGY



### 1. ACETAMINOPHEN (NEW '10)

#### a) Indications

Patients ages 3 years and above judged to be in mild to moderate discomfort (e.g. 2-5 on FACES scale).

#### b) Adverse Effects

Not clinically significant

#### c) Precautions

Administration of acetaminophen for mild to moderate pain does not eliminate the need for transport of the patient to the hospital to receive a comprehensive evaluation of the cause of the pain and appropriate definitive treatment.

#### d) Contraindications

- (1) Administration of acetaminophen or acetaminophen containing medications within the previous four hours



MANY COMMON COLD PREPARATIONS CONTAIN ACETAMINOPHEN.

- (2) Inability to swallow or take medications by mouth
- (3) Respiratory distress
- (4) Persistent vomiting
- (5) Known or suspected liver disease (including patients suspected of current alcohol ingestion)
- (6) Allergy to acetaminophen

#### e) Preparations Use Unit Dose Only

(DO NOT USE MULTIDOSE BOTTLE)

- (1) Unit dose 160 mg/5 mL
- (2) Unit dose 325 mg/10.15 mL

#### f) Dosage

- (1) Less than 3 years of age: Not indicated
- (2) 3-5 years: Unit dose 160 mg/5 mL
- (3) 6-9 years: Unit dose 325 mg/10.15 mL
- (4) 10 years & above: Administer TWO Unit doses of 325 mg/10.15 mL each for total of 650 mg/20.3 mL
- (5) Obtain on-line medical direction for appropriate dosing for patients who are significantly underweight or overweight.

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#### 4. ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

##### a) Pharmacology

- (1) Synthetic sympathomimetic amine (a type of stimulant)
- (2) Stimulates beta-2 adrenergic receptors of the bronchioles
- (3) Little effect on blood pressure
- (4) Little cardiac effects
- (5) Main effect is bronchodilation.
- (6) It may cause some vasodilation as evidenced by headache or flushing.

##### b) Pharmacokinetics

- (1) Bronchodilation begins within 5 to 15 minutes after inhalation.
- (2) Peak effect occurs in 30-120 minutes.
- (3) Duration of action is usually 3-4 hours.

##### c) Indications

- (1) To reverse bronchospasm (wheezing)
- (2) Hyperkalemia (**NEW '10**)


##### d) Contraindications

Known hypersensitivity

##### e) Adverse Effects

Tachycardia, palpitations, peripheral vasodilation, tremors, and nervousness, headache, sore throat, PVCs, nausea, and vomiting

##### f) Precautions

- (1) Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity.
- (2) If respirations worsen, consider discontinuing use.
- (3) Should be used with caution in patients with hyperthyroidism or coronary artery disease.
- (4) Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol.
- (5)  Medical direction required before administering to pregnant patient or patient having a cardiac history.







**g) Dosage**

**Bronchospasm (NEW '10)**

- (1) Adult: 2.5 mg by nebulized aerosol connected to 6-8 lpm of oxygen; may repeat one time
- (2) Pediatric: May repeat one time; connect to 6-8 lpm of oxygen
  - (a) **Age two or older:** 2.5 mg by nebulized aerosol
  - (b) **Ages less than two years:** 1.25 mg by nebulized aerosol

**Hyperkalemia (NEW '10)**

- (1)  Adult: 20 mg (if available) by nebulized aerosol connected to 6-8 lpm of oxygen
- (2)  Pediatric
  - (a) **Age two or older:** 2.5 mg by nebulized aerosol
  - (b) **Ages less than two years:** 1.25 mg by nebulized aerosol



**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

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The Benzocaine protocol formerly on page 219 has been removed.  
Benzocaine is no longer an approved medication. **(NEW '10)**



## 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.

### 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 250 mg slow IVP for hypotension following diltiazem administration.
- (2) Pediatric: Administer 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min)  
Maximum dose 1 gram or 10 mL.



## 11. DIAZEPAM (VALIUM) (for Chempack or Mark I Optional Protocol)

### a) Pharmacology

- (1) Sedation, hypnosis, alleviation of anxiety, muscle relaxation, anticonvulsant activity
- (2) Little cardiovascular effect

### b) Pharmacokinetics

- (1) Onset of action is extremely rapid following IV administration.
- (2) Half-life ranges from 20 to 90 minutes.

### c) Indications

- (1) Sustained and/or recurrent seizures due only to nerve agent or organophosphate exposure

### d) Contraindications

- (1) Known hypersensitivity, head injury
- (2) Should be used with caution in patients with altered mental status, hypotension, or acute narrow angle glaucoma

### e) Adverse Effects

- (1) Lightheadedness, motor impairment, ataxia, impairment of mental and psychomotor function, confusion, slurred speech, amnesia
- (2) Additive effect with ethanol
- (3) Irritability and excitation may be seen paradoxically.

### f) Precautions

- (1) Respiratory depression may occur with IV administration, especially if given too rapidly.
- (2) Respiratory support may be required.
- (3) Use with caution in pregnant patients, persons ingesting alcohol, or persons ingesting sedatives.

### g) Dosage (Paramedic consultation NOT required for above indication)

- (1) Adult: Administer 10 mg IM. **(NEW '10)**
- (2) Pediatric: greater than 30 kg/66 lbs: Administer 10 mg or 0.1 mg/kg IM, maximum of 10 mg. **(NEW '10)**



**12. DILTIAZEM (Cardizem)**  
(CRT-(I) & EMT-P only)

**a) Class**

Calcium channel blocker

**b) Actions**

- (1) Inhibits the movement of calcium ions across cardiac muscle cells
- (2) Decreases conduction velocity and ventricular rate

**c) Indications**

Symptomatic atrial fibrillation and atrial flutter

**d) Contraindications**

- (1) Hypotension below 90 mm Hg, second or third degree heart block, hypersensitivity to the drug
- (2) Patients less than 12 years of age

**e) Precautions**

Use cautiously in patients with renal failure or congestive heart failure.

**f) Side effects**

- (1) Headache
- (2) Nausea
- (3) Vomiting
- (4) Bradycardia
- (5) Hypotension

**g) Significant interactions**

Congestive heart failure may result if used along with beta blockers.

**h)  Dosage**

(1) Adult:

- (a) 0.25 mg/kg (maximum dose 20 mg) by IV bolus administered slow IV over 2 minutes; if response is not adequate, repeat in 15 minutes with a dosage of 0.35 mg/kg (maximum dose 25 mg) over 2 minutes.
- (b) For patients older than 50 years of age or borderline blood pressure, consider initial bolus 5-10 mg administered IV over 2 minutes.

(2) Pediatric:

Contraindicated for patients less than 12 years of age.

**f) Precautions**

- (1) Violent patients should be physically restrained while the medication is administered.
- (2) May mask subsequent evaluation.

**g)  Dosage (May combine with midazolam in same syringe)**

- (1) Adult
  - a. **Patient 15-69 years of age:**  
5 mg IM or IV
  - b. **Patient greater than 69 years of age:**  
2.5 mg IM or IV
- (2) Pediatric
  - a. **Child less than 6 years of age:**  
Contraindicated
  - b. **Child 6-11 years of age:**  
0.05 mg/kg IM or IV, max of 2.5 mg
  - c. **Patient 12-14 years of age:**  
2.5 - 5 mg IM or IV



## 19. LACTATED RINGER'S

### a) Pharmacology

- (1) Isotonic crystalloid solution
- (2) Lactated Ringer's contains:

(a) Sodium (Na <sup>+</sup> )	130 mEq/liter
(b) Potassium (K <sup>+</sup> )	4 mEq/liter
(c) Calcium (Ca <sup>++</sup> )	3 mEq/liter
(d) Chloride (Cl <sup>-</sup> )	109 mEq/liter
(e) Lactate	28 mEq/liter

### b) Pharmacokinetics

Lactated Ringer's is a water and electrolyte replacement.

### c) Indications

- (1) Hypovolemia
- (2) Keep vein open
- (3) Fluid boluses

### d) Contraindications

Fluid overload states



### e) Adverse Effects

Rare in therapeutic doses

### f) Precautions

- (1) Patients receiving lactated Ringer's should be monitored to prevent circulatory overload.
- (2) Lactated Ringer's should be used with caution in patients with congestive heart failure or renal failure.

### g) Dosage

- (1)  Maximum dose 2,000 mL without medical consultation
- (2) Adult:
  - (a) KVO
  - (b) Initiate IV LR fluid therapy (20 mL/kg bolus).
  - (c) Titrate to a systolic pressure of 100 mm Hg.
- (3) Pediatric:
  - (a) KVO
  - (b) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. Fluid boluses for neonates and volume sensitive children are 10 mL/kg **(NEW '10)**
  - (c) If patient's condition does not improve, administer the second fluid bolus of 20 mL/kg LR IV/IO.
  - (d)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO



## 20. LIDOCAINE (XYLOCAINE)

### a) Pharmacology

- (1) Suppresses ventricular ectopy
- (2) Elevates VT and VF threshold
- (3) Nasal anesthesia

### b) Pharmacokinetics

- (1) Extremely rapid (within minutes) onset following IV administration and lasts approximately 10-20 minutes
- (2) Mucosal anesthesia with onset in 1-5 minutes

### c) Indications

- (1) Prevent recurrence of ventricular fibrillation/tachycardia after defibrillation and conversion to supraventricular rhythm
- (2) Ventricular tachycardia (VT)
- (3) Ventricular fibrillation (VF)
- (4) Reduce or eradicate ventricular ectopy, especially closely coupled, multifocal, or short bursts of five or more PVCs in succession
- (5) Decrease intracranial pressure with Rapid Sequence Intubation
- (6) Nasal tracheal intubation

### d) Contraindications

- (1) AV blocks
- (2) Sensitivity to lidocaine
- (3) Idioventricular escape rhythms
- (4) Accelerated idioventricular rhythm
- (5) Sinus bradycardia or arrest or block
- (6) Hypotension
- (7) Shock
- (8) Ventricular conduction defects

### e) Adverse Effects

- (1) Lidocaine may cause clinical evidence of toxicity usually related to the central nervous system.
- (2) Toxicity:
  - (a) Early: muscle twitching, slurred speech, altered mental status, decreased hearing, paresthesia (pins and needles), anxiety, apprehension, visual disturbances, nausea, numbness, difficulty breathing or swallowing, decreased heart rate
  - (b) Late: convulsions, hypotension, coma, widening of QRS complex, prolongation of the P-R interval, hearing loss, hallucinations





**f) Precautions**

- (1) Reduce the dosage in patients with decreased cardiac output, liver dysfunction, and the elderly (age over 70)
- (2) Bolus doses should be administered over a 1-minute period, except in ventricular fibrillation/ventricular tachycardia, when they are administered IVP.

**g) Dosage**

- (1) Adult with pulse: Administer 1 -1.5 mg/kg IVP/IO bolus followed by 0.5-0.75 mg/kg every 8-10 minutes as needed, up to 3 mg/kg.
- (2) Adult without pulse: Administer 1.5 mg/kg IVP/IO bolus initially followed by additional 1.5 mg/kg IVP bolus in 3-5 minutes to maximum of 3 mg/kg.
- (3) Pediatric with pulse: Administer 1 mg/kg initial bolus and 0.5 mg/kg IVP/IO bolus every 8-10 minutes, as needed, to maximum of 3 mg/kg.  
ET dose: 2-2.5 times the above dose
- (4) Pediatric without pulse: Administer 1 mg/kg initial bolus IVP/IO bolus followed by 1 mg/kg IVP boluses in 3-5 minutes to a maximum of 3 mg/kg.  
ET dose: 2-2.5 times the above dose
- (5) Adult with an IO infusion: To prevent or treat pain during an IO infusion in adult patients (40 kilograms or greater), administer 20-40 mg (1-2 mL) of 2% (preservative free) lidocaine IO. **(NEW '10)**
- (6) Pediatric with an IO infusion: To prevent or treat pain during an IO infusion in pediatric patients (39 kilograms or less), consult a pediatric base station. **(NEW '10)**
- (7) Nasal Pharyngeal Anesthesia (age 12 years and greater)  
Draw up 4 mL of lidocaine 4% (40 mg/mL) and using mucosal atomization device, administer 2 mL per nares. The patient IV, gel, and intranasal dosing should not exceed 3 mg/kg. **(NEW '10)**

**h) Inter-Facility Transport Only**

- (1) IV Infusion
- (2) Maintain the IV Infusion of lidocaine at the rate established by the sending physician and record vital signs every 15 minutes. (See Lidocaine Infusion for Inter-Facility Transport.)



**21. MIDAZOLAM (VERSED)(Non-RSI)  
(CRT-I and EMT-P)**

**a) Pharmacology**

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

**b) Pharmacokinetics**

- (1) A short-acting benzodiazepine with strong hypnotic, anticonvulsant activity and amnestic properties
- (2) Onset of action is extremely rapid following IV administration approximately 1<sup>1</sup>/<sub>2</sub> minutes and for IM approximately 15 minutes.
- (3) Duration of effect 1-4 hours with half life of 1<sup>1</sup>/<sub>2</sub> 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 (for RSI jurisdictions)
- (8) Chemical Restraint

**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 narcotics 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/IM by 50% for patients 69 years or older.)

0.1mg/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 IM may be administered

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:  
0.1mg/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 IM  
Maximum total dose 5 mg (**NEW '10**)

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

Adult: 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

Pediatric: Not indicated


#### Bucking Endotracheal Intubated patient (RSI PILOT ONLY)

- (1) Adult: Administer 0.05 mg/kg (2-5 mg) slow IVP over 1-2 minutes, while maintaining BP systolic greater than 80 mmHg. STOP ONCE BUCKING HAS RESOLVED AND VENTILATION IS RELAXED  
Additional doses require medical consultation.





## 28. SODIUM BICARBONATE

- a) Pharmacology**  
Sodium bicarbonate corrects acidosis.
- b) Pharmacokinetics**  
(1) Rapid onset of action in the blood  
(2) Delayed onset of action in the tissues
- c) Indications**  
(1) Used in cardiac arrest only after more definitive treatments  
(2) Hyperkalemia  
(3) Tricyclic and phenobarbital overdose
- d) Contraindications**  
Pre-existing alkalosis
- e) Adverse Effects**  
(1) Worsened intracellular acidosis due to carbon dioxide formation  
(2) Hyperosmolality  
(3) May precipitate congestive heart failure  
(4) Metabolic alkalosis  
(5) Acute hypokalemia  
(6) Exacerbation of central venous acidosis  
(7) Shifting the oxyhemoglobin dissociation curve, inhibiting the release of oxygen to the tissues
- f) Precautions**  
(1) Inactivates simultaneously administered catecholamines  
(2) Priorities before use:  
(a) Intubation  
(b) Hyperventilation  
(c) Defibrillation  
(d) Epinephrine  
(e) Antiarrhythmics
- g)  Dosage**  
(1) Should only be given after airway has been secured and ventilations achieved  
(2) Adult: Administer 1 mEq/kg IVP bolus initially with 0.5 mEq/kg at 10-minute intervals.  
(3) Pediatric: Administer 1 mEq/kg IVP/IO; for patients less than 1 year of age, must be diluted (1:1) with LR. **(NEW '10)**

Hyperkalemia (**NEW '10**)

(Reserve for patients with suspected CRUSH SYNDROME or patients with functional kidneys by history)



FLUSH IV WITH 5 ML OF LACTATED RINGER'S BETWEEN CALCIUM AND BICARBONATE ADMINISTRATION (**NEW '10**)

Adult:



Consider/ Administer sodium bicarbonate 50 mEq SLOW over 5 minutes and then initiate drip of sodium bicarbonate 100 mEq in 1000 mL LR to run over 30-60 minutes

Pediatric:




Consider / administer sodium bicarbonate 1 mEq/kg IV over five minutes. For patients less than 1 year of age, must be diluted 1:1 with LR

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

**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) *Age less than 12 (NEW '10)*
- (3) *History of malignant hyperthermia*

**c) Preparation**

- (1) *Pre-oxygenate with 90-100% oxygen.*
- (2) *Monitor oxygen saturation with pulse oxymetry and ECG.*
- (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 (NEW '10)*
  - (e) *Capnograph*

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

**d) RSI Procedure**

- (1) *Etomidate: Administer 0.3 mg/kg IVP over 30-60 seconds  
If the provider suspects hypovolemia, administer half the usual initial dose (0.15 mg/kg) IVP over 30-60 seconds. May repeat 0.15 mg/kg IVP in 2-3 minutes if inadequate sedation*

**OR**

- Midazolam: Administer 0.05 mg/kg (2-5 mg) IVP over 1-2 minutes  
(a) Hold for BP less than 80 **(NEW '10)***
- (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 (60-150 mg) rapid IVP*
- (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 0.5 mg/kg IVP (20-50 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). **(NEW '10)***
- (6) *Attach capnograph and ventilate to desired end tidal carbon dioxide level.*
- (7) *If significant resistance to ventilation occurs as succinylcholine wears off (4-5 minutes), or if patient exhibits difficulty in tolerating an approved alternative airway device as succinylcholine wears off, refer to Ventilatory Difficulty Secondary to Bucking Protocol. **(NEW '10)***

**g) If Unable to Ventilate**

*Insert an approved alternative airway device (refer to alternative airway device protocol). **(NEW '10)***

- h) If still unable to ventilate using an approved alternative airway device, remove and perform cricothyroidotomy (refer to Cricothyroidotomy Protocol). **(NEW '10)****

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

**2. Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients**

**a) Indication**

*Patients successfully intubated with an endotracheal tube, an approved alternative airway device, or Cricothyroidotomy, for whom the ability to provide manual or mechanical ventilation is impaired secondary to bucking or combativeness (NEW '10)*

**b) Contraindication**

*Unsecured airway*

**c) Procedure**

- (1) *Midazolam up to 0.05 mg/kg (2-5 mg) IVP over 1-2 minutes, titrated to abate bucking and relax ventilation while maintaining BP systolic greater than 80 mmHg*

**OR**


*Etomidate: Administer 0.3 mg/kg IVP over 30-60 seconds*

*If the provider suspects hypovolemia, the initial dose will be 0.15 mg/kg IVP over 30-60 seconds. May repeat 0.15 mg/kg IVP after succinylcholine effects resolve and patient is bucking or combative. May repeat 0.15 mg/kg IVP every 15 minutes to a total of three doses. Additional doses require medical consultation.*

- (2) *If ventilatory difficulty is thought to be the result of pain response, Morphine may be used in addition to, or instead of, Midazolam: Morphine 0.05 mg/kg (2-5 mg) IVP over 1-2 minutes, titrated to abate bucking and relax ventilation while maintaining BP systolic greater than 80 mmHg. May be repeated x1 in 5 minutes if required*
- (3) *If significant resistance to ventilation continues, the EMT-P may administer*
- (a) *Vecuronium 0.05 mg/kg (2-5 mg) IVP*



*PRE-SEDATION MUST BE PROVIDED WHEN VECURONIUM IS ADMINISTERED TO A PATIENT WHO IS EITHER RESPONSIVE TO STIMULUS, OR WHO MAY BECOME RESPONSIVE TO STIMULUS DURING NEUROMUSCULAR BLOCKADE. USE OF VECURONIUM REQUIRES FUNCTIONING END TIDAL CO<sub>2</sub> MONITORING. VECURONIUM MAY ONLY BE USED IF CONTINUOUS, BREATH TO BREATH, ETCO<sub>2</sub> MONITORING CAN BE PROVIDED.*

- (b) *Dose may be repeated in 4-6 minutes if necessary.*
- (4) *Continue to monitor oxygen saturation and ventilate to desired end tidal carbon dioxide.*
- (5)  *Obtain on-line medical direction if further problems present.*



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

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The pilot protocol for Combitube has been removed. Combitube is no longer an approved airway device. **(NEW '10)**

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

**4. Protocol for Cricothyroidotomy (Surgical and Needle)**

**a) Indications**

- (1) Inability to ventilate despite having tried BVM with oropharyngeal/nasopharyngeal airway, ET placement, and an alternative airway device (if not contraindicated) **(NEW '10)**
- (2) Inability to place ET in the setting of life-threatening upper airway hemorrhage
- (3) Completely obstructing upper airway foreign body that cannot be removed via BLS maneuvers or Magill forceps with direct visualization

**b) Preparation**

- (1) Prepare suction and cricothyroidotomy kit.
- (2) Begin at sternal notch and locate cricoid cartilage.
- (3) Palpate cricothyroid membrane anteriorly between cricoid cartilage and thyroid cartilage.
- (4) Prepare skin with betadine or alcohol swabs.

**c) Surgical Cricothyroidotomy**

- (1) Stabilize thyroid cartilage and make vertical incision (1-1½ inches) over cricothyroid membrane. Alternatively, a needle puncture dilator device may be utilized.
- (2) Palpate cricothyroid membrane with gloved finger and carefully make transverse incision through membrane. Insert scalpel handle and rotate 90 degrees.
- (3) Insert a 6.0 mm cuffed ET tube, using the natural curve of tube.
- (4) Insert ET tube to just beyond cuff.
- (5) Inflate cuff and ventilate patient.
- (6) Monitor oxygen saturation and end tidal carbon dioxide level.
- (7) Secure ET tube. (Do not cut or trim ET tube.)
- (8) If significant resistance to ventilation develops, or if patient develops difficulty in tolerating successful cricothyroidotomy, refer to Ventilatory Difficulty Secondary to Bucking or Combativeness Protocol.

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

***Protocol for Cricothyroidotomy (Continued)***

***d) Needle Cricothyroidotomy***



**ONLY NEEDLE CRICOTHYROIDOTOMY SHOULD BE PERFORMED FOR PATIENTS LESS THAN THE AGE OF 8 WHO REQUIRE CRICOTHYROIDOTOMY. (NEW '10)**

- (1) Insert 12- or 14-gauge over-the-needle catheter through the cricothyroid membrane at a 45-degree angle toward the feet. Aspiration of air with a syringe indicates tracheal entry.*
- (2) Hold needle in place and advance catheter, then remove needle.*
- (3) Attach catheter hub to intermittent jet oxygen insufflator valve.*
- (4) Manually secure catheter at hub at all times to prevent kinking or displacement.*
- (5) Monitor oxygen saturation.*
- (6) If significant resistance to ventilation develops, or if patient develops difficulty in tolerating cricothyroidotomy, refer to Ventilatory Difficulty Secondary to Bucking or Combativeness Protocol.*

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

**5. 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 during a full EMT-P skills evaluation will perform this. 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:*
- (2) *Immediate notification of your jurisdictional RSI supervisor for all RSI attempts*
- (3) *Medical Director evaluation of all RSI attempts within 12 hours*

**d) Maintenance of detailed RSI database**

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

**N. PEDIATRIC RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE  
(For children less than 12 years of age) (NEW '10)**



**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  
RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE  
EMT-Paramedic only**

**c) Preparation**

- (1) Pre-oxygenate with 90-100% oxygen.
- (2) Monitor oxygen saturation with pulse oximetry and ECG.
- (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: Recommended to carry both cuffed and uncuffed ET tubes for patients less than 8 years of age or 25 kg. **(NEW '10)**
  - (b) Bag Valve Mask (BVM) with manometer. (Manometer may be part of the BVM or separate.) **(NEW '10)**
  - (c) Suction
  - (d) RSI kit
    - (i) Prepare medications
    - (ii) Alternative airway device, Cricothyroidotomy equipment **(NEW '10)**
  - (e) Capnograph

**d) RSI Procedure**

- (1) Etomidate: Administer 0.3 mg/kg IVP over 30-60 seconds  
If the provider suspects hypovolemia, administer half the usual initial dose (0.15 mg/kg) IVP over 30-60 seconds. May repeat 0.15 mg/kg IVP in 2-3 minutes if sedation is inadequate. **(NEW '10)**  
**OR**  
Midazolam: Administer 0.05 mg/kg (2-5 mg) IVP over 1-2 minutes
  - (a) Hold for BP less than 60 in neonates (patients less than 28 days old), less than 70 in infants (patients less than 1 year of age), less than  $[70 + (2 \times \text{years}) = \text{systolic BP}]$  for patients greater than 1 year of age. **(NEW '10)**
- (2) For patients with head injury or suspected increased intracranial pressure, administer Lidocaine 1 mg/kg IVP over 1-2 minutes.
- (3) If patient is less than 8 years of age (or if age unknown and using ET tube smaller than 6.0), pretreat patient with Atropine 0.02 mg/kg IVP (minimum dose of 0.1 mg).
- (4) In-line cervical spine stabilization by second caregiver (in trauma setting)
- (5) Apply cricoid pressure (by third caregiver).
- (6) Succinylcholine: Administer 1.5 mg/kg rapid IVP
- (7) Intubate trachea and verify ET placement.
- (8) If inadequate relaxation after 2-3 minutes, repeat succinylcholine 0.5 mg/kg IVP.

**e) Successful Endotracheal Tube Placement**

- (1) Release cricoid pressure and secure ET.
- (2) Ventilator 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.

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

**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.*

**g) If Unable to Ventilate**

*If unable to ventilate, verify appropriate oropharyngeal airway placement and reposition BVM for optimal mask seal. If still unable to ventilate, refer to needle cricothyroidotomy protocol.*

**2. Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients**

**a) Indication**

*Patients successfully intubated with an endotracheal tube, or needle Cricothyroidotomy, for whom the ability to provide manual or mechanical ventilation is impaired secondary to bucking or combativeness*

**b) Contraindication**

*Unsecured airway*

**c) Procedure**

- (1) *Midazolam up to 0.05 mg/kg IVP over 1-2 minutes, titrated to abate bucking and relax ventilation while maintaining BP systolic: greater than 60 in neonates (patients less than 28 days old), less than 70 in infants (patients less than 1 year of age), less than  $[70 + (2 \times \text{years}) = \text{systolic BP}]$  for patients greater than 1 year of age.*

**OR**

*Etomidate: Administer 0.3 mg/kg IVP over 30-60 seconds  
If the provider suspects hypovolemia, the initial dose will be 0.15 mg/kg IVP over 30-60 seconds. May repeat 0.15 mg/kg IVP after succinylcholine effects resolve and patient is bucking or combative. May repeat 0.15 mg/kg IVP every 15 minutes to a total of three doses.  
Additional doses require medical consultation.*


- (2) *If ventilatory difficulty is thought to be the result of pain response, Morphine may be used in addition to, or instead of, Midazolam/Etomidate:  
Morphine 0.05 mg/kg IVP over 1-2 minutes, titrated to abate bucking and relax ventilation while maintaining BP systolic: greater than 60 in neonates (patients less than 28 days old), less than 70 in infants (patients less than 1 year of age), less than  $[70 + (2 \times \text{years}) = \text{systolic BP}]$  for patients greater than 1 year of age.  
May be repeated x1 in 5 minutes if required.*

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

- (3) *If significant resistance to ventilation continues, the EMT-P may administer*
  - (a) *Vecuronium 0.05 mg/kg (2-5 mg) IVP (May not be used for patients with needle cricothyroidotomy because of inability to monitor breath to breath  $ETCO_2$ ).*



*PRE-SEDATION MUST BE PROVIDED WHEN VECURONIUM IS ADMINISTERED TO A PATIENT WHO IS EITHER RESPONSIVE TO STIMULUS, OR WHO MAY BECOME RESPONSIVE TO STIMULUS DURING NEUROMUSCULAR BLOCKADE. VECURONIUM MAY ONLY BE USED IF CONTINUOUS, BREATH TO BREATH,  $ETCO_2$  MONITORING CAN BE PROVIDED.*

- (b) *Dose may be repeated in 4-6 minutes if necessary.*
- (4) *Continue to monitor oxygen saturation and ventilate to desired end tidal carbon dioxide.*
- (5)  *Obtain on-line medical direction (preferably from a pediatric Base Station), if further problems present.*

**3. Protocol for Cricothyroidotomy  
(Surgical for 8 years old or greater and Needle) (NEW '10)**

**a) Indications**

- (1) *Inability to ventilate despite having tried BVM with oropharyngeal/nasopharyngeal airway, ET placement, and alternative airway device (if not contraindicated)*
- (2) *Inability to place ET in the setting of life-threatening upper airway hemorrhage*
- (3) *Completely obstructing upper airway foreign body that cannot be removed via BLS maneuvers or Magill forceps with direct visualization*

**b) Preparation**

- (1) *Prepare suction and cricothyroidotomy kit.*
- (2) *Begin at sternal notch and locate cricoid cartilage.*
- (3) *Palpate cricothyroid membrane anteriorly between cricoid cartilage and thyroid cartilage.*
- (4) *Prepare skin with betadine or alcohol swabs.*

**c) Surgical Cricothyroidotomy for 8 years old or greater (NEW '10)**

- (1) *Stabilize thyroid cartilage and make vertical incision (1-1 $\frac{1}{2}$  inches) over cricothyroid membrane. Alternatively, a needle puncture dilator device may be utilized.*
- (2) *Palpate cricothyroid membrane with gloved finger and carefully make transverse incision through membrane. Insert scalpel handle and rotate 90 degrees.*
- (3) *Insert a 5 to 6.0 mm cuffed ET tube, using the natural curve of tube.*
- (4) *Insert ET tube to just beyond cuff.*
- (5) *Inflate cuff and ventilate patient.*



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

- (6) *Monitor oxygen saturation and end tidal carbon dioxide level.*
- (7) *Secure ET tube. (Do not cut or trim ET tube.)*
- (8) *If significant resistance to ventilation develops, or if patient develops difficulty in tolerating successful cricothyroidotomy, refer to Ventilatory Difficulty Secondary to Bucking or Combativeness Protocol.*



ONLY NEEDLE CRICOTHYROIDOTOMY SHOULD BE PERFORMED FOR PATIENTS LESS THAN AGE 8 WHO MAY REQUIRE CRICOTHYROIDOTOMY. **(NEW '10)**

**d) Needle Cricothyroidotomy**

- (1) *Insert 12- or 14-gauge over-the-needle catheter through the cricothyroid membrane at a 45-degree angle toward the feet. Aspiration of air with a syringe indicates tracheal entry.*
- (2) *Hold needle in place and advance catheter, then remove needle.*
- (3) *Attach catheter hub to intermittent jet oxygen insufflator valve.*
- (4) *Manually secure catheter at hub at all times to prevent kinking or displacement.*
- (5) *Monitor oxygen saturation.*
- (6) *If significant resistance to ventilation develops, or if patient develops difficulty in tolerating cricothyroidotomy, refer to Ventilatory Difficulty Secondary to Bucking or Combativeness Protocol.*

**4. Pediatric RSI Quality Assurance Process**

**a) Individual Paramedic Approval for Pediatric RSI Pilot Participation**

- (1) *Successful completion of small group training includes all of the following:*
  - (a) *Classroom lecture*
  - (b) *Mannequin instruction*
  - (c) *Must demonstrate proficiency through skills testing and written test*
- (2) *Successful completion of individualized Operating Room Training*
  - (a) *Individual Operating Room training with Pediatric/Critical Care/Anesthesiology Attending approved by the Associate State EMS Medical Director for Pediatrics*
  - (b) *Must demonstrate proficiency to Attending Pediatric/Critical Care/ Anesthesiologist's satisfaction*

**b) Ongoing Demonstration of Proficiency**

*A verification of all pediatric and adult RSI skills and review of pediatric and adult RSI principles of safety will be performed on a quarterly basis.*

**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:*

**PILOT PROGRAM  
PELVIC STABILIZATION/ BINDER TECHNIQUE FOR  
SUSPECTED PELVIC FRACTURE PROCEDURE**

**4. PRECAUTIONS**

- a) Incorrectly placing the pelvic stabilization binder device at the level of the iliac wing could cause harm by widening the pelvic fracture.  
Assessment after application of the pelvic stabilization binder device
- b) Continue with patient care
- c) EMS providers should also assess distal pulses before and after the application of the pelvic stabilization binder device.
- d) For EMS units with long transport times and with patients requiring large volumes of fluid resuscitation, the patient will need to be periodically monitored to make sure that the device is not becoming too tight due to expansion of the pelvic area from accumulation of fluids that have third spaced to the pelvic area.
- e) If providers feel the device is becoming too tight it should be slowly loosened and then reapplied.

**PILOT PROGRAM  
ON-SCENE PROTOCOL AND ALTERNATIVE DISPATCH PROTOCOL DURING  
DECLARED PUBLIC HEALTH EMERGENCIES FOR PANDEMIC INFLUENZA (NEW '10)**

**N4. On-Scene Protocol and Alternative Dispatch Protocol During Declared Public Health Emergency for Pandemic Influenza**

This protocol is designed to be implemented only when there is a significant infectious disease that has impacted the health care system to the extent that all hospital beds are full, the EMS/Dispatch work force is significantly depleted due to absenteeism, and the calls for EMS support overwhelm resources to manage all calls. MIEMSS, in collaboration with DHMH and Local health officers, would activate this protocol to provide authorization for the adjustment in the pre-hospital standard of care.

**MANAGING ARRESTS**

If the patient is in cardiac arrest, CPR for 5 cycles, than apply AED. Shock and continue to shock with 5 cycles CPR if indicated.

- 1) If a pulse returns, initiate patient transport as quickly as possible to a higher level of medical care (the ED or rendezvous with ALS, whichever has a shorter ETA).
- 2) If no shock is indicated and there is no return of pulse, Consult Medical Direction to withdraw care and leave patient on scene.

Follow normal *Maryland Medical Protocol for EMS Providers* and conduct General Patient Care assessment and make sure you are using appropriate universal precautions.

Follow the sequential steps below:

- 1) If patient has an obvious **non-flu related illness or injury**, apply appropriate *Maryland Medical Protocol for EMS Providers*, then treat and transport appropriately.
- 2) If patient has **Critical Vital Signs (Table #1)**, transport patient to ED.
- 3) If patient has **Normal Vital Signs (Table #1)**, then go to Case Definition Signs and Symptoms for Flu (Table #2).
  - a) If the patient has **three or more Case Definition Signs or Symptoms for Flu**, transport patient to Alternate Care Facility.
  - b) If the patient has **two or less Case Definition Signs or Symptoms for Flu**, EMS provider shall call for Medical Consult (state central resource physician) to determine if EMS provider can leave the patient on scene and advise the patient to self-quarantine and call a nurse/public health hotline for further assistance.

**PILOT PROGRAM  
ON-SCENE PROTOCOL AND ALTERNATIVE DISPATCH PROTOCOL DURING  
DECLARED PUBLIC HEALTH EMERGENCIES FOR PANDEMIC INFLUENZA (NEW '10)**

<b>Table 1. Assess Patient's Vital Signs</b>				
	<b>Critical Adult Vital Signs</b>	<b>Critical Pediatric Vital Signs</b>	<b>Normal Adult Vital Signs</b>	<b>Normal Pediatric Vital Signs</b>
	<b>Transport to ED</b>		<b>Consider Alternate Care</b>	
<b>Pulse/Perfusion</b>	Equal or Greater than 130	<b>CRT greater than 2 seconds</b>	Less than 130	<b>CRT less than or equal to 2 seconds</b>
<b>RR/Distress</b>	Equal or Greater than 30	<b>Greater than 45 or increased work of breathing Neonate: Less than 30 Infant: Less than 20 Child: Less than 15</b>	Less than 30	<b>Unlabored breathing or Neonate: 30-45 Infant: 20-45 Child: 15-45</b>
<b>Systolic BP</b>	Less than 90	<b>Neonates: Less than 60 Infants: Less than 70 Children under 10 years of age: Less than 70 + (2 x years)</b>	Equal or Greater than 90	<b>Neonates: Equal or greater than 60 Infants: Equal or greater than 70 Children under 10 years of age: Equal or greater than 70 + (2 x years)</b>
<b>Pulse Ox</b>	Less than 92 on room air	<b>Less than 92 on room air</b>	Equal or Greater than 92	<b>Equal or Greater than 92</b>
<b>AVPU</b>	Pain or Unresponsive	<b>Pain or Unresponsive</b>	Alert or Verbal	<b>Alert or Verbal</b>
<b>Lung sounds</b>	Rales/ Wheezing	<b>Rales/ Wheezing</b>	Clear	<b>Clear</b>

<b>Table 2. Case Definition Signs and Symptoms for FLU</b>	
1. Difficulty breathing with exertion	7. Sore throat
2. Has doctor diagnosed flu	(no difficulty breathing or swallowing)
3. Cough	8. Nasal congestion
4. Fever	9. Runny nose
5. Shaking chills	10. Muscle aches
6. Chest pain (pleuritic)	11. Headache

**PILOT PROGRAM  
ON-SCENE PROTOCOL AND ALTERNATIVE DISPATCH PROTOCOL DURING  
DECLARED PUBLIC HEALTH EMERGENCIES FOR PANDEMIC INFLUENZA (NEW '10)**

<b>Maximize the Use of Limited Resources Alternative Dispatch Protocols</b>				
<b>Dispatch Priority Level</b> (match vendor or call center based dispatch protocol/tiered algorithm)	<b>Response</b> (Standard Operating Mode)	Level 1 (A) Activation of Card 36 and ONLY for use in 6, 10, 18, and 26 DSS1 BELOW IS BACK UP STRATEGY FOR EMD WITHOUT CARD 36	Level 2(B) Implement Declining Response /Configuration CAD Table (Moderate) + Card 36 (6,10,18 & 26)  DSS2	Level 3(C) Implement Declining Response /Configuration CAD Table (Severe) + Card 36 (6,10,18 & 26)  DSS 3
<b>Classification 1 (*Echo)</b> Confirmed Cardiac Arrest (Not Breathing, Unresponsive per 911 call) (MPD cards - 2, 6, 9, 11,15, 31)	Closest AED Unit <u>and</u> Closest 1st Responder <u>and</u> Closest ALS Ambulance	Closest AED Unit <u>and</u> Closest 1st Responder <u>and</u> Closest BLS Ambulance if available	-Closest AED Unit and -Closest 1st Responder if available	- Closest AED Unit if available - If no unit available, no response
<b>Classification 2 (*Delta)</b> Life Threatening Emergency/Potentially Life Threatening/Confirmed Unstable Patient(s)	Closest 1st Responder <u>and</u> Closest ALS Ambulance	- Closest 1st Responder <u>and</u> Closest ALS Ambulance if available; - BLS ambulance if ALS unit not available	Closest 1st Responder <u>and</u> Closest Ambulance available (ALS or BLS)	- Closest 1st Responder <u>and</u> - If available Closest Ambulance available (ALS or BLS)
<b>Classification 3 (*Charlie)</b> Non-Critical/Currently Stable Patient(s) Requiring ALS Assessment	Closest ALS Ambulance	Closest Ambulance available (ALS or BLS)	Closest Ambulance available (ALS or BLS)	- Closest 1st Responder if available or - Closest stand-in responder unit
<b>Classification 4 (*Bravo)</b> BLS Assessment for unknown/possibly dangerous scenes	Closest 1st Responder <u>and</u> Closest BLS Ambulance	Closest 1st Responder <u>and</u> Closest BLS Ambulance if available	Closest 1st Responder	- Trauma Closest 1st Responder - Medical Referral to Nurse or Health Department Advice Phone service if available; or self-transport Alternate Care Site
<b>Classification 5 (*Alpha)</b> BLS Treatment	BLS Ambulance	Alternate Care Referral	Alternate Care Referral	Alternate Care Referral
<b>Classification 6 (*Omega)</b> Non-Ambulance Care	Alternate care such as Poison Control Center; Police/Fire service call, etc.	Alternate care such as Poison Control Center; Police/Fire service call, etc.	Alternate care such as Poison Control Center; Police/Fire service call, etc.	Alternate care such as Poison Control Center; Police/Fire service call, etc.

**PILOT PROGRAM  
AIRWAY MANAGEMENT: VIDEO LARYNGOSCOPE/GLIDESCOPE  
RANGER FOR OROTRACHEAL INTUBATION (NEW '10)**

**N5. Airway Management: Video Laryngoscopy/Glidescope Ranger for Orotracheal Intubation**

**1. PURPOSE**

Endotracheal Intubation using video laryngoscopy involves visualizing the glottic opening using specialized technology to view “around the corner” and pass the endotracheal tube, under optimal visualization, into the trachea. The purpose is to provide airway and ventilatory support for apnea, hypoxia, hypoventilatory respiratory failure, or respiratory insufficiency.

**2. INDICATION**

Video laryngoscopy and oro tracheal intubation is indicated for patients who are 18 years or older.

- a) Apnea or agonal respirations
- b) Airway reflex compromised
- c) Ventilatory effort compromised
- d) Injury or illness involving the airway
- e) Potential for airway or ventilatory compromise

**3. CONTRAINDICATIONS**

Patients less than 18 years of age.

**4. POTENTIAL ADVERSE EFFECTS/COMPLICATIONS**

- a) Trauma to the mouth, pharynx, larynx, trachea, esophagus
- b) Right mainstem bronchus intubation
- c) Vomiting
- d) Secondary brain injury resulting from hypoxia and/or hypotension
- e) Displacement of a properly placed endotracheal tube
- f) Esophageal intubation

**5. PRECAUTIONS**

- a) Attempt visualization and endotracheal intubation up to two times. If additional attempts are indicated, consult medical direction and consider what changes would result in improved visualization and success at endotracheal placement of the ET tube.
- b) Confirm placement of the endotracheal tube in the trachea as described in AIRWAY MANAGEMENT: OROTRACHEAL INTUBATION.

**PILOT/RESEARCH PROTOCOL  
RAMPART: The Rapid Anticonvulsant Medication  
Prior to Arrival Trial (NEW '10)**

**N6. RAMPART: The Rapid Anticonvulsant Medication  
Prior to Arrival Trial**

**PROTOCOL**

RAMPART - A double-blind randomized clinical trial of the efficacy of IM midazolam (10 mg) versus IV lorazepam (4 mg) in the prehospital treatment of status epilepticus by paramedics.

**1. INDICATIONS**

The benefits of emergent treatment and termination of Status Epilepticus likely result from minimizing the consequences of impaired ventilation, pulmonary aspiration, hemodynamic instability, or metabolic derangements associated with prolonged convulsions. Rapid termination of seizures may also prevent kindling effects demonstrated in animal models in which seizures become more refractory to subsequent treatment as the duration of seizure increases.

**2. PATIENT INCLUSION CRITERIA**

**Patients must be convulsing at the time of treatment to be enrolled.**

- a) Destination is a study participating hospital
- b) Paramedics or reliable witnesses verify continuous or repeated convulsive seizure activity of more than 5 minutes.

**OR**

Patient does not regain consciousness (operationally defined as meaningful speech or obeying commands) between seizures.

- c) Patient is still seizing on paramedic arrival.

**OR**

Patient isn't seizing, but is unresponsive on paramedic arrival and has a qualifying generalized seizure without regaining consciousness (as above).

**3. PATIENT EXCLUSION CRITERIA**

- a) Patient is not 18 years of age or older.
- b) Major trauma as the precipitant of the seizure.
- c) Hypoglycemia (glucose less than 60 mg/dl).
- d) Known allergy to midazolam or lorazepam.
- e) Cardiac Arrest or Heart Rate (HR) < 40 beats per minute.
- f) Medical Alert tag marked with "RAMPART declined."
- g) Prior treatment of this seizure with diazepam autoinjector as part of another study.
- h) Known pregnancy.
- i) Prisoners.

**4. PROCEDURE: INITIAL INCLUSION**

- a) Evaluate patient for unconsciousness or active seizure.
- b) If the patient is unconscious, ask bystander/family if the patient had a seizure.

**OPTIONAL SUPPLEMENTAL PROGRAM  
HEPARIN INFUSION FOR INTER-FACILITY TRANSPORT  
EMT-Paramedic only**



**Q. HEPARIN INFUSION FOR INTER-FACILITY TRANSPORT**  
(EMT-Paramedic only)

**1. PURPOSE**

*During inter-facility transports, a paramedic may monitor a patient on a continuous IV heparin infusion as long as the following criteria have been met.*

**2. INDICATIONS**

*The heparin infusion must have been started by the hospital staff prior to an inter-facility transfer. IV heparin infusions may NOT be started by the prehospital provider in the prehospital setting.*

**3. CONTRAINDICATIONS (NEW '10)**

- a) *Patients who have had trauma or surgery to the brain, eye, spinal cord, urinary tract, joints, or retroperitoneum within the last 7 days*
- b) *Patients with active bleeding*
- c) *Third trimester pregnancy*



**4. PROCEDURE**

- a) *Follow the appropriate ALS algorithm and maintain the infusion as directed by the sending physician.*
- b) *The sending physician must document the infusion to be administered on the patient's record or transport note, including the concentration of the units per hour.*
- c) *The 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 total volume of heparin infused must be recorded on the patient care report.*
- e) *The patient must be on a cardiac monitor and vital signs should be documented on the patient care report every 15 minutes.*
- f) *When in doubt, contact the sending physician for medical direction.*

**5. SPECIAL CONSIDERATIONS**

*The ALS service or jurisdiction must provide and document training of the ALS providers on the operation of infusion pump(s) being used. They 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  
HEPARIN INFUSION FOR INTER-FACILITY TRANSPORT  
EMT-Paramedic only**



**HEPARIN**

*(EMT-Paramedic only)*

**1. Pharmacology**

*Heparin is an anticoagulant that works by neutralizing several of the clotting factors (XIII, XII, XI, X, IX, and II).*

**2. Pharmacokinetics**

- a) *Heparin inhibits the coagulation mechanism in 3 sites:
  - (1) activation of factor X
  - (2) formation of thrombin from prothrombin
  - (3) conversion of fibrinogen to fibrin*
- b) *Heparin's effect, which is to retard or prevent blood clotting, is immediate. The half-life of intravenous heparin is 1 - 1<sup>1</sup>/<sub>2</sub> hours.*

**3. Indications**

- a) *Thromboembolic disease, such as pulmonary embolism, deep vein thrombophlebitis, and arterial embolization*
- b) *Acute myocardial infarction. (Heparin may be given alone or in conjunction with thrombolytic therapy.)*

**4. Contraindications**

- a) *Patients who have had trauma or surgery to the brain, eye, spinal cord, urinary tract, joints, or retroperitoneum within the last 7 days*
- b) *Patients with active bleeding*
- c) *Third trimester pregnancy*

**5. Adverse Effects**

*Increased potential for bleeding*

**6. Precautions**

- a) *Inadvertent infusion of too much heparin can result in over-anticoagulation and the potential for bleeding complications.*
- b) *If it is necessary to draw blood or start an IV while a patient is receiving heparin, extra time to hold pressure over the puncture site will be necessary to stop the bleeding.*
- c) *Use with caution for patients with extreme hypertension.*



**7. Dosage**

- a) *Adult: Administer a maximum of 1500 units per hour.*
- b) *Pediatric: Not indicated. (NEW '10)*

**OPTIONAL SUPPLEMENTAL PROGRAM  
AIRWAY MANAGEMENT  
ALS ONLY**



**Q2. AIRWAY MANAGEMENT: Laryngeal Tube Airway Device (King LTS-D™)**

**1. PURPOSE**

To provide an alternative to the Combitube (latex) or Easy Tube (latex free); it is a latex-free means of ventilating patients who cannot be intubated via direct laryngoscopy.

**2. INDICATIONS**

Inability to place an endotracheal tube in a patient who has no gag reflex (including patients who cannot be intubated following the administration of succinylcholine)

**3. CONTRAINDICATIONS**

- (1) Responsive patients with an intact gag reflex
- (2) Patients under 4 ft (2 and 2.5 LT not to be used) **(NEW '10)**
- (3) Known esophageal disease or ingestion of caustic substances

**4. POTENTIAL ADVERSE EFFECTS / COMPLICATIONS**

- (1) The LTS-D airway does not protect against the effects of regurgitation and aspiration.
- (2) High airway pressures may divert gas either to the stomach or to the atmosphere.
- (3) Intubation of the trachea cannot be ruled out as a potential complication of the insertion of the LTS-D airway. After placement, perform standard checks for breath sounds and utilize an appropriate carbon dioxide monitor.

**5. PROCEDURE**

- (1) Inspect all components of the LTS-D for visible damage.
- (2) Select appropriate size LTS-D airway:
  - (a) Size 3: Patients 4-5 ft tall (BVM connector tip is yellow) **(NEW '10)**
  - (b) Size 4: Patients 5-6 ft tall (BVM connector tip is red)
  - (c) Size 5: Patients greater than 6 ft tall (BVM connector tip is purple)
- (3) Test cuffs by injecting the maximum volume of air (by size) and lubricate with water soluble jelly.
  - (a) Size 3: 60mL Air
  - (b) Size 4: 80mL Air
  - (c) Size 5: 90mL Air

**OPTIONAL SUPPLEMENTAL PROGRAM  
AIRWAY MANAGEMENT**

- (4) Maintain cervical immobilization (if indicated) and lift tongue and jaw upward with one hand. Ideal position of the head is in the “sniffing position”; however, the LTS-D airway can be inserted with the head in neutral position.
- (5) Insert LTS-D airway to the indicated depth until the proximal cuff is slightly visible in the posterior pharynx under the base of the tongue; **DO NOT USE EXCESSIVE FORCE.**
- (6) With the free hand, hold the mouth open and make sure that the tongue is not folded back during insertion of the LTS-D airway.
- (7) Inflate cuff. When the airway is properly seated, the patient's teeth should be located within the black lines on the lumen of the LTS-D airway.
- (8) Ventilate and evaluate lung ventilation (breath sounds, absence of gastric sounds, chest rise, end tidal carbon dioxide, oxygen saturation).
- (9) If no lung ventilation, then deflate the cuff, withdraw LTS-D airway 2 cm at a time, re-inflate cuff, and reevaluate ventilation.
- (10) Once effective ventilation is confirmed, continue to monitor oxygen saturation and ventilate to desired end tidal carbon dioxide level.
- (11) If unable to achieve adequate ventilation using LTS-D airway, remove device, reinsert, and attempt again. If unable to ventilate, re-attempt bag valve mask ventilation and consider obstructed airway maneuvers.

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

Medication - Procedure (Continued)			
<b>A. Medications (Continued)</b>		<b>Solo (S)</b>	<b>Team with Nurse (T)</b>
9.	Fibrinolytics/ Thrombolytics		
a.	All types		T
10.	Anti-Coagulants /Anti-Platelets		
a.	All Types	S (adults only) <b>(NEW '10)</b>	
11.	Anti-Emetic		
a.	All types anti-emetic	S	
12.	Antibiotics		
a.	All types of antibiotics	S	
13.	Miscellaneous		
a.	Flumazenil AD (romazicon)		T
b.	Insulin – IV		T
c.	Insulin in TPN	S	
d.	Mannitol (osmitrol)		T
e.	Mg Sulfate (added to mixed drip– eg, with vitamins)	S	
f.	Potassium Chloride (only maintenance infusions; Not bolusing)	S	
g.	Steroids – IV (not initiated )	S	
h.	Total Parenteral Nutrition (TPN)	S	
i.	Tocolytics (including Mag Sulfate)		T
j.	Uterine stimulants (eg, oxytocin)		T
14	Anti-Arrhythmic		
a.	Amiodarone		T
b.	Bretylium (bretylol)		T
c.	Digoxin (lanoxin)		T
d.	Esmolol (brevibloc)		T
e.	Metoprolol (lopressor)		T
f.	Procainamide (pronestyl)		T
g.	Quinidine Sulfate & Gluconate		T
15.	Anti-Convulsants (also see sedatives)		
a.	Barbiturates		T
b.	Phenytoin (dilantin) / Fosphenytoin	S	
c.	Other non-benzodiazepine anti-convulsants		T

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

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



**OPTIONAL SUPPLEMENTAL PROGRAM  
MARYLAND VACCINATION & TESTING PROGRAM  
FOR EMT-P PROVIDERS**

**Y. MARYLAND VACCINATION & TESTING PROGRAM**

Scope of practice for EMT-Paramedic personnel has been expanded to allow select immunization and PPD testing by paramedic personnel. The immunizations that are allowed to be performed include Hepatitis B, Influenza, and PPD. This program is a jurisdictional option requiring the jurisdictional medical director and the jurisdiction to authorize select trained paramedic personnel to perform these functions. There are program requirements which are attached for your review. Please note that you must have a written memorandum of understanding between your EMS service and the local health department before this program can be instituted.

In order to become recognized and authorized to implement the immunization and testing program for EMT-Paramedics, you must complete the application and submit a copy of the health department memorandum of understanding to the Office of the State EMS Medical Director. At that time you will receive a copy of the CD-ROM that has all of the pertinent documents and instructional material, along with a CDC videotape on PPD placement and interpretation. Your jurisdiction will then be recognized as an authorized optional immunization and testing jurisdiction.

When you are implementing this program, we strongly encourage you to advise EMS personnel at risk to seek vaccination where possible.

**REQUIREMENTS:**

- 1) Medical Director: Must have a jurisdictional medical director who is willing to take responsibility for the program.
- 2) Must be under the Infection Control Program for the Jurisdiction.
- 3) Immunization record form with documentation of all pertinent information about vaccination or test, including the patient's primary care practitioner.
- 4) Direct linkage with occupational medicine/employee health and a memorandum of understanding (MOU) with local public health service/department.
- 5) Statewide protocol approved by the EMS Board.
- 6) ALS resuscitation equipment (refer to "Maryland Medical Protocols for EMS Providers") must be available on-site during vaccinations.
- 7) Must use the comprehensive training curriculum developed by MIEMSS Infection Control Committee and becomes an "optional supplemental protocol."
- 8) Physician does not have to be physically present for the administration of vaccinations or tests by the trained paramedic called the Vaccination and Testing Officer (VTO).
- 9) Program instruction must be directed by and have participation by the jurisdictional medical director to select paramedics (EMT-Ps) who will become the VTOs.
- 10) This is not for post-exposure prophylaxis (patient must be seen by occupational medicine/physician for consent and treatment).
- 11) Only Public Safety Personnel (any career or volunteer member of a fire, rescue, or EMS department, company, squad, or auxiliary; any law enforcement

officer; or the State Fire Marshal or sworn member of the State Fire Marshal's office) are eligible to receive immunizations or testing from VTOs.

- 12) Mechanism for meeting FDA storage and refrigeration standards for vaccines and test Maryland Inventory Control Sheet.
- 13) Mechanism for follow-up
  - a) For additional vaccinations for completion of series
  - b) For potential complications of vaccinations or symptoms noted on adverse event form (meeting federal reporting requirements)
  - c) Patient contact phone number for complications (e.g., bad vaccine "lot")
- 14) Must have a standardized informed consent form and standardized vaccine pre-screening questionnaire form.
- 15) Vaccinations allowable are:
  - a) Influenza
  - b) Hepatitis B
- 16) Testing
  - a) PPD Screening (Intradermal)
- 17) Recommend 30-minute observation period (to be determined by the jurisdictional medical director) post-immunization administration with ALS personnel and equipment available.



THE GOVERNOR'S ORIGINAL EXECUTIVE ORDER 01.01.2009.15 HAS BEEN RENEWED BY EXECUTIVE ORDER 01.01.2009.19 AND NOW EXTENDS UNTIL JANUARY 10, 2010. SO LONG AS THAT ORDER AND ANY RENEWAL OR REISSUE THEREOF REMAINS IN EFFECT, 18),19), AND 20) OF THIS PROTOCOL WILL BE IN EFFECT. **(NEW '10)**

- 18) Cardiac Rescue Technicians who have been trained by the EMS Operational Program and credentialed by the Medical Director may vaccinate public safety personnel, health care providers, and members of the general public with H1N1 (Swine) flu vaccine (LAIV and IM injection) after appropriate screening by a Vaccination and Testing Officer, registered nurse, or physician.
- 19) Vaccination and Testing Officers and Cardiac Rescue Technicians are permitted to vaccinate public safety personnel, health care providers, and members of the general public with H1N1 (Swine) flu vaccine (LAIV and IM injection) at points of distribution that have been established or approved by Local Health Departments (e.g., a clinic, occupational health site, a fire house, or other location).
- 20) Screening, administration, tracking, and dosage requirements for H1N1 (Swine) flu vaccine (LAIV and IM injection) shall be provided by the Maryland Department of Health and Mental Hygiene and/or Local Health Departments.



**MARYLAND VACCINATION & TESTING PROGRAM  
FOR EMT-P PROVIDERS  
REFERENCE SHEET**

## **HEPATITIS B VACCINATION**

**Indications:**

Pre-exposure: preventive

**Contraindications:**

History of anaphylactic reaction to baker's yeast

**Adverse effects:**

Not clinically significant

**Precautions:**

- (1) Recipients must read and sign consent form.
- (2) CDC recommends antibody testing 1-2 months after the third dose to determine immunity.

**Dose:** (three total, using a 3 mL syringe with 1" 25 gauge needle)

Initial 1 mL IM (deltoid)

2nd dose 4 weeks after initial; 1 mL IM (deltoid)

3rd dose 5-6 months after 2nd dose; 1 mL IM (deltoid)

## **INFLUENZA VACCINATION**

**Indications:**

- (1) Persons who attend to patients at high risk for complications (e.g., the elderly)
- (2) Persons with chronic medical conditions
- (3) Pregnant women who will be in the second or third trimester of pregnancy during influenza season
- (4) Providers of essential community services

**Contraindications:**

History of anaphylactic hypersensitivity to eggs

**Adverse effects:**

- (1) More common: soreness at the injection site that lasts up to 2 days
- (2) Less common: fever, malaise, myalgia beginning 6-12 hours after vaccination and persisting for 1 to 2 days.

**Precautions:**

- (1) Vaccine should be delayed in the presence of acute febrile illness; administer after symptoms have abated.
- (2) Takes two weeks to develop adequate antibodies against the vaccine virus strain.
- (3) Optimal time for organized vaccination campaigns is usually the period from October through mid-November.

**MARYLAND VACCINATION & TESTING PROGRAM  
FOR EMT-P PROVIDERS  
REFERENCE SHEET**

- (4) Because influenza vaccine contains only noninfectious viruses, it cannot cause influenza.
- (5) Recipients must read and sign consent or refusal form.

**Dose:** (using a 3 mL syringe with 1" 25 gauge needle)  
0.5 - 1 mL IM (deltoid)

**PURIFIED PROTEIN DERIVATIVE (PPD) TEST**

**Indications:**

Yearly administration for healthcare providers

**Contraindications:**

- (1) Previous positive reaction to PPD
- (2) History of TB

**Adverse effects:**

Not clinically significant

**Precautions:**

Recipients must read and sign consent form.

**Procedure:**

- (1) Injection is given intradermally and should be read 48-72 hours post injection.
- (2) Feel the induration with your finger tips
- (3) Measure with approved device in millimeters (mm)
  - a. Less than 5 mm is negative
  - b. Equal to or Greater than 5 mm requires clinical correlation and evaluation by jurisdictional medical director or other appropriate physician

**Note:**

Do not use erythema as margins, measure only the induration.

**Z. NEUROPROTECTIVE INDUCED HYPOTHERMIA (THERAPEUTIC)  
AFTER CARDIAC ARREST - SCENE & INTERFACILITY TRANSFER  
(NEW '10)**

**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. If the transport time is greater than 30 additional minutes to an ED capable of maintaining hypothermia, the hypothermia protocol shall not be initiated.


**Patient Inclusion Criteria:**

- (1) Age 15 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 CO<sub>2</sub> of 40-45mm Hg)
- (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

**Patient Exclusion Criteria:**

- (1) Cardiac Instability
  - a) Refractory or recurrent dysrhythmia
  - b) Inability to maintain SBP at least 90mm Hg (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


**Procedure:**

- (1)  Medical Consult required with potential receiving center to confirm their ability to maintain hypothermic intervention and to approve initiation of neuroprotective induced hypothermic procedure
- (2) Institute cooling as early as possible. Core temperature goal is 33°C.
- (3) Acutely Cooled with Either:
  - a) Rapid IV infusion of ice cold (4°C) LR (allowed to be carried on Supervisor units or ambulance). Give 2 liters for adult IV in single dose over a period of 30 minutes immediately.

## OPTIONAL SUPPLEMENTAL PROGRAM

b) If not able to administer ice cold IV fluids, apply ice / cold packs bilaterally to patient's: neck, axilla, and femoral groins

### PLUS

- (4) Reduce the covering on the patient while maintaining dignity
- (5) If IV Fluid administration completed before arrival at hospital, continue the cooling process by applying ice /cold packs bilaterally to patient's: neck, axilla, and femoral groins.
- (5) If patient begins shivering, administer midazolam
  -  Adult: (Reduce the below IV/IO/IM by 50% for patients 69 years or older.)
    - a) 0.1mg/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.
- (6) Consider turning on vehicle air conditioning to assist with cooling enroute.
- (7) Documents initial GCS and pupillary response
- (8) Report to receiving hospital that can maintain the hypothermic intervention preferentially the Acute Cardiac Intervention Center.
- (9) 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

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