Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
Important Numbers	3			Regional Programs telephone and fax numbers have been updated.
Health Care Facility Codes	5, 14		Calvert Memorial Hospital	CalvertHealth Medical Center
Health Care Facility Codes	6	Code 239	Frederick Memorial Hospital (Base Station, Cardiac Interventional, Perinatal)	Frederick Memorial Hospital (Base Station, Cardiac Interventional, Perinatal, Primary Stroke)
Health Care Facility Codes	6	Code 297	Easton (UMSRH) (Base Station, Primary Stroke)	Easton (UMSRH) (Base Station, Primary Stroke, Cardiac Interventional)
Health Care Facility Codes	7	Code 352	Laurel Regional Hospital	Laurel Regional Hospital (Base Station) (NEW '18)
Health Care Facility Codes	7	Code 360	Southern Chester County Medical Center, PA (pg. 10)	Now known as Jennersville Regional Hospital (moved to page 7)
Health Care Facility Codes	10	Code 360	Southern Chester County Medical Center, PA (pg. 10)	Now known as Jennersville Regional Hospital (moved to page 7)
Maryland Trauma and Specialty Referral Centers	15			Added Shore Medical Center at Easton (UM) to Cardiac Interventional list
General Patient Care	30	4.a)(3)	Patients greater than 13 years of age, refer to the Universal Algorithm for Adult Emergency Cardiac Care for BLS.	Patients 13 years of age or greater, refer to the Universal Algorithm for Adult Emergency Cardiac Care for BLS.
General Patient Care	31	5.b)(2)(e)	Distracting Injury	Added definition of distracting injury.
General Patient Care	35	E. 3.	Added instructions	Providers should obtain and document a contact telephone number for one or more individuals who have details about the patient's medical history so that the physician may obtain and validate additional patient information.
Altered Mental Status: Seizures	43 through 45	3. Treatment		Entire treatment section reformatted. No changes to patient care (except pg. 44, letter k (see below)).
Altered Mental Status: Seizures	44	k	The paramedic may assist patients with the administration of their prescribed benzodiazepine	ALS providers may assist patients with the administration of their prescribed benzodiazepine
Cardiac Emergencies: Cardiac Guidelines	51	Entire protocol		Complete revision
Universal Algorithm for Adult Emergency Cardiac Care	53			Revised to meet current protocol
Cardiac Emergencies: Bradycardia	56 through 58			Added 4. Continue General Patient Care to pg. 56; renumbered algorithms. No changes made to patient care.
Pediatric Bradycardia Algorithm	58	(e)	Medical Consult required for administration of calcium chloride	Medical consultation requirement has been removed. This change also applies to all instances where medical consultation appears for calcium chloride administration in the protocol document, specifically on pages 61, 64, 65, 66, 87, 88, 119, 120, 211, 216, and 231.
Adult Tachycardia Algorithm	61	c) through g)	c) - Consider calcium chloride 500 mg IVP for hypotension induced by diltiazem. If rate does not slow in 15 minutes, administer a second dose of diltiazem (15–25 mg over 2 minutes). Medical consultation required.	c) - Consider calcium chloride 500 mg IVP for hypotension induced by diltiazem. d) - If rate does not slow in 15 minutes, administer a second dose of diltiazem (15–25 mg over 2 minutes). Medical consultation required. Remaining instructions were renumbered.
Cardiac Emergencies: Cardiac Arrest	63	Entire protocol		Numerous revisions
Adult Asystole Algorithm	64		Intubate 0_2 (90%-100%)	Assure Adequate Ventilation

Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
Pediatric Cardiac Arrest Algorithm	65		Begin CPR Attach monitor	Begin CPR Assure Adequate Ventilation Attach monitor
Adult Pulseless Electrical Activity	66		Intubate	Assure Adequate Ventilation
Ventricular Fibrillation Pulseless Ventricular Tachycardia	67		Perform CPR until defibrillator is attached	Perform CPR and assure adequate ventilation
Ventricular Fibrillation Pulseless Ventricular Tachycardia	67		Intubate	Removed
Return of Spontaneous Circulation (ROSC)	68-69			Numerous revisions
Termination of Resuscitation (Medical and Traumatic)	70 through 72	Entire protocol		Numerous revisions, including the algorithm
EMS DNR/MOLST	74 through 77, 80, 83			Removed all references to the EMS/DNR program booklet
Environmental Emergencies: Heat-Related Emergencies	102	2.a)	Heat Cramps: Moist, cool skin temperature, cramps, normal to slightly elevated temperature	Heat Cramps: Moist, cool skin, cramps, normal to slightly elevated temperature
Overdose/Poisoning: Carbon Monoxide/Smoke Inhalation	115-2	o) (2) (d)-(j)	o) (2)	Outline reformatted to o) (2). No changes made to patient care.
Overdose/Poisoning: Ingestion	118-120			Reformatted. Changes in naloxone dosing (see spreadsheet pgs. 3-4)
Excited Delirium Syndrome	127 through 128		Multiple Alerts	In all instances, "benzodiazepines" replaced with "medication."
Excited Delirium Syndrome	128 through 129	3. d)-m)	Multiple lines	Revision of adult and pediatric ALS treatment
Pain Management	131	e)(1)(b)		Removed the word "opioid"
Pain Management	132	(3) (b) (c) (e) and (f)		Ketamine added. IO route of administration added for fentanyl.
Pain Management	133	4. through 6.	Use opioid analgesia with caution in the management of patients with altered mental status.	Reformatted. Transport removed. Removed the word "opioid" from 2nd alert, third paragraph: Use analgesia with caution in the management of patients with altered mental status. Added Continue General Patient Care.
Allergic Reaction	135	f), h), and i)	Greater than 5 years of age: 0.5 mg in 0.5 mL IM	5 years of age of greater: 0.5 mg in 0.5 mL IM
Anaphylaxis	137	d)(1)	0.3 mg IM in the lateral thigh via epinephrine auto-injector or epinephrine (1:1,000) 0.5 mg in 0.5 mL IM	Epinephrine (1:1,000) 0.5 mg in 0.5 mL IM
Asthma/COPD	139	3. j. and k.		Removed the word "OR" between instructions in j) and k)
Asthma/COPD	140	3. u) and v)		Changed the order of instructions by switching verbiage in u) and v). No changes made to patient care.
Sepsis: Adult	148	h)		Reformatted and added letter h). No changes made to patient care.
Stroke: Neurological Emergencies	152	3. b)	Added instructions	Providers should obtain and document a contact telephone number for one or more individuals who have details about the patient's medical history so that the physician may obtain and validate additional patient information.

Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
Stroke: Neurological Emergencies	153	3. j)	Added instructions	Providers should obtain and document a contact telephone number for one or more individuals who have details about the patient's medical history so that the physician may obtain and validate additional patient information.
Stroke: Neurological Emergencies	152 through 155	Algorithm		Algorithm moved to end of protocol
Stroke: Neurological Emergencies	152 through 155	ALERT	Designated Stroke Center	Designated Acute Stroke Ready, Primary, or Comprehensive Stroke Center
Trauma Protocol: Hand/Upper/Lower Extremity Trauma	162	3.d) and 3.i)	Administer opioid per Pain Management Protocol.	Replaced the word "opioid" with "analgesia": Administer analgesia per Pain Management Protocol.
Trauma Protocol: Spinal Protection	167	2. Presentation	"Spinal Protection" (1) Midline spinal pain, tenderness, or deformity (3) Focal neurological deficit	a) "Full Spinal Protection" c)(1)(a) Midline cervical, thoracic, or lumbar spinal pain, tenderness, or deformity c)(1)(c) Focal neurological deficit (sensory or motor) Entire section also reformatted; no other changes to patient care
Trauma Protocol: Spinal Protection Algorithm	171-1			New Algorithm
Trauma Protocol: Trauma Arrest	172 through 173	Entire protocol		Complete revision
Appendices: Glossary	175	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™)	An airway adjunct other than an endotracheal tube that may include the laryngeal tube airway device (e.g., King LTS-D™) or laryngeal mask airway with design to facilitate hospital endotracheal intubation
Procedures, Medical Devices and Medications	182	Intranasal		Changed from OSP to SO for EMR
Procedures, Medical Devices and Medications	182	Alternative Airway Device	EasyTube®	King Airway®
Procedures, Medical Devices and Medications	182		Laryngeal Tube Airway (King LTS-D™)	Laryngeal Mask Airway Device
Procedures, Medical Devices and Medications	183		Monitors	Apnea Monitors Fixed a formatting error. No changes made to patient care.
Procedures, Medical Devices and Medications	184	Calcium Chloride (10% Solution)	CRT-I (MC) PM (MC)	CRT-I (SO) PM (SO)
Procedures, Medical Devices and Medications	184	Naloxone	EMR (OSP)	EMR (SO)
BLS Pharmacology: Naloxone (Narcan) Public Safety	193		Public Safety	Public Safety and EMR

Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
BLS Pharmacology: Naloxone (Narcan) Public Safety	193	g) (1)-(2)	(1) Adult: Administer 2 mg IN. Divide administration of the dose equally between the nares to a maximum of 1 mL per nare. (2) Pediatric: (a) Child 5 years of age to adult: Administer 2 mg IN. Divide administration of the dose equally between the nares to a maximum of 1 mL per nare. (b) Child 28 days of age to 4 years of age: Administer 0.8–1 mg IN. Divide administration of the dose equally between the nares to a maximum of 1 mL per nare.	(1) Adult: Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, OR administer 4 mg/0.1 mL IN in one nare. (2) Pediatric (child aged 28 days to adult): Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, OR administer 4 mg/0.1 mL IN in one nare. This new dosing regimen appears in multiple places throughout the protocols, specifically on pages 46, 47, 116, 117, 118, 119, 123, 124, 374, 375, 376, 377, and 378.
ALS Pharmacology: Dextrose	213 through 214	g) (2) (b)	Patients 28 days or greater up to the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 25% dextrose IV/IO to a maximum of 25 grams. D25W is prepared by mixing one part of D50W with an equal volume of LR.	(b) Patients 28 days up to 4 years - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams. Recheck glucose after first dose. If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W. (i) If unable to start IV and blood glucose is less than 70 mg/dL, administer 0.5 mg glucagon IM/IN. (ii) Medical consult for additional dosing to a maximum of 3 mg IM/IN (c) Patients 5 years up to patient's 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams. Recheck glucose after first dose. If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W. (i) If unable to start IV and blood glucose is less than 70 mg/dL, administer 1 mg glucagon IM/IN. (ii) Medical consult for additional dosing to a maximum of 3 mg IM/IN
ALS Pharmacology: Epinephrine 1:10,000/1:1,000	220	c)		Added new indication: (6) Dopamine replacement indications for epinephrine drip
ALS Pharmacology: Epinephrine 1:10,000/1:1,000	221	g)(1)(a)(i)	Administer 1 mg (1:10,000) IVP every 3–5 minutes	Administer 1 mg (1:10,000) IVP/IO every 3–5 minutes
ALS Pharmacology: Epinephrine 1:10,000/1:1,000	221 to 222	g)		Added new dosing for dopamine replacement.
ALS Pharmacology: Fentanyl	223 through 224		IV/IN/IM	IO route of administration added for fentanyl
ALS Pharmacology: Haloperidol (Haldol)	226	d) (5)		Added: (5) Excited delirium
ALS Pharmacology: Ketamine	227-1 through 227-3			New Addition
ALS Pharmacology: Multiple pages	227-4 through 230			Re-numbered to accommodate Ketamine. No changes made to patient care.
ALS Pharmacology: Midazolam	234	g)(1)(c)		Added medical consult symbol. No changes made to patient care.
ALS Pharmacology: Midazolam	235	(5) Excited Delirium		Complete revision.
ALS Pharmacology: Morphine Sulfate	236	c) Indications		Added: (3) Pulmonary Edema/Congestive Heart Failure (Pediatric Only)

Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
ALS Pharmacology: Morphine Sulfate	237	g) Dosage		Added: (3) Pediatric Pulmonary Edema/CHF (a) 0.1 mg/kg SLOW IVP/IO/IM (1-2 mg/minute). Maximum dose 5 mg.
ALS Pharmacology: Naloxone (Narcan)	238		(1) Adult: Administer 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); repeat as necessary to maintain respiratory activity. (2) Pediatric: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare), up to maximum initial dose of 2 mg; may be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg	(1) Adult: Administer 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); OR administer 4 mg/0.1 mL IN in one nare. Repeat as necessary to maintain respiratory activity. (2) Pediatric: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); OR administer 4 mg/0.1 mL IN in one nare. May be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg This new dosing regimen appears in multiple places throughout the protocols, specifically on pages 46, 47, 116, 117, 118, 120, 123, and 124.
ALS Pharmacology: Multiple pages	239 through 246			Re-numbered to accommodate Ketamine. No changes made to patient care.
ALS Pharmacology: Verapamil	246 to 246-2			New medication for ALS providers
Airway Management: CPAP	252			Removed duplicate title. No changes made to patient care.
Airway Management: EasyTube	253		Latex-Free Dual Lumen Tube (e.g., EasyTube®)	Laryngeal Tube Airway Device (KING LTS-D™) Protocol replaced, including adding of another acceptable size of the device.
Airway Management: Nasotracheal Intubation	256	(3)	When hypovolemia is unlikely, morphine or midazolam, or a combination of both...	When hypovolemia is unlikely and hypotension is not present, morphine/fentanyl or midazolam, or a combination of both…
Airway Management: Needle Decompression Thoracostomy (NDT)	257	Purpose	Needle Decompression Thoracostomy is the 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.	Needle Decompression Thoracostomy is the procedure of introducing a needle/catheter with a minimum length of 3.25 inches and a minimum diameter of 14 gauge (with add-on flutter valve attached) into the pleural space of the chest to provide temporary relief for the patient suffering from a tension pneumothorax.
Airway Management: Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients	265	c) (1) c) (5)		Medical consultation requirement has been removed for midazolam administration in adult and pediatric sections. Pediatric section has been renumbered (no further changes to patient care).
Glucometer Protocol	279	c)(1)(b)	If unable to initiate an IV and blood glucose is less than 70 mg/dL, administer glucagon 1 mL IM/IN.	If unable to initiate an IV and blood glucose is less than 70 mg/dL, administer glucagon 1 mg IM/IN.
Glucometer Protocol	280		Patients 28 days or greater up to the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 25% dextrose IV/IO to a maximum of 25 grams. D25W is prepared by mixing one part of D50W with an equal volume of LR. Recheck glucose after first dose. If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D25W.	Patients 28 days or greater up to the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams. Recheck glucose after first dose. If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W.
Procedures: High Performance CPR	281 through 284-1	Entire protocol		Numerous revisions, including new algorithm.
Procedures: Intraosseous Infusion	285	Title		Fixed formatting in the title. No changes to patient care.

Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
Procedures: Emerging Infectious Disease	320	Title		Fixed formatting in the title. No changes to patient care.
Pilot Protocol: Adult and Pediatric RSI	328, 335, 336	Etomidate dosing	Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia. Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. May repeat 0.15 mg/kg IVP in 2–3 minutes if inadequate sedation.	Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia. Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. If the patient is hypotensive or provider suspects hypovolemia, the initial dose will be 0.15 mg/kg IVP over 30–60 seconds. May repeat 0.15 mg/kg IVP in 2–3 minutes if inadequate sedation.
Pilot Protocol: Adult RSI	328 through 329	f) (5)	Insert an approved alternative airway device (refer Alternative Airway Device Protocol).	Insert an approved alternative airway device (refer to Laryngeal Mask Airway Optional Supplemental Program or Laryngeal Tube Airway Device procedure).
Pilot Protocol: Adult RSI	329	Etomidate dosing for Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients	Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia. Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. May repeat 0.15 mg/kg IVP every 15 minutes to a total of three doses.	Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia. Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. 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 every 15 minutes to a total of three doses.
Pilot Protocol: Adult RSI	330	c) (1) Midazolam		Additional doses require medical consultation.
Pilot Protocol: Pediatric RSI	336 through 338	f) (4)-(5)	(4) If unsuccessful, resume BVM ventilation.	(4) If unsuccessful, resume BVM ventilation for 30 seconds. (5) Insert a laryngeal mask airway designed to facilitate hospital placement of an endotracheal tube (see Laryngeal Mask Airway Optional Supplemental Program).
Pilot Protocol: RSI Pharmacology	340	g) (1)	(1) Adult: 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 10 mg for adult IVP after succinylcholine effects resolve and patient is bucking or combative. May repeat 10 mg for adult IVP every 15 minutes to a total of three doses.	(1) Adult: 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. Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients: 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 every 15 minutes to a total of three doses.
Pilot Program: Tactical EMS	345 through 345-20	Entire protocol		Complete revision and moved from Jurisdictional Optional Protocols
Pilot Protocol: Pelvic Binder Device	348 through 349	Entire protocol	Pilot Protocol	Moved to Optional Supplemental Programs
Pilot Protocol: Transport to Freestanding Emergency Medical Facility at Bulle Rock (Base Station)	348	Entire protocol		New Protocol

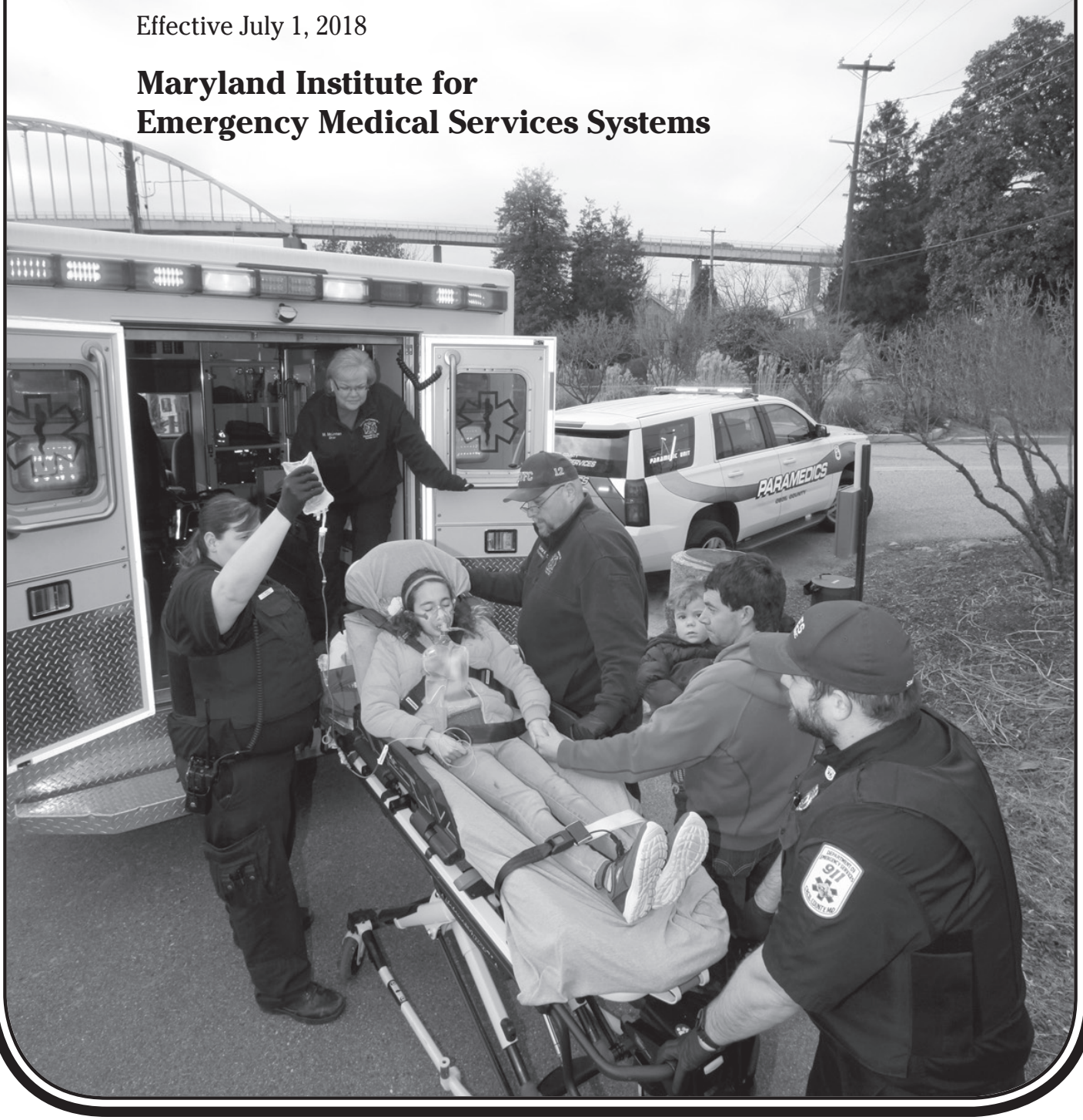
Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
Pilot Protocol: Airway Management: Video Laryngoscopy	353		2. INDICATION Video laryngoscopy and orotracheal intubation is indicated for patients who are 18 years or older. 3. CONTRAINDICATIONS Patients less than 18 years of age.	1. d) Appropriately-sized blade for the patient being intubated (New language) 2. INDICATION Video laryngoscopy and orotracheal intubation is indicated for patients who meet one or more of the following criteria and for whom appropriately-sized equipment is available: 3. CONTRAINDICATIONS Lack of an appropriately-sized laryngoscope blade for the patient being intubated.
Pilot Program: Stabilization Center	364	2. Presentation	...If the patient is not requesting evaluation for an emergency medical condition and substance use is suspected, proceed to the Stabilization Center Inclusion Checklist.	...If the patient is not requesting evaluation for an emergency medical condition and substance use is suspected, including suspected opioid patients who have improved with naloxone, patient must consent to be evaluated and transported to the Stabilization Center. Then the Paramedic must complete the Stabilization Inclusion Checklist.
Pilot Program: Stabilization Center	364			Added language: 5. If all answers are "NO" or medical consultation approves if a "YES" occurs, the patient shall be transported to the Stabilization Center.
Pilot Protocol: Alternative Destination Program	366 through 366-9	Entire protocol		Complete revision.
Pilot Protocol: "Leave Behind" Naloxone Program	366-10	Entire protocol		New Protocol
Optional Supplemental Program: Intranasal Naloxone for Commercial Service BLS Providers	373 through 378	Title	INTRANASAL NALOXONE FOR BLS PROVIDERS	INTRANASAL NALOXONE FOR COMMERCIAL SERVICE BLS PROVIDERS
Optional Supplemental Program: Intranasal Naloxone for Commercial Service BLS Providers	373		July 2014: Naloxone is required for Public Safety EMT and remains Optional Supplemental Program for EMR and BLS Commercial Services (initially implemented September '13). (EMR AND COMMERCIAL EMT)	July 2018: Naloxone is required for Public Safety EMT and EMR (October '17) and remains Optional Supplemental Program for BLS Commercial Services (initially implemented September '13). (COMMERCIAL EMT)
Optional Supplemental Program: Intranasal Naloxone for Commercial Service BLS Providers	378		July 2014: Naloxone is required for Public Safety EMT and remains Optional Supplemental Program for EMR and BLS Commercial Services (initially implemented September '13).	July 2018: Naloxone is required for Public Safety EMT and EMR (October '17) and remains Optional Supplemental Program for BLS Commercial Services (initially implemented September '13).
Optional Supplemental Program: Heparin Infusion for Interfacility Transport	380	7. a)	a) Adult: Administer a maximum of 18 units/kg per hour.	a) Adult: Administer a maximum of 18 units/kg per hour or 2,000 units per hour, whichever is higher.
Optional Supplemental Program: Laryngeal Tube Airway Device (King LTS-D)	381	Entire protocol		Moved to Procedures.

Summary of 2018 Protocol Changes				
PROTOCOL TITLE	**PAGE #**	**LINE #**	**ORIGINAL TEXT**	**NEW TEXT**
Optional Supplemental Program: Laryngeal Mask Airway with Design to Facilitate Hospital Endotracheal Intubation	381	Entire protocol		New Protocol.
Optional Supplemental Program: Specialty Care Paramedic	394	B. 4.	Laryngeal Mask Airway (LMA)	Laryngeal Mask Airway [Removed acronym LMA]
Optional Supplemental Program: Tactical EMS	395 through 411	Entire protocol		Complete revision and moved to Pilot Programs
Optional Supplemental Program: Mechanical CPR	395	Entire protocol		New protocol
Optional Supplemental Program: Pelvic Binder Device	397 through 398	Entire protocol		Moved from Pilot Protocols
Multiple protocols	413 through 417-2			Protocols re-lettered to accommodate Pelvic Binder Device. No changes made to patient care.
Optional Supplemental Program: Wilderness EMS	418 through 442	Entire protocol		Numerous revisions
Optional Supplemental Program: Maryland Vaccination & Testing Program	443			Protocol re-lettered to accommodate Pelvic Binder Device. No changes made to patient care.
Research Protocol: LAMS Stroke Protocol For Baltimore City Fire Department	450-1 through 450-3	Entire protocol		New research protocol
Research Protocol: Pediatric Destination Decision Tree	450-4 through 450-6	Entire protocol		New research protocol

The Maryland
Medical Protocols
for Emergency Medical Services Providers

Effective July 1, 2018

Maryland Institute for
Emergency Medical Services Systems



The complete “Maryland Medical Protocols for
Emergency Medical Services Providers”
is also available on the Internet at
www.MIEMSS.org.
Protocols are occasionally amended during the year.
Please check the MIEMSS website to be sure you have
the most up-to-date version.
The edition date appears on the lower
portion of the page.

April 10, 2018

To All Health Care Providers in the State of Maryland:

Re: 2018 revisions, updates, and additions to *The Maryland Medical Protocols for EMS Providers*

EMS providers will be able to download the full document from the MIEMSS website at www.miemss.org and will be receiving a single copy of the 2018 pocket protocols.

The EMS Board has approved these protocols for implementation on July 1, 2018. Prior to July 1, all EMS providers must complete the Maryland EMS Update: 2018 (visit the Online Training Center) that will highlight the new material.

Some major protocol additions, deletions, and changes have been made this year. The spreadsheet of these changes is for reference only, and the information located in the full protocol book is the official medical reference for EMS providers.

Protocol Changes:

- The use of D10 has been expanded to include all pediatric patients, thus removing the need to make D25.
- Ketamine has been added to the Advanced Life Support formulary, with the primary indication for use being patients experiencing Excited Delirium Syndrome (ExDS). A secondary indication for pain management has also been approved.
- The Spinal Protection Protocol has been enhanced to include an algorithm and refined definitions for indications of when to implement the protocol.
- The consult requirement for calcium chloride has been removed for all indications.
- The EasyTube® has been removed from the airway procedure section and replaced by the King LTS-D™ airway. The King LTS-D has been moved from an Optional Supplemental Protocol to general procedures.
- The management of cardiac arrest patients has been significantly revised for both medical and trauma etiologies. Multiple changes have been made including an increase of time from 15 minutes to 30 minutes before consideration of implementing the Termination of Resuscitation protocol for medical patients.
- The use of naloxone/Narcan as a standing order has been expanded to include the Emergency Medical Responder level of certification. This was approved for emergency implementation on October 1, 2017, to meet the opioid overdose crisis.
- The Pelvic Stabilization Binder Device Pilot Protocol has been changed to an Optional Supplemental Protocol, which removes the reporting requirement for local jurisdictions.
- Freestanding Emergency Medical Facility Acute Stroke Ready Harford pilot protocol for future implementation.

In addition to the above changes, the following changes were approved by the EMS Board on April 10, 2018, and are included in this version of *The Maryland Medical Protocols for EMS Providers.*

- **Epinephrine drip has been approved for use by ALS providers as a replacement for dopamine when it is in short supply, per indications for dopamine (pgs. 220 to 222).**
- **Verapamil (Isoptin) has been has been approved for use by ALS providers as a replacement for diltiazem when it is in short supply (pgs. 246 to 246-1).**
- **The Stabilization Center Pilot Program has been updated to specifically include suspected opioid patients who have improved with naloxone (pg. 364).**
- **A naloxone "leave behind" protocol has been added as a pilot protocol (pg. 366-10).**
- **The Pediatric Destination Decision Tree (PDTree) program has been added as a research protocol (pgs. 450-4 to 450-5).**

Richard L. Alcorta, MD, FACEP
State EMS Medical Director
Acting Co-Executive Director, MIEMSS

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B. IMPORTANT NUMBERS

1.	Commercial Ambulance Licensing and Regulation	Office	**(410) 706-8511**
		Fax	**(410) 706-8552**
2.	Critical Incident Stress Management		**(800) 648-3001**
3.	Office of Licensure and Certification	Office	**(800) 762-7157**
		Fax	**(410) 706-2367**
4.	Regional Programs		
	a) Region I (Allegany and Garrett Counties)	Office	**(301) 895-5934**
		Fax	**(301) 687-0129**
	b) Region II (Washington and Frederick Counties)	Office	**(301) 791-2366**
		Fax	**(301) 791-9231**
	c) Region III (Baltimore City, Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties)	Office	**(410) 706-3996**
		Fax	**(410) 706-8530**
	d) Region IV (Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties)	Office	**(410) 822-1799**
		Fax	**(410) 822-0861**
	e) Region V (Calvert, Charles, Montgomery, Prince George's, and St. Mary's Counties)	Office	**(301) 474-1485**
		Fax	**(301) 513-5941**
5.	State EMS Medical Director	Office	**(410) 706-0880**
		Fax	**(410) 706-0853**
6.	SYSCOM (Administrative)		**(800) 648-3001**
7.	EMRC		
	a) Consult Line (Region I)		**(301) 722-0494**
	b) Consult Line (Region III)		**(800) 492-3805**
	c) Consult Line (Region IV)		**(877) 963-6963**
	d) Consult Line (Region V)		**(877) 840-4245**

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) Gilchrist Center–Towson **(443) 849-8200**

   b) Gilchrist Center Baltimore–Joseph Richey House **(410) 523-2150**

   c) Stella Maris Hospice **(410) 560-9695**

C. HEALTH CARE FACILITY CODES

Code	Health Care Facility Name
345	10th Street Medical Center, Ocean City
346	26th Street Medical Center, Ocean City
379	63rd Street Medical Center, Ocean City
380	75th Street Medical Center, Ocean City
527	Adventist Behavioral Health, Rockville
384	Adventist Healthcare Germantown Emergency
529	Adventist Rehabilitation Hospital, Rockville
492	Alleghany General Hospital, Alleghany, PA
397	Altoona Rehabilitation Hospital, PA
231	Andrew Rader Clinic, VA
221	Anne Arundel Medical Center (Base Station, Cardiac Interventional, Primary Stroke)
550	Annie M. Warner Hospital, PA
381	Atlantic General Hospital (Base Station, Primary Stroke)
590	Baltimore City Public Service Infirmary
222	Baltimore Washington Medical Center (UM) (Base Station, Cardiac Interventional, Primary Stroke)
567	Bashline Memorial Osteopathic Hospital, PA
350	Bayhealth Kent General, DE (Cardiac Interventional)
359	Bayhealth Medical Center, Milford Hospital, DE
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
771	Calvert County Nursing Home Center
266	CalvertHealth Medical Center (Base Station, Primary Stroke) **(NEW '18)**
554	Carlisle Regional Medical Center, PA
219	Carroll Hospital Center (Base Station, Cardiac Interventional, Primary Stroke)
276	Chambersburg Hospital, PA
291	Charles Regional (UM)
284	Charlestown Area Medical Center, WV
241	Chemtrec Chemical Manufacturers Association Chemical Transportation Emergency Center, DC
296	Chestertown (UMSRH) (Base Station)
243	Chestnut Lodge Hospital
225	Children's Hospital and Center for Reconstructive Surgery, Baltimore

Code	Health Care Facility Name
756	Children's Hospital of Philadelphia, PA
317	Children's National Health System, DC (Neonatal, Pediatric Base Station, Pediatric Burn, Pediatric Trauma)
304	Christiana Hospital (CCHS), DE (Cardiac Interventional)
341	City Hospital, Martinsburg, WV
757	Cooper Trauma Center, NJ
293	Deer's Head Hospital Center
256	DeWitt Army Hospital, VA
342	District of Columbia General Hospital, DC (Neonatal)
329	Doctor's Community Hospital (Base Station, Primary Stroke)
257	Dominion Hospital, VA
294	Dorchester (UMSRH)
310	Dover U.S. Air Force Clinic, DE
491	Eastern Neurological Rehabilitation Hospital
331	Eastern Shore State Hospital
297	Easton (UMSRH) (Base Station, Primary Stroke, Cardiac Interventional) **(NEW '18)**
258	Finan Center
279	Fort Detrick Medical Center
522	Fort Washington Hospital
203	Franklin Square (MedStar) (Base Station, Cardiac Interventional, Primary Stroke)
239	Frederick Memorial Hospital (Base Station, Cardiac Interventional, Perinatal, Primary Stroke) **(NEW '18)**
286	Fulton County Medical Center, PA
322	Garrett Regional Medical Center (WVU) (Base Station)
580	Geisinger Medical Center, PA
335	George Washington University Hospital, DC
337	Georgetown University (MedStar), DC
240	Gettysburg Hospital, PA
759	Gladys Spellman Specialty Hospital and Nursing Center
226	Good Samaritan Hospital (MedStar) (Base Station, Primary Stroke)
559	Grant Memorial Hospital, WV
217	Greater Baltimore Medical Center (Base Station, Primary Stroke, Neonatal)
316	Greater Southeast Community Hospital, DC
348	Groupe Memorial Hospital
363	Hadley Memorial Hospital, DC
560	Hagerstown State Hospital
561	Hampshire Memorial Hospital, WV
242	Hanover Hospital, PA
211	Harbor Hospital (MedStar) (Base Station, Primary Stroke)
220	Harford Memorial Hospital (UMUCH) (Base Station, Primary Stroke)

Code	Health Care Facility Name
562	Harryon State Hospital
399	HealthSouth Chesapeake Rehabilitation Center
490	HealthSouth Rehabilitation Hospital, Altoona, PA
398	HealthSouth Rehabilitation Hospital, Mechanicsburg , PA
267	Highland State Health Facility Psychiatric Unit
444	Holy Cross Germantown Hospital
244	Holy Cross Hospital (Base Station, Cardiac Interventional, Primary Stroke)
450	Hospice of Baltimore, Gilchrist Center, Towson
223	Howard County General Hospital (JHM) (Base Station, Cardiac Interventional, Primary Stroke)
270	Howard University Hospital, DC
268	HSC Pediatric Center, 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
360	Jennersville Regional Hospital **(NEW ’18)**
201	Johns Hopkins Bayview (Adult Burn, Adult Trauma, Base Station, Cardiac Interventional, Neonatal, Perinatal, Comprehensive Stroke)
766	Johns Hopkins Bayview Medical Center Transitional Care Unit
761	Johns Hopkins Comprehensive Geriatric Center
204	Johns Hopkins Hospital Adult (Adult Trauma, Base Station, Cardiac Intervention, Eye Trauma, Comprehensive Stroke)
706	Johns Hopkins Hospital Inpatient Rehabilitation Center
704	Johns Hopkins Pediatric (Pediatric Base Station, Pediatric Burn, Pediatric Trauma)
451	Joseph Richey Hospice - Joseph Richey House - Baltimore (Gilchrist Hospice Care)
461	J.W. Ruby Memorial Hospital, Morgantown, WV
274	Kennedy-Krieger Institute
277	Keswick Multi-Care Center
262	Kimbrough Ambulatory Care Center, Fort Meade
563	King’s Daughters Hospital, WV
259	Kirk U.S. Army Health Clinic, Aberdeen
403	Lancaster General Hospital, PA
564	Lancaster Osteopathic Health Foundation, PA
352	Laurel Regional Hospital (Base Station) **(NEW ’18)**
773	Laurel Regional Hospital–Rehabilitation
565	Leesburg Hospital, VA

Code	Health Care Facility Name
278	Levindale Hebrew Geriatric Center and Hospital
205	Liberty Medical Center Psychiatric Center
255	Lincoln Memorial Hospital
354	Malcolm Grow U.S. Air Force Medical Center
280	Mary Washington Hospital, VA
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 Veterans Administration Medical Center, VA
774	Medlink Hospital of Capitol Hill, DC
327	MedStar Washington Hospital Center, DC (Adult Trauma, Burn, Cardiac Interventional)
404	Memorial Hospital, PA
207	Mercy Medical Center (Base Station, Neonatal, Perinatal, Primary Stroke)
389	Meritus Medical Center (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke)
799	Meritus Medical Center, Comprehensive Inpatient Rehabilitation Services
499	Meritus Medical Center, Psychiatric Unit
798	Meritus Medical Center, Skilled Nursing Facility
206	Midtown (UM) (Base Station, Primary Stroke)
271	Monongalia General Hospital, WV
228	Montebello Center - Baltimore
264	Montgomery Medical Center (MedStar) (Base Station, Primary Stroke)
292	Mount Washington Pediatric Hospital
400	Myersdale Medical Center, PA
351	Nanticoke Memorial Hospital, DE (Cardiac Interventional)
295	National Capital Poison Center, Washington, DC
334	National Hospital for Orthopedics and Rehabilitation, VA
308	National Institute of Mental Health
356	National Institutes of Health Clinical Center
309	National Rehabilitation (MedStar) at Irving Street, Washington, DC
751	Nemours/Alfred I. DuPont Hospital for Children
307	Newark Emergency Center, Newark, DE
568	Newark Hospital, NJ
762	Newmedico Rehabilitation
753	Northampton-Accomac Memorial Hospital
313	Northeast Georgetown Medical Center
315	Northern Virginia Doctor's Hospital, VA
218	Northwest Hospital Center (Base Station)

Code	Health Care Facility Name
344	Novant Health Prince William Medical Center, VA
408	Peninsula Regional Medical Center (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke)
419	Penn State Children's Hospital, Hershey, PA
301	Penn State Milton Hershey Medical Center, PA
318	Perkins State Hospital
569	Pittsburgh Institute for Rehabilitation
362	Pocomoke City Medical Center
361	Pocomoke Family Health Center
338	Police and Fire Clinic, DC
325	Potomac Hospital, VA
401	Potomac Valley Hospital, WV
232	Prince George's Hospital Center (UM) (Adult Trauma, Cardiac Interventional, Base Station, Neonatal, Primary Stroke)
288	Providence Hospital, DC
378	Psychiatric Institute of Washington, DC
364	Psychiatric Institute of Montgomery County
634	R Adams Cowley Shock Trauma Center (UM) (Adult Trauma, Base Station, Hyperbaric, Neurotrauma)
570	Reading Medical Center, PA
227	Rehabilitation and Orthopaedic Institute (UM)
571	Riverside Hospital, DE
311	Riverside Hospital, VA
572	Sacred Heart Hospital, PA
573	Saint Agnes Burn Center, PA
212	Saint Agnes Hospital (Base Station, Cardiac Interventional, Neonatal, Perinatal, Primary Stroke)
366	Saint Elizabeth's Hospital, DC
303	Saint Francis Hospital, WV
460	Saint Francis Healthcare, Wilmington, DE
213	Saint Joseph Medical Center (UM) (Base Station, Cardiac Interventional, Primary Stroke)
405	Saint Joseph Hospital, PA
367	Saint Luke Institute
333	Saint Mary's Hospital (MedStar) (Base Station, Primary Stroke)
455	Salisbury Genesis Center
582	Select Specialty Hospital, Laurel Highlands, PA
265	Shady Grove Adventist Hospital (Base Station, Cardiac Interventional, Primary Stroke)
368	Sheppard and Enoch Pratt Hospital
387	Shore Emergency Center at Queenstown (UMSRH) (Base Station)
324	Sibley Memorial Hospital (JHM), DC
750	Sinai Head Injury Rehabilitation Hospital

Code	Health Care Facility Name
210	Sinai Hospital of Baltimore (Adult Trauma, Base Station, Cardiac Interventional, Neonatal, Perinatal, Primary Stroke)
770	Sinai Rehabilitation Hospital
772	Solomon's Nursing Center
343	Southern Maryland Hospital (MedStar) (Base Station, Cardiac Interventional, Primary Stroke)
369	Spring Grove State Hospital
406	Springfield State Hospital
370	Springwood Psychiatric Institute, VA
521	State Post Mortem Examiner's (Morgue)
452	Stella Maris Hospice, Dulaney Valley Road, Timonium
453	Stella Maris Hospice at Mercy Medical Center, Baltimore
249	Suburban Hospital (JHM) (Adult Trauma, Base Station, Cardiac Interventional, Primary Stroke)
371	Tawes-Bland Bryant Nursing Center
574	Taylor Hospital, WV
312	Taylor Manor Hospital
372	TB Clinic, Baltimore City Health Department
373	Tidewater Memorial Hospital, VA
254	University Specialty Hospital (formerly Deaton Hospital and Medical Center of Christ Lutheran Church)
374	U.S. Naval Medical Clinic, Annapolis
576	U.S. Public Health Services Hospital, Baltimore
375	U.S. Soldier's and Airmen's Home, DC
298	Union Hospital of Cecil County (Base Station)
214	Union Memorial Hospital (MedStar) (Base Station, Cardiac Interventional, Hand/Upper Extremity, Primary Stroke)
215	University of Maryland Medical Center (Base Station, Cardiac Interventional, Neonatal, Perinatal, Comprehensive Stroke)
575	University of Pennsylvania Hospital
551	University of Pittsburgh Medical Center Bedford Memorial, PA
224	Upper Chesapeake Medical Center (UMUCH) (Base Station, Cardiac Interventional, Primary Stroke)
407	Upper Shore Mental Health Center
246	Veterans Administration Medical Center, Baltimore
306	Veterans Administration Medical Center, Ellsmere, DE
376	Veterans Administration Medical Center, DC
275	Veterans Administration Medical Center, Martinsburg, VA
357	Veterans Administration Medical Center, Perry Point
577	Veterans Administration Medical Center, Wilmington, DE
233	Virginia Hospital Center, VA
238	Walter P. Carter Center

D. MARYLAND TRAUMA AND SPECIALTY REFERRAL CENTERS

Trauma Centers (Adult)

Primary Adult Resource Center

- R Adams Cowley Shock Trauma Center (UM), Baltimore

Level I Trauma Center

- The Johns Hopkins Hospital Adult Trauma Center, Baltimore

Level II Trauma Centers

- Johns Hopkins Bayview Medical Center, Baltimore
- Prince George's Hospital Center (UM), Cheverly
- Sinai Hospital
- Suburban Hospital (JHM), Bethesda

Level III Trauma Centers

- Meritus Medical Center, Hagerstown
- Peninsula Regional Medical Center, Salisbury
- Western Maryland Regional Medical Center, Cumberland

Out-of-State Centers

- Christiana Care Health System, Wilmington, DE
- MedStar Washington Hospital Center, Washington, DC

Specialty Referral Centers

Eye Trauma

- Wilmer Eye Institute/The Johns Hopkins Hospital, Baltimore

Hand/Upper Extremity Trauma

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

Hyperbaric Medicine

- Center for Hyperbaric Medicine/R Adams Cowley Shock Trauma Center (UM), Baltimore

Neurotrauma (Head and Spinal Cord Injuries)

- Neurotrauma Center/R Adams Cowley Shock Trauma Center (UM), Baltimore

Pediatric Trauma

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

Burns

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

Specialty Referral Centers

Perinatal Referral Centers

- Anne Arundel Medical Center, Annapolis
- Franklin Square Medical Center (MedStar), Baltimore
- Frederick Memorial Hospital, Frederick
- Greater Baltimore Medical Center, Towson
- Holy Cross Hospital, Silver Spring
- Howard County General Hospital (JHM), Columbia
- Johns Hopkins Bayview Medical Center, Baltimore
- Mercy Medical Center, Baltimore
- Prince George's Hospital Center (UM), Cheverly
- Saint Agnes Hospital, Baltimore
- Saint Joseph Medical Center (UM), Baltimore
- Shady Grove Adventist Hospital, Gaithersburg
- Sinai Hospital of Baltimore
- The Johns Hopkins Hospital, Baltimore
- University of Maryland Medical Center, Baltimore

Primary Stroke

- Anne Arundel Medical Center, Annapolis
- Atlantic General Hospital, Berlin
- Baltimore Washington Medical Center (UM), Glen Burnie
- CalvertHealth Medical Center, Prince Frederick **(NEW '18)**
- Carroll Hospital Center, Westminster
- Charles Regional Medical Center (UM), La Plata
- Doctor's Community Hospital, Lanham
- Franklin Square Medical Center (MedStar), Baltimore
- Frederick Memorial Hospital, Frederick
- Good Samaritan Hospital (MedStar), Baltimore
- Greater Baltimore Medical Center, Baltimore
- Harbor Hospital (MedStar), Baltimore
- Harford Memorial Hospital (UMUCH), Havre De Grace
- Holy Cross Hospital, Silver Spring
- Howard County General Hospital (JHM), Columbia
- Mercy Medical Center, Baltimore
- Meritus Medical Center, Hagerstown
- Midtown Campus (UM), Baltimore
- Montgomery Medical Center (MedStar), Olney
- Northwest Hospital, Baltimore
- Peninsula Regional Medical Center, Salisbury
- Prince George's Hospital Center (UM), Cheverly
- Saint Agnes Hospital, Baltimore
- Saint Joseph Medical Center (UM), Baltimore
- Saint Mary's Hospital (MedStar), Leonardtown
- Shady Grove Adventist Hospital, Rockville
- Shore Medical Center at Easton (UMSRH)

Primary Stroke (Continued)

- Sinai Hospital of Baltimore
- Southern Maryland Hospital (MedStar), Clinton
- Suburban Hospital (JHM), Bethesda
- Union Hospital of Cecil County, Elkton
- Union Memorial Hospital (MedStar), Baltimore
- Upper Chesapeake Medical Center (UMUCH), Bel Air
- Washington Adventist Hospital, Takoma Park
- Western Maryland Regional Medical Center, Cumberland

Comprehensive Stroke

- Johns Hopkins Bayview Medical Center, Baltimore
- The Johns Hopkins Hospital, Baltimore
- University of Maryland Medical Center, Baltimore

Cardiac Interventional

- Anne Arundel Medical Center, Annapolis
- Baltimore Washington Medical Center (UM), Glen Burnie
- Bayhealth Kent General, Dover, DE
- Carroll Hospital Center, Westminster
- Christiana Care Health System, Newark, DE
- Franklin Square Medical Center (MedStar), Baltimore
- Frederick Memorial Hospital, Frederick
- Holy Cross Hospital, Silver Spring
- Howard County General Hospital (JHM), Columbia
- Johns Hopkins Bayview Medical Center, Baltimore
- MedStar Washington Hospital Center, Washington, DC
- Meritus Medical Center, Hagerstown
- Nanticoke Memorial Hospital, Seaford, DE
- Peninsula Regional Medical Center, Salisbury
- Prince George's Hospital Center (UM), Cheverly
- Saint Agnes Hospital, Baltimore
- Saint Joseph Medical Center (UM), Baltimore
- Shady Grove Adventist Hospital, Rockville
- Shore Medical Center at Easton (UM) **(NEW '18)**
- Sinai Hospital of Baltimore
- Southern Maryland Hospital (MedStar), Clinton
- Suburban Hospital (JHM), Bethesda
- The Johns Hopkins Hospital, Baltimore
- Union Memorial Hospital (MedStar), Baltimore
- University of Maryland Medical Center, Baltimore
- Upper Chesapeake Medical Center (UMUCH), Bel Air
- Washington Adventist Hospital, Takoma Park
- Western Maryland Regional Medical Center, Cumberland

Maryland Sexual Assault Forensic Examination (SAFE) Hospitals
SAFE hospital programs recognized by the Maryland Coalition Against Sexual Assault (MCASA)

- Anne Arundel Medical Center (Adult)
- Atlantic General Hospital (Pediatric and Adult)
- Baltimore Washington Medical Center (UM) (Pediatric and Adult)
- Calvert Memorial Hospital (Adult)
- Carroll Hospital Center (Pediatric and Adult)
- Charles Regional Medical Center (UM) (Pediatric and Adult)
- Chestertown Medical Center (UMSRH) (Adult)
- Dorchester Medical Center (UMSRH) (Pediatric and Adult)
- Easton Medical Center (UMSRH) (Pediatric and Adult)
- Franklin Square Medical Center (MedStar) (Pediatric)
- Frederick Memorial Hospital (Pediatric and Adult)
- Garrett Regional Medical Center (WVU) (Pediatric and Adult)
- Greater Baltimore Medical Center (Adult)
- Harford Memorial Hospital (UMUCH) (Pediatric and Adult)
- Howard County General Hospital (JHM) (Pediatric and Adult)
- Mercy Medical Center (Adult)
- Meritus Medical Center (Pediatric and Adult)
- Peninsula Regional Medical Center (Pediatric and Adult)
- Prince George's Hospital Center (UM) (Pediatric and Adult)
- Saint Mary's Hospital (MedStar) (Pediatric and Adult)
- Shady Grove Adventist Hospital (Pediatric and Adult)
- Union Hospital of Cecil County (Adult)
- University of Maryland Medical Center (Pediatric)
- Western Maryland Regional Medical Center (Pediatric and Adult)

Percent O_2 Saturation	Ranges	General Patient Care
94–100%	Normal	Give oxygen as necessary
91–93%	Mild Hypoxia	Give oxygen as necessary
86–90%	Moderate Hypoxia	Give 100% oxygen Assisting Ventilations if necessary
less than or equal to 85%	Severe Hypoxia	Give 100% oxygen Assist Ventilations If indicated, Intubate
ALERT INACCURATE OR MISLEADING SpO_2 READINGS MAY OCCUR IN THE FOLLOWING PATIENTS: HYPOTHERMIC, HYPOPERFUSION (SHOCK), CO POISONING, HEMOGLOBIN ABNORMALITY, ANEMIA, AND VASOCONSTRICTION.		

(3) If available, utilize $EtCO_2$ waveform monitoring in intubated patients (required on all ALS transport units for advanced airway management since 2015).
(4) Consider carbon monoxide measurement, if available.

b) Hyperventilate the head-injured patient only if signs/symptoms of herniation are present, including posturing, loss of pupillary light response, dilation of one or both pupils, vomiting, hypertension, bradycardia, and/or irregular respirations.
(1) If hyperventilating, use the following rates
Adult (including adolescent 13 years of age or older): 20 breaths per minute
Child (1-12 years of age): 30 breaths per minute
Infant (less than 1 year of age): 35 breaths per minute
(2) If hyperventilating, use $EtCO_2$ monitoring if available.

ALERT NEVER WITHHOLD OXYGEN FROM A PATIENT IN RESPIRATORY DISTRESS!

DEVICE	FLOW RATE	CONCENTRATION
Nasal Cannula	2–6 lpm	24–44%
Venturi Mask	Variable	24–60%
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

ALERT ONCE CONFIRMED PULSELESS, HIGH-QUALITY CONTINUOUS CPR WITH FREQUENT PROVIDER ROTATION IS AN ESSENTIAL COMPONENT IN THE SUCCESSFUL RESUSCITATION OF THE ARRESTED PATIENT. THIS MAY BE ACCOMPLISHED THROUGH MANUAL OR MECHANICAL MEANS, AS APPROPRIATE, IN ADULTS. MECHANICAL METHODS OF COMPRESSION ARE NOT INDICATED FOR INFANTS OR CHILDREN WHO HAVE NOT YET REACHED THEIR 13TH BIRTHDAY.

PERFORM CPR WHILE PREPARING FOR RHYTHM ANALYSIS AND DEFIBRILLATION.

a) Assess pulse.
   (1) Patients within the first hour after delivery, refer to Newly Born Protocol.
   (2) Patients from one hour after birth up to those who have not reached their 13th birthday, refer to the Universal Algorithm for Pediatric Emergency Cardiac Care for BLS.
   (3) Patients 13 years of age or greater, refer to the Universal Algorithm for Adult Emergency Cardiac Care for BLS.

High Quality CPR Reference Chart for All Ages

Component	Adults and Adolescents	Children (Age 1 Year to Puberty)	Infants (Age Less Than 1 Year, Excluding Newborns)
Compression-ventilation ratio without advanced airway	***1 or 2 rescuers*** 30:2	***1 rescuer*** 30:2 ***2 or more rescuers*** 15:2	
Compression-ventilation ratio WITH advanced airway	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)		
Compression rate	100-120/min		
Compression depth	At least 2 inches (5 cm) Compression depth should be no more than 2.4 inches (6 cm)	At least one-third anterior-posterior diameter of chest About 2 inches (5 cm)	At least one-third anterior-posterior diameter of chest About 1½ inches (4 cm)
Hand placement	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)	***1 rescuer*** 2 fingers in the center of the chest, just below the nipple line ***2 or more rescuers*** 2 thumb-encircling hands in the center of the chest, just below the nipple line

b) Assess for and manage profuse bleeding.
c) Assess skin color, temperature, and capillary refill.

5. Disability
   a) Perform Mini-Neurologic Assessment (Pulse/Motor/Sensory).
   b) Spinal protection
      (1) The provider shall determine the appropriate method to use in spinal protection of the patient. Infant or child car seats may NOT be used as a spinal immobilization device for the pediatric patient.
      (2) Patients who have a blunt trauma with a high-energy mechanism of injury that has potential to cause spinal cord injury or vertebral instability ***and*** one or more the following should receive spinal protection.
         (a) Midline spinal pain, tenderness, or deformity
         (b) Signs and symptoms of new paraplegia or quadriplegia
         (c) Focal neurological deficit
         (d) Altered mental status or disorientation
         (e) Distracting injury: Any injury (e.g., fracture, chest, or abdominal trauma) associated with significant discomfort that could potentially distract from a patient's ability to accurately discern or define spinal column pain or tenderness.

In addition to the above indicators for adults, the below apply to children who have not yet reached their 15th birthday.
         (f) Neck pain or torticollis
         (g) High impact diving incident or high risk motor vehicle crash (head on collision, rollover, ejected from the vehicle, death in the same crash, or speed greater than 55 mph)
         (h) Substantial torso injury
         (i) Conditions predisposing to spine injury
      (3) If NO to all of the above, transport as appropriate.

IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, APPLY SPINAL PROTECTION PROTOCOL.

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.

8. Normal Vital Signs Chart

AGE	ESTIMATED WEIGHT	HEART RATE	RESPIRATORY RATE	SYSTOLIC B/P
Premature	Less than 3 kg	160	Greater than 40	60
Newborn	3.5 kg	130	40	70
3 mo.	6 kg	130	30	90
6 mo.	8 kg	130	30	90
1 yr.	10 kg	120	26	90
2 yrs.	12 kg	115	26	90
3 yrs.	15 kg	110	24	90
4 yrs.	17 kg	100	24	90
6 yrs.	20 kg	100	20	95
8 yrs.	25 kg	90	20	95
10 yrs.	35 kg	85	20	100
12 yrs.	40 kg	85	20	100
14 yrs.	50 kg	80	18	110
ADULT	Greater than 50 kg	80	18	120

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/MOLST, or jurisdictional form).

3. Providers should obtain and document a contact telephone number for one or more individuals who have details about the patient's medical history so that the physician may obtain and validate additional patient information. **(NEW '18)**

4.  Obtain an EKG when appropriate.

ALL HEALTH CARE PROVIDERS ARE OBLIGATED BY LAW TO REPORT CASES OF SUSPECTED CHILD OR VULNERABLE ADULT ABUSE AND/OR NEGLECT TO EITHER THE LOCAL POLICE OR ADULT/CHILD PROTECTIVE SERVICE AGENCIES. DO NOT INITIATE REPORT IN FRONT OF THE PATIENT, PARENT, OR CAREGIVER (MD CODE, FAMILY LAW, § 5-704). UNDER MARYLAND LAW, EMS PROVIDERS ARE PROTECTED FROM LIABILITY IF THEY MAKE A REPORT OF CHILD/VULNERABLE ADULT ABUSE AND NEGLECT IN GOOD FAITH (COURTS AND JUDICIAL PROCEEDINGS ARTICLE § 5-620).

F. TREATMENT PROTOCOLS

1. Refer to **ALL** appropriate protocols.

2. Patients who have had an impaled conducted electrical weapon used on them will be transported to the nearest appropriate facility without dart removal (exception: Tactical EMS). ANY conducted electrical weapon dart impalement to the head, neck, hands, feet, or genitalia must be stabilized in place and evaluated by a physician. An assessment must be conducted to determine if the patient meets Excited Delirium Syndrome.

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 fast-acting bronchodilator 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 reestablish 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., hydrocortisone (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.

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

4. For pediatric patients
   a) Pediatric section of the treatment protocol will be used for children who have **not** reached their 15th birthday (trauma) or their 18th birthday (medical), except as otherwise stated in the treatment protocol.
   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.
      Destination consideration:
      For those patients who are 18 years of age or older who receive specialized care at a pediatric facility, consider medical consultation with a Pediatric Base Station for patient destination.
   d) Infants and children must be properly restrained prior to and during transport.
   e) When appropriate, family members should remain with pediatric patients.

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.

ALERT 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 from further injury.
      (3) Consider underlying cause of seizure.
   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.

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   c) Use glucometer and treat accordingly.
   d) Consider midazolam.
      (1) If patient has no IV or IO in place or IV/IO is not available: Administer midazolam 5 mg IN or IM.
      (2) If IV/IO is already in place: 0.1 mg/kg in 2 mg increments SLOW IVP/IO over 1–2 minutes per increment with maximum single dose 5 mg.

ALERT REDUCE BY 50% FOR PATIENTS 69 YEARS OR OLDER.

      (3) Additional doses up to a maximum total dose of 10 mg require medical consultation for all providers.
      (4) If patient seizures are refractory to treatment, consider IO administration of midazolam.
      (5) If midazolam is not available, consider diazepam in 2.5 mg increments SLOW IVP/IM. Maximum total dose 10 mg. If patient is in status, consider IO administration of diazepam.
         (a) IM administration requires all providers to obtain medical consultation. If suspected severe nerve agent exposure, providers may administer midazolam 5 mg IM or diazepam (CANA) without medical consultation.
      (6) Establish IV/IO access with LR.
      (7) If patient is pregnant, actively seizing, consider magnesium sulfate 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of approved diluent).
         (a) If seizures persist, consult for second dose of magnesium sulfate.

B. ALTERED MENTAL STATUS: SEIZURES (Continued)

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

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

e) If the patient is still seizing:
   (1) DO NOT RESTRAIN.
   (2) Protect from further injury.
   (3) Consider underlying cause of seizure.
f) 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.

g) Use glucometer and treat accordingly.
h) ALS providers may assist patients with the administration of their prescribed benzodiazepine. **(NEW ’18)**
i) Consider midazolam for seizures lasting greater than 10 minutes.
   (1) If patient has no IV or IO in place or IV/IO is not available: Administer midazolam 0.2 mg/kg IN or IM. Maximum total dose 5 mg.
   (2) If IV or IO is already in place: Administer midazolam 0.1 mg/kg in 2 mg increments SLOW IVP over 1–2 minutes. Maximum total dose 5 mg.

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

   (3) Additional doses of midazolam up to a maximum total dose of 5 mg require medical consultation for all providers.
   (4) If patient’s seizures are refractory to treatment, consider IO administration of midazolam.
   (5) If midazolam is not available, consider diazepam for seizures lasting greater than 10 minutes (paramedic may perform without consult for patients with active seizures).
      (a) Up to 0.2 mg/kg diazepam rectal; maximum total dose 10 mg.
      OR
      0.1 mg/kg in 2.5 mg increments SLOW IVP/IO/IM; maximum total dose 5 mg.

B. ALTERED MENTAL STATUS: SEIZURES (Continued)

(b)  IM requires all providers to obtain medical consultation. If suspected severe nerve agent exposure, providers may administer midazolam as above or diazepam (CANA) without medical consultation.

(6) Establish IV/IO access with LR.

(7) If patient is pregnant, actively seizing, consider magnesium sulfate 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of approved diluent).

(8) Administer fluid bolus, if appropriate, 20 mL/kg of LR IV/IO.

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.

   c) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

   d) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. Repeat as necessary to maintain respiratory activity. **(NEW ’18)**

   e) Establish IV access with LR.
   Administer fluid bolus, if appropriate.
   20 mL/kg of LR IV

   f) Titrate to a systolic pressure of 100 mmHg.

   g) Consider obtaining blood sample using closed system.

   h) Use glucometer and treat accordingly.

   i) Consider an additional dose of naloxone.

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

C. ALTERED MENTAL STATUS: UNRESPONSIVE PERSON (Continued)

k) Obtain pulse oximetry if available.

l) Administer glucose paste (10–15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.

m) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

n) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. May be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg. **(NEW '18)**

o) Consider repeating naloxone.

p) Establish IV/IO access with LR.

(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 (birth to 28 days), children with congenital heart disease, chronic lung disease, or chronic renal failure.

(2) Consider obtaining blood sample using closed system.

q) Use glucometer and treat accordingly.

r) 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.

D. APPARENT LIFE-THREATENING EVENT (ALTE)

1. Initiate General Patient Care.

2. Presentation
   An episode in an infant or child less than 2 years old that is frightening to the observer and is characterized by some combination of the following:
   a) Apnea (central or obstructive)
   b) Skin color change: cyanosis, erythema (redness), pallor, plethora (fluid overload)
   c) Marked change in muscle tone
   d) Choking or gagging not associated with feeding or a witnessed foreign body aspiration

MOST PATIENTS WILL APPEAR STABLE AND EXHIBIT A NORMAL PHYSICAL EXAM UPON ASSESSMENT BY RESPONDING FIELD PERSONNEL. HOWEVER, THIS EPISODE MAY BE THE SIGN OF UNDERLYING SERIOUS ILLNESS OR INJURY. FURTHER EVALUATION BY MEDICAL STAFF IS REQUIRED AND IT IS ESSENTIAL TO TRANSPORT ALL PATIENTS WHO EXPERIENCED ALTE.

3. Treatment
   a) Perform an initial assessment utilizing the Pediatric Assessment Triangle.
   b) Obtain a description of the event including nature, duration, and severity.
   c) Obtain a medical history with emphasis on the following conditions:
      (1) Known chronic diseases
      (2) Evidence of seizure activity
      (3) Current or recent infections
      (4) Gastroesophageal reflux
      (5) Recent trauma
      (6) Medications (current or recent)
   d) Apply oxygen.
   e) Be prepared to assist with ventilation if this type of episode occurs again during transport.
   f) Assess environment for possible causes.

   g) Place patient on cardiac monitor.
   h) Consider establishing IV/IO access with LR.

IF THE PARENT OR GUARDIAN REFUSES MEDICAL CARE OR TRANSPORT, PROVIDER SHALL CONTACT A **PEDIATRIC BASE STATION** PHYSICIAN.

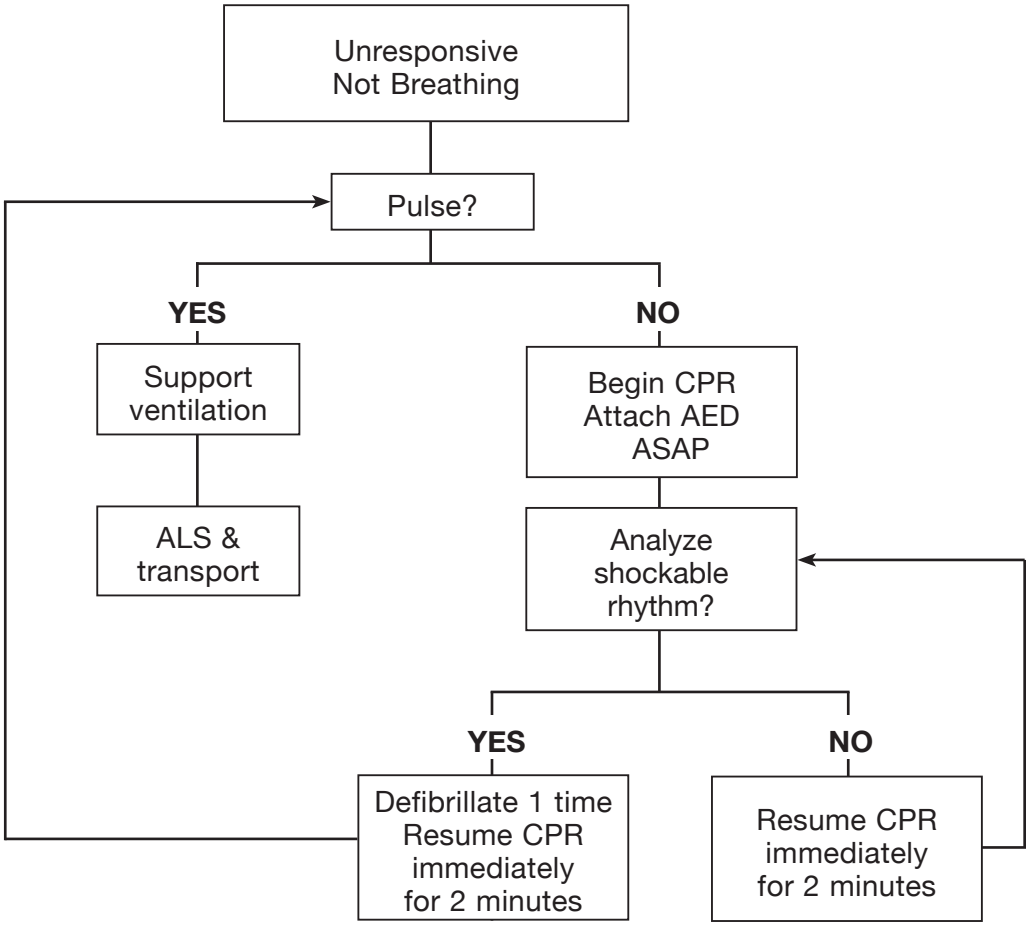
4. Continue General Patient Care.

F. CARDIAC EMERGENCIES: NON-ARREST CARDIAC GUIDELINES (NEW ’18)

1. The following pertains to cardiac emergencies in patients who have a pulse. Several guidelines apply to all algorithms when assessing and treating cardiac patients. These guidelines are:
   a) When the patient’s condition changes, indicating the transition to a new treatment algorithm, the new treatment shall take into account prior therapy (e.g., previously administered medications).
   b) As BLS/ALS guidelines indicate, definitive airway control is preferable; if this can be achieved, along with other initial interventions, then the earlier, the better. However, electrical therapy is more important if the patient can be ventilated without intubation.

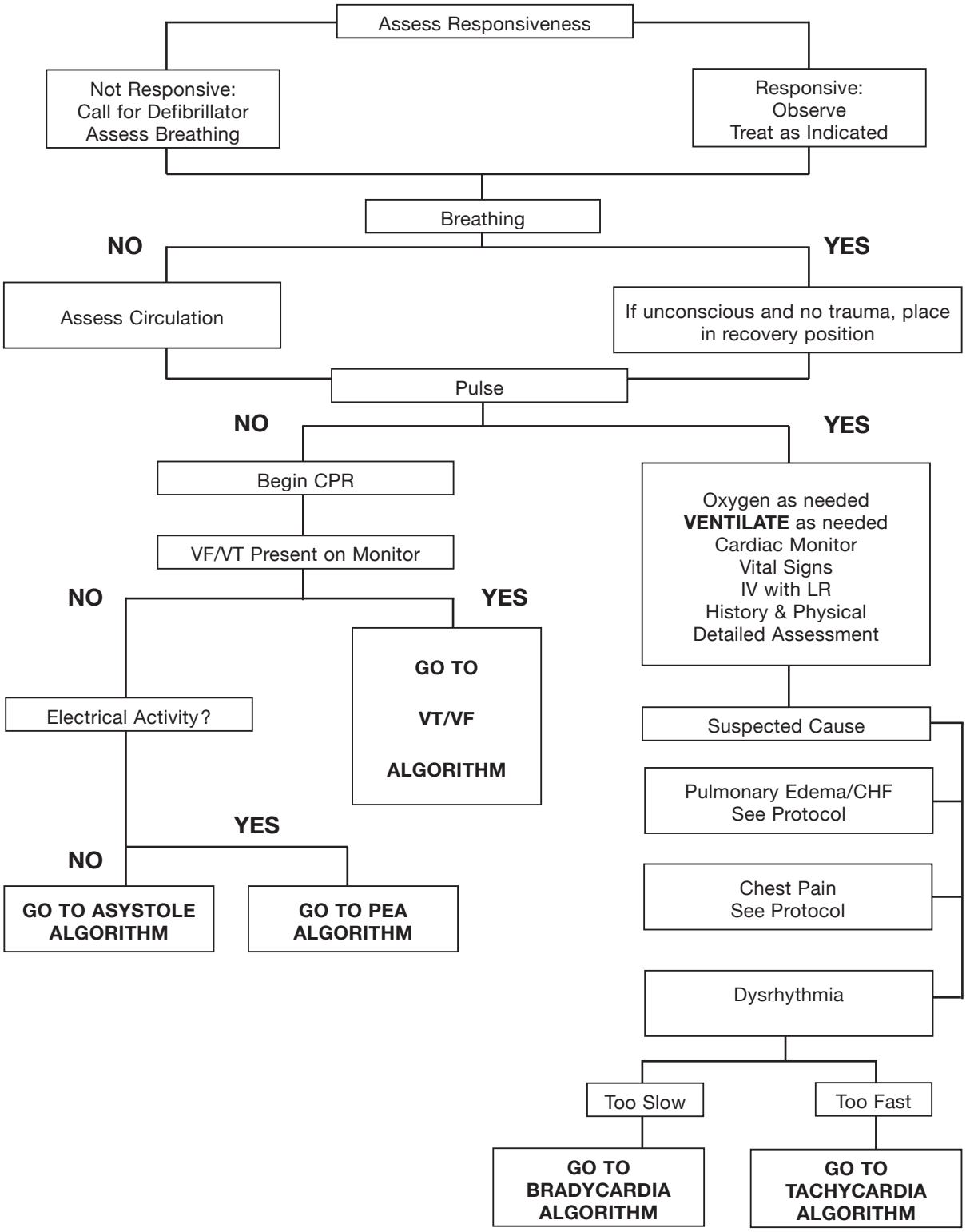
2.

UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE FOR BLS



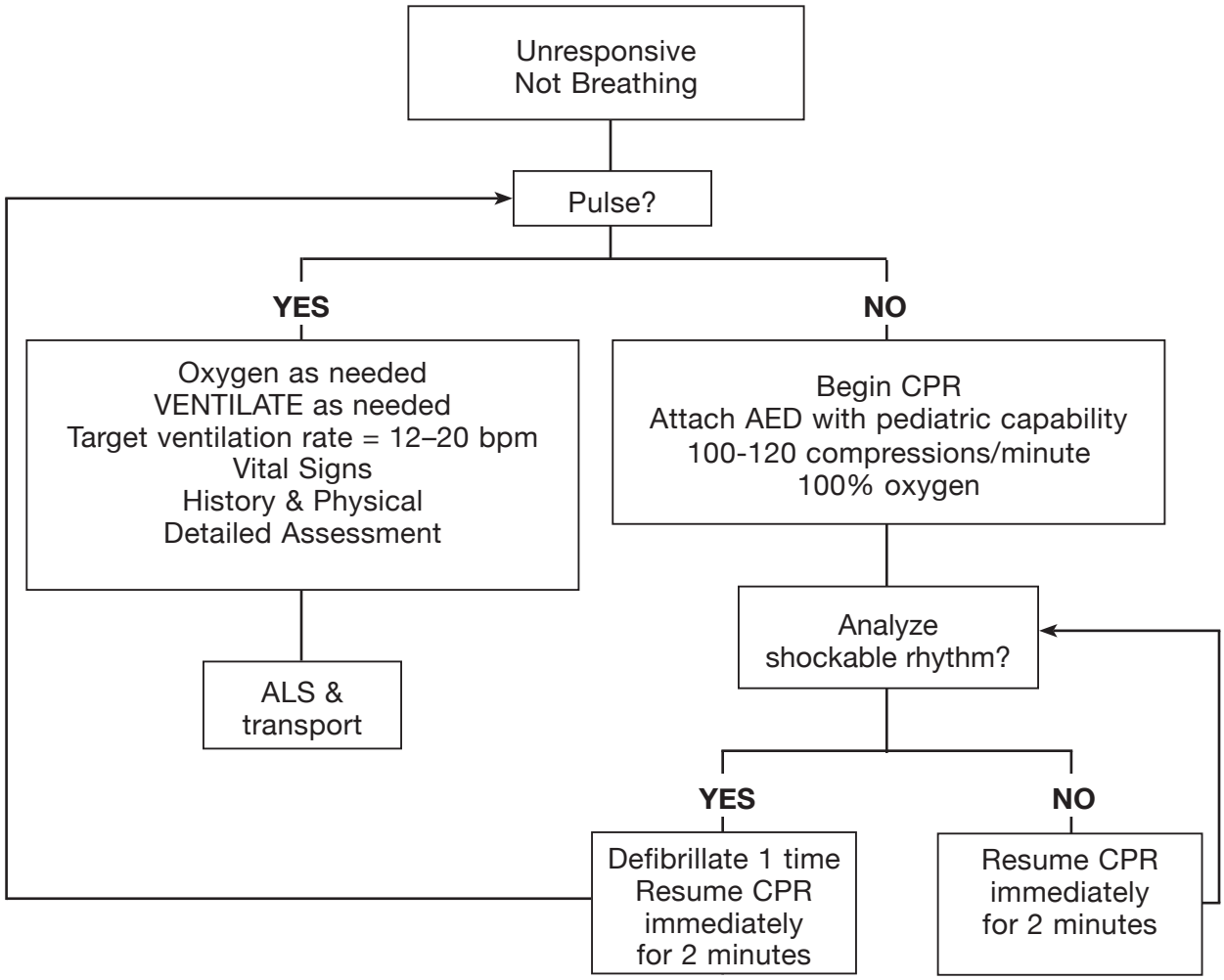
3.

UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE FOR ALS (NEW '18)



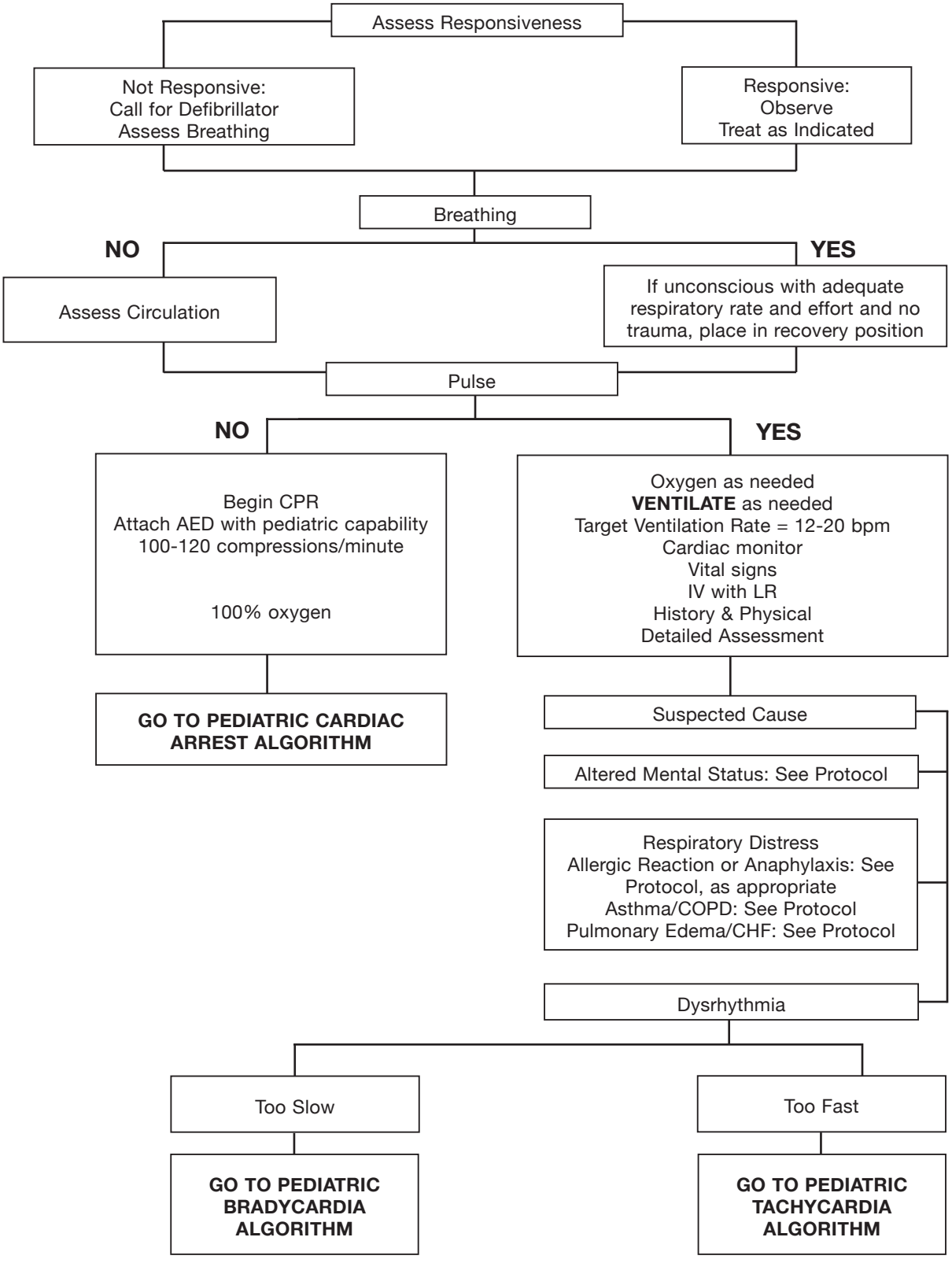
4.

UNIVERSAL ALGORITHM FOR PEDIATRIC
(GREATER THAN 1 HOUR AND LESS THAN 13 YEARS OF AGE)
EMERGENCY CARDIAC CARE FOR BLS
(If less than 1 hour old, refer to Newly Born Protocol)



5.

UNIVERSAL ALGORITHM FOR PEDIATRIC
(GREATER THAN 1 HOUR AND LESS THAN 13 YEARS OF AGE)
EMERGENCY CARDIAC CARE FOR ALS
(If less than 1 hour old, refer to Newly Born Protocol)



G. CARDIAC EMERGENCIES: BRADYCARDIA

1. Initiate General Patient Care.

2. Presentation
   Patient may present with a slow heart rate and chest pain, shortness of breath, decreased level of consciousness, hypotension, hypoperfusion, pulmonary congestion, congestive heart failure, and/or acute myocardial infarction.

3. Treatment

   a) Place patient in position of comfort.

   b) Assess and treat for shock, if indicated.

   c) Continuously monitor airway and reassess vital signs every 5 minutes.

   d) Establish IV access with LR.

   e) If patient is hemodynamically unstable: initiate transcutaneous pacing (TCP).

   f) If TCP is unsuccessful or not available, administer atropine:
   0.5–1 mg IVP
   Atropine should be given in repeat doses in 3–5 minute intervals up to a total of 0.04 mg/kg.

   g)  Consider dopamine
   2–20 **mcg**/kg/min

   h)  If patient is hemodynamically stable and in Type II, second-degree AV Block or third-degree AV Block:

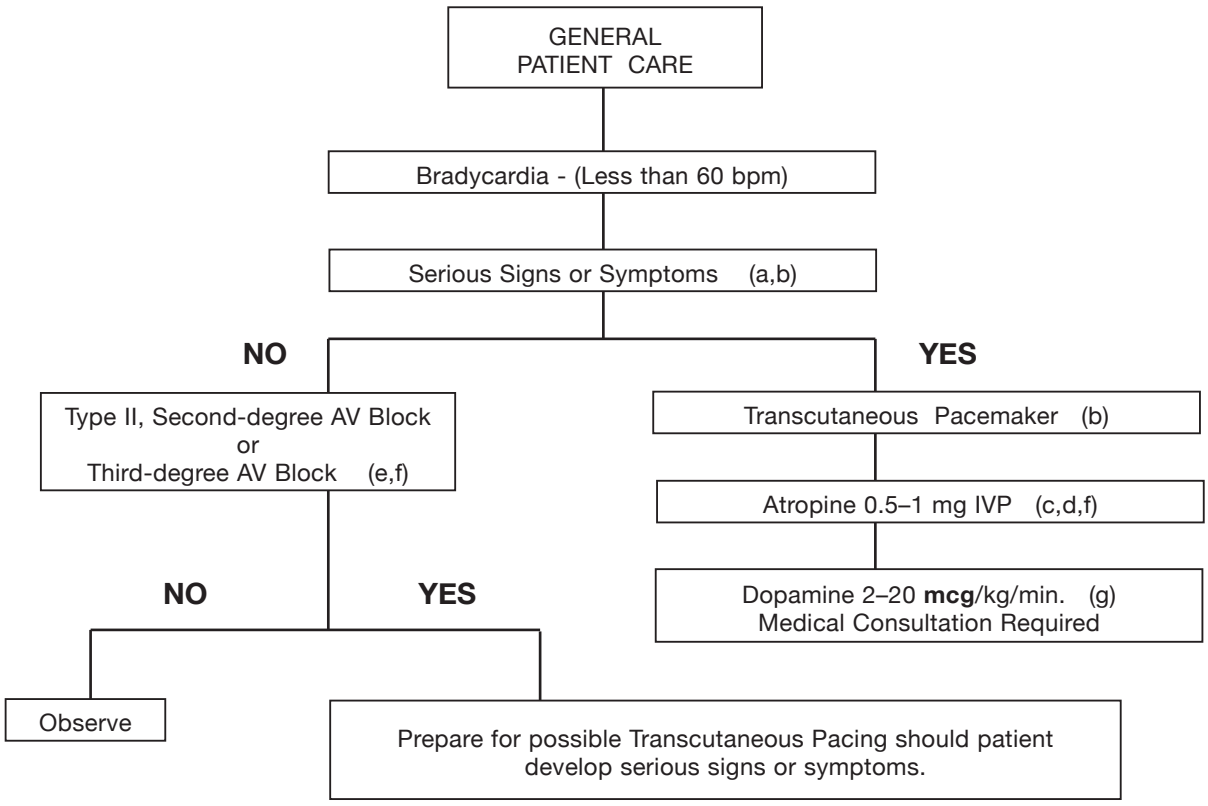
      (1) Consider/prepare for TCP.

      (2) If patient develops discomfort with TCP
      Administer opioid per Pain Management Protocol.
      OR
      Consider midazolam 0.1 mg/kg in 2 mg increments SLOW IVP over 1–2 minutes per increment with maximum single dose 5 mg.
      (Reduce by 50% for patients 69 years or older.)

   i) Refer to appropriate algorithm.

4. Continue Patient Care.

5. ADULT BRADYCARDIA ALGORITHM



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

(b) - Do not delay TCP while awaiting IV or atropine to take effect if the patient is symptomatic.

(c) - Denervated transplanted hearts will not respond to atropine. Go at once to TCP.

(d) - Atropine shall be given in repeat doses in 3–5 minute intervals up to a total of 0.04 mg/kg. Consider shorter intervals in severe clinical conditions.
Medical consultation required to administer atropine in AV block at the His-Purkinje level (Type II AV block and new third-degree block with wide QRS complexes).

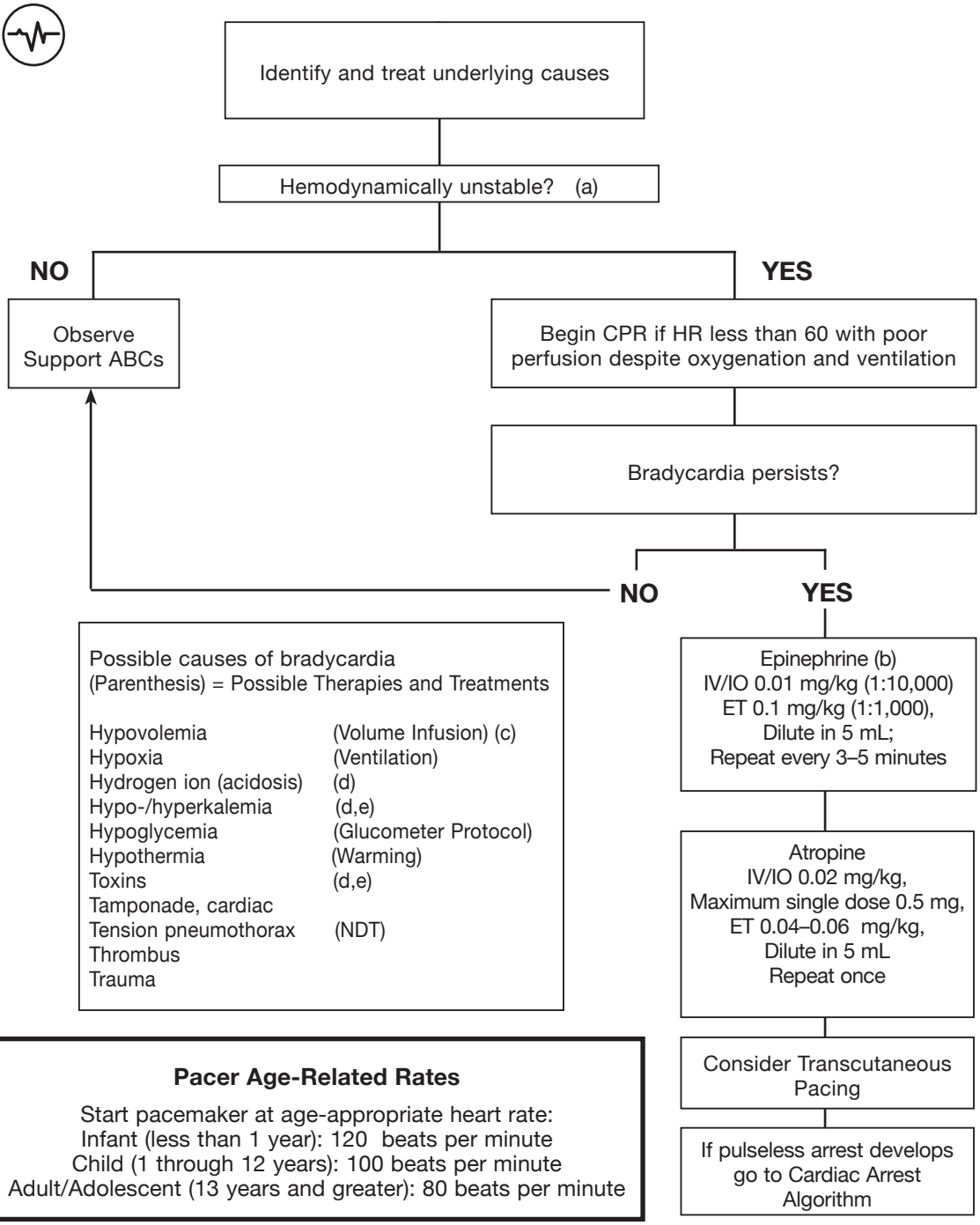
(e) - Never treat third-degree AV block or ventricular escape beats with amiodarone.

(f) - In the presence of Mobitz II and third-degree AV block, medical consultation is required for atropine administration.

(g) - Requires medical consultation for administration of dopamine. Adults: titrate to systolic BP 100 mmHg or medical consultation directed BP. IV infusion pump is preferred.

6.

PEDIATRIC BRADYCARDIA ALGORITHM
(If less than 1 hour old, refer to Newly Born Protocol)



(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.

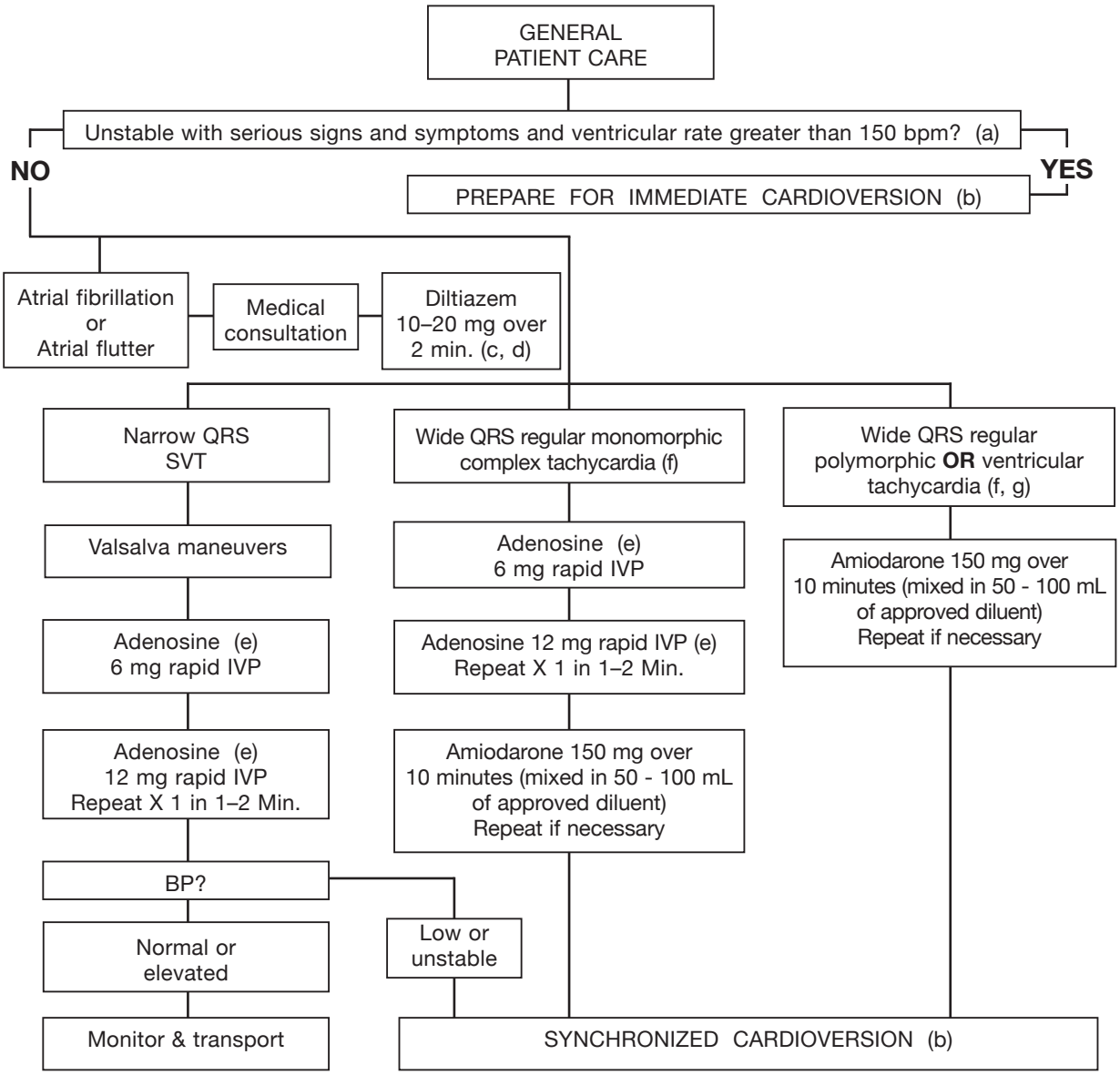
(b) - Neonates (birth to 28 days), epinephrine ET 0.03 mg/kg (1:10,000) dilute with 1 mL.

(c) - Volume infusion for neonates and volume-sensitive children, 10 mL/kg; for infant and child 20 mL/kg.

(d) - Sodium Bicarbonate, 1 mEq/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. **(NEW '18)**

5. ADULT TACHYCARDIA ALGORITHM



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

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

(c) - Consider calcium chloride 500 mg IVP for hypotension induced by diltiazem. **(NEW '18)**

(d) - If rate does not slow in 15 minutes, administer a second dose of diltiazem (15–25 mg over 2 minutes). Medical consultation required.

(e) - Be prepared for up to 40 seconds of asystole.

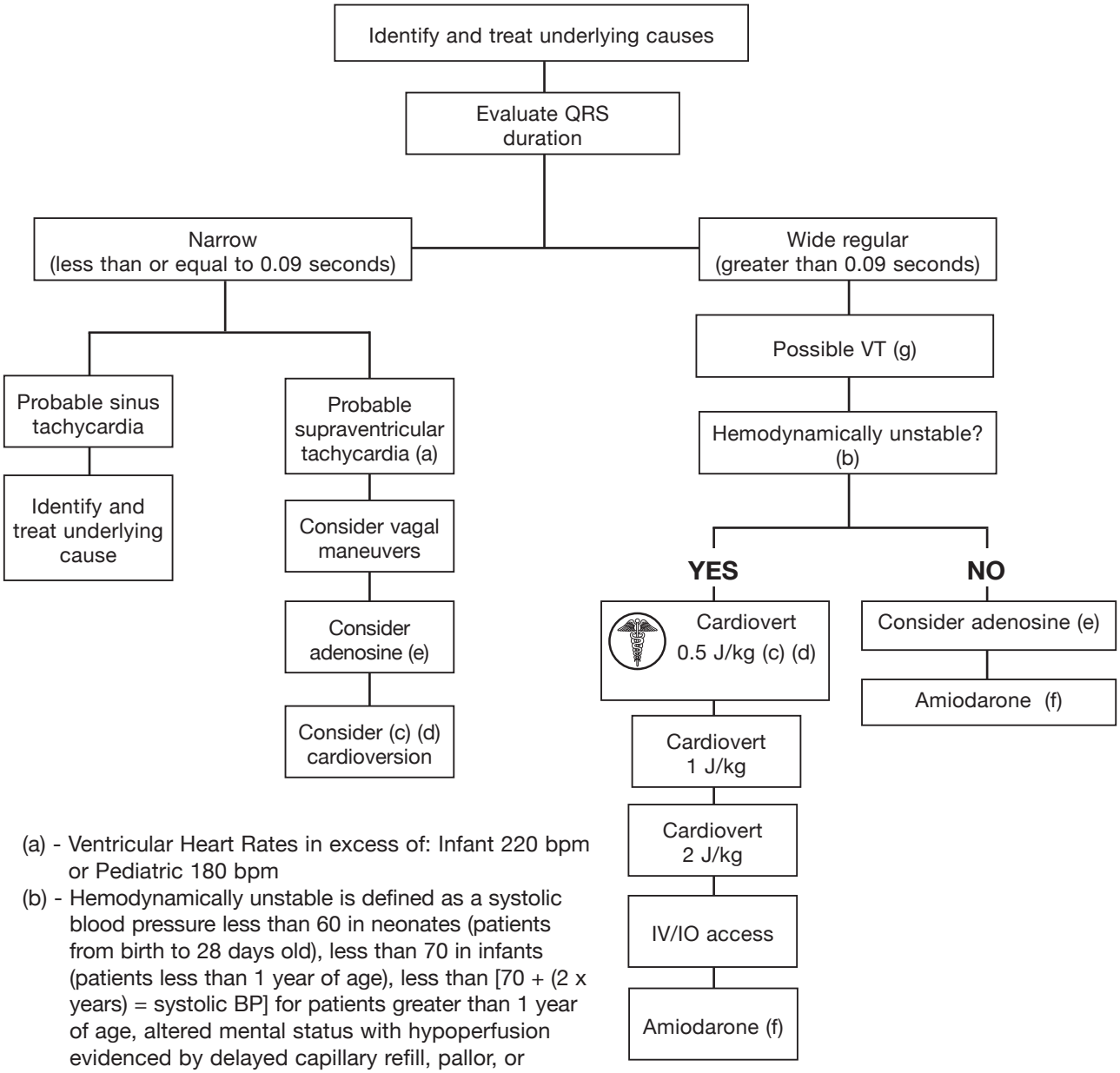
(f) - If **irregular, DO <u>NOT</u>** administer amiodarone or adenosine. Cardiovert if unstable.

(g) - If torsades de pointes, administer magnesium sulfate (1–2 grams IV/IO over 2 minutes).

6.

PEDIATRIC TACHYCARDIA ALGORITHM

(If less than 1 hour old, refer to the Newly Born Protocol)



(a) - Ventricular Heart Rates in excess of: Infant 220 bpm or Pediatric 180 bpm

(b) - Hemodynamically unstable is defined as a systolic blood pressure less than 60 in neonates (patients from birth to 28 days old), less than 70 in infants (patients less than 1 year of age), less than [70 + (2 x years) = systolic BP] for patients greater than 1 year of age, altered mental status with hypoperfusion evidenced by delayed capillary refill, pallor, or peripheral cyanosis.

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

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

(e) - Adenosine: 0.1 mg/kg rapid IV/IO, maximum 6 mg. Second and third doses 0.2 mg/kg rapid IV/IO, maximum single dose 12 mg. Be prepared for up to 40 seconds of asystole. (Contraindicated in polymorphic or irregular wide complex tachycardia)

(f) - Amiodarone: 5 mg/kg IV/IO over 20 minutes (mixed in 50 - 100 mL of approved diluent). Obtain 12-lead EKG prior to administration of amiodarone.

(g) If torsades de pointes, administer magnesium sulfate (25 mg/kg IV/IO to a maximum of 2 grams over 2 minutes).

I. CARDIAC EMERGENCIES: CARDIAC ARREST (NEW ’18)

1. Initiate General Patient Care.
2. Presentation
   Patient must be unconscious, apneic, and pulseless.
3. Treatment
   a) Perform high quality uninterrupted chest compressions as soon as possible and until defibrillator available.
   b) Apply AED as soon as available.
   c) Follow machine prompts regarding rhythm analyses and shocks.
   d) Limit breaks in compressions to rhythm analysis periods and during shocks; perform compressions while defibrillator is charging.

ALERT ALS PROVIDERS WITH A COMBINATION AED/MANUAL DEFIBRILLATOR SHOULD USE IT IN THE MANUAL MODE TO MINIMIZE BREAKS IN COMPRESSIONS CAUSED BY AED ANALYSIS.

   e) **On-scene resuscitation:** patients who are found in arrest or who arrest prior to transport and are **attended to by BLS providers must only be resuscitated in place** (with minimal movement, no attempts at patient loading, and no attempts at transport) until the following have been accomplished:
      (1) **Medical Etiologies**
         (a) The patient has received a minimum of five two-minute cycles of rhythm interpretation and chest compressions.
      (2) **Trauma Etiologies**
         (a) Penetrating trauma patients should receive the indicated reversible causes treatments listed in section BBB–Trauma Protocol: Trauma Arrest, lines a) through h) of Treatment, while loading and preparing for immediate transport.
         (b) Blunt trauma patients should receive all indicated reversible causes treatments listed in section BBB–Trauma Protocol: Trauma Arrest, lines a) through h) of Treatment, while on scene before termination of resuscitation or transport if ROSC is achieved.
      (3) **Exemptions** from on-scene resuscitation:
         (a) Where physical barriers prevent resuscitation
         (b) Where providers are in danger
         (c) Patients who have not yet reached their 18th birthday
         (d) Pregnant patients
         (e) Patients in cardiac arrest thought to be secondary to hypothermia or submersion
   f) **Following the initial on-scene resuscitation above,** providers may choose to continue the on-scene resuscitation until termination of resuscitation or to transport the patient at any time. Providers should ensure the following prior to transport:
      (1) Mechanical CPR (mCPR) in place (if available)

HIGH-QUALITY CONTINUOUS CHEST COMPRESSIONS WITH FREQUENT PROVIDER ROTATION IS AN ESSENTIAL COMPONENT IN THE SUCCESSFUL RESUSCITATION OF THE CARDIAC ARREST PATIENT. THIS MAY BE ACCOMPLISHED ENTIRELY WITH MANUAL COMPRESSIONS, OR INITIALLY WITH MANUAL AND THEN MECHANICAL COMPRESSIONS, IN ACCORDANCE WITH THE OPTIONAL MECHANICAL CPR (MCPR) PROTOCOL. THE USE OF MCPR IS CONTRAINDICATED IN PATIENTS WHO HAVE NOT YET REACHED THEIR 13TH BIRTHDAY.

g) Assess for shockable rhythm at next appropriate interval and treat appropriately.
h) Minimize peri-shock pauses of compressions to less than 10 seconds.
i) Any interruption of chest compressions, at any time for any reason, should last no more than 10 seconds
j) 10-second interruptions should coincide with two-minute cycles of chest compressions
k) **On-scene resuscitation:** patients who are found in arrest or who arrest prior to transport and are **attended to by ALS providers must remain in place** (with minimal movement, no attempts at patient loading, and no attempts at transport) until the following have been accomplished:
   (1) **Medical Etiologies**
      (a) The patient has received three doses of epinephrine, regardless of algorithm being followed
   (2) **Trauma Etiologies**
      (a) Penetrating trauma patients should receive the indicated reversible causes treatments listed in section BBB–Trauma Protocol: Trauma Arrest, lines a) through h) of Treatment, while loading and preparing for immediate transport
      (b) Blunt trauma patients should receive all indicated reversible causes treatments listed in section BBB–Trauma Protocol: Trauma Arrest, lines a) through h) of Treatment, while on scene before termination of resuscitation or transport if ROSC is achieved.
   (3) **Exemptions** from on-scene resuscitation:
      (a) Where physical barriers prevent resuscitation
      (b) Where providers are in danger
      (c) Patients who have not yet reached their 18th birthday
      (d) Pregnant patients
      (e) Patients in cardiac arrest thought to be secondary to hypothermia or submersion
l) **Following the initial on-scene resuscitation above,** providers may choose to continue the on-scene resuscitation until termination of resuscitation or to transport the patient at any time. Providers should ensure the following prior to transport:
   (1) Mechanical CPR (mCPR) in place (if available)
   (2) Placement of an airway that facilitates ventilation during transport by a restrained provider
m) Identify rhythm and treat according to appropriate algorithm.
n) When the patient's condition changes, indicating the transition to a new treatment algorithm, the new treatment shall take into account prior therapy (e.g., previously administered medications).
o) If ROSC, refer to ROSC Protocol.
p) Consider Termination of Resuscitation when appropriate.

For patients who have not reached their 18th birthday:

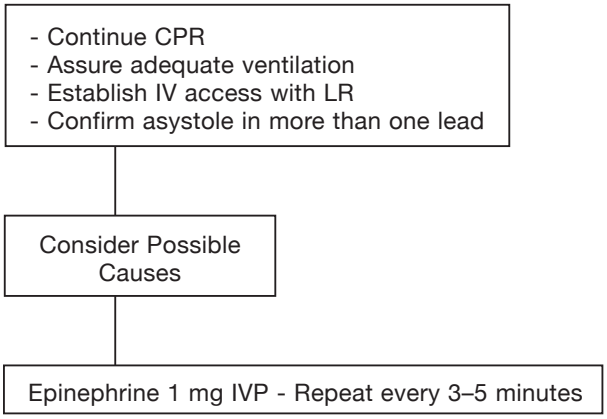
q) Identify rhythm and treat according to appropriate algorithm.

r) Only in a pediatric or neonatal arrest situation, naloxone, atropine, and epinephrine, can be administered via the ET route. Medications administered for pediatric patients via the endotracheal tube route shall be 2–2.5 times the IV dose for naloxone and atropine, and ten times the IV dose for epinephrine (1:1,000). All ET medications shall be diluted in 5 mL of LR for pediatric patients.

s) If no ROSC, transport to the closest appropriate facility.

t) If ROSC, perform 12-lead EKG and transport the patient to Children's National Medical Center or Johns Hopkins Children's Center by ground or medevac. If arrival time is greater than 30 minutes to either of these destinations, transport to the closest appropriate facility.

4. ADULT ASYSTOLE ALGORITHM (NEW ’18)



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

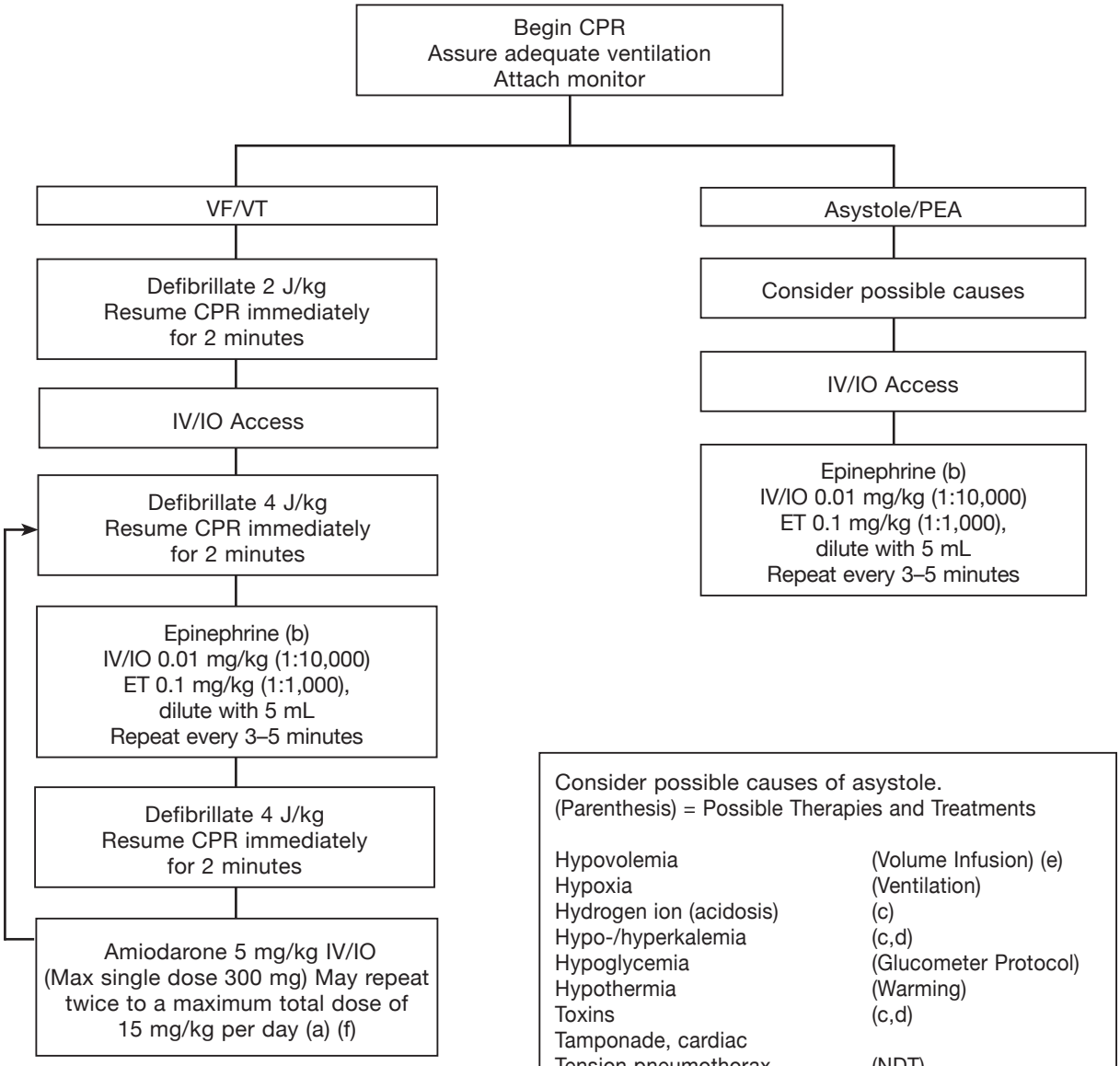
Hypovolemia	(Volume Infusion) (c)
Cardiac Tamponade	(Volume Infusion) (c)
Tension Pneumothorax	(Needle Decompression Thorocostomy–NDT)
Massive Pulmonary Embolism	
Massive AMI	
Drug Overdose	(a,b)
Hypoxia	(Ventilation)
Hypothermia	(Warming)
Acidosis	(a)
Hyperkalemia	(a,b)

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

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

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

5. PEDIATRIC CARDIAC ARREST ALGORITHM (NEW '18)
(If less than 1 hour old, refer to the Newly Born Protocol)



(a) - Continue cycle of epinephrine, defibrillation (at 4 J/kg), then amiodarone**.** Defibrillate at increasing dosage: 6 J/kg, 8 J/kg, 10 J/kg.

(b) - Neonates (0–28 days), epinephrine ET 0.03 mg/kg (1:10,000) dilute with 1 mL.

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

(d) - Calcium chloride, 20 mg/kg (0.2 mL/kg) SLOW IVP/IO (50 mg/min). Max dose 1 gram.

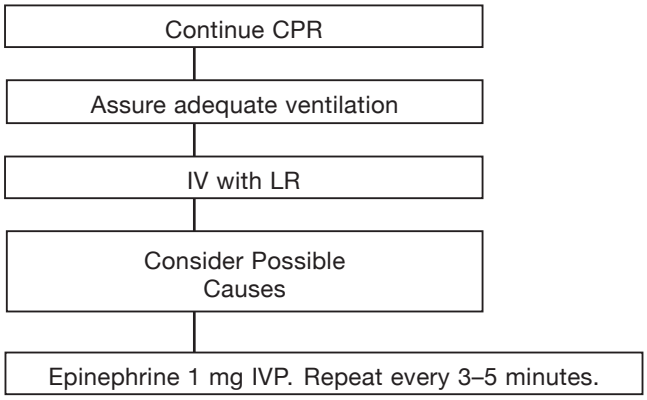
(e) - Volume infusion for neonates and volume-sensitive children, 10 mL/kg; for infant and child 20 mL/kg.

(f) - If torsades de pointes, administer magnesium sulfate (25 mg/kg IV/IO to a maximum of 2 grams over 2 minutes before amiodarone).

6. ADULT PULSELESS ELECTRICAL ACTIVITY (PEA) ALGORITHM (NEW '18)

Includes:

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



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

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

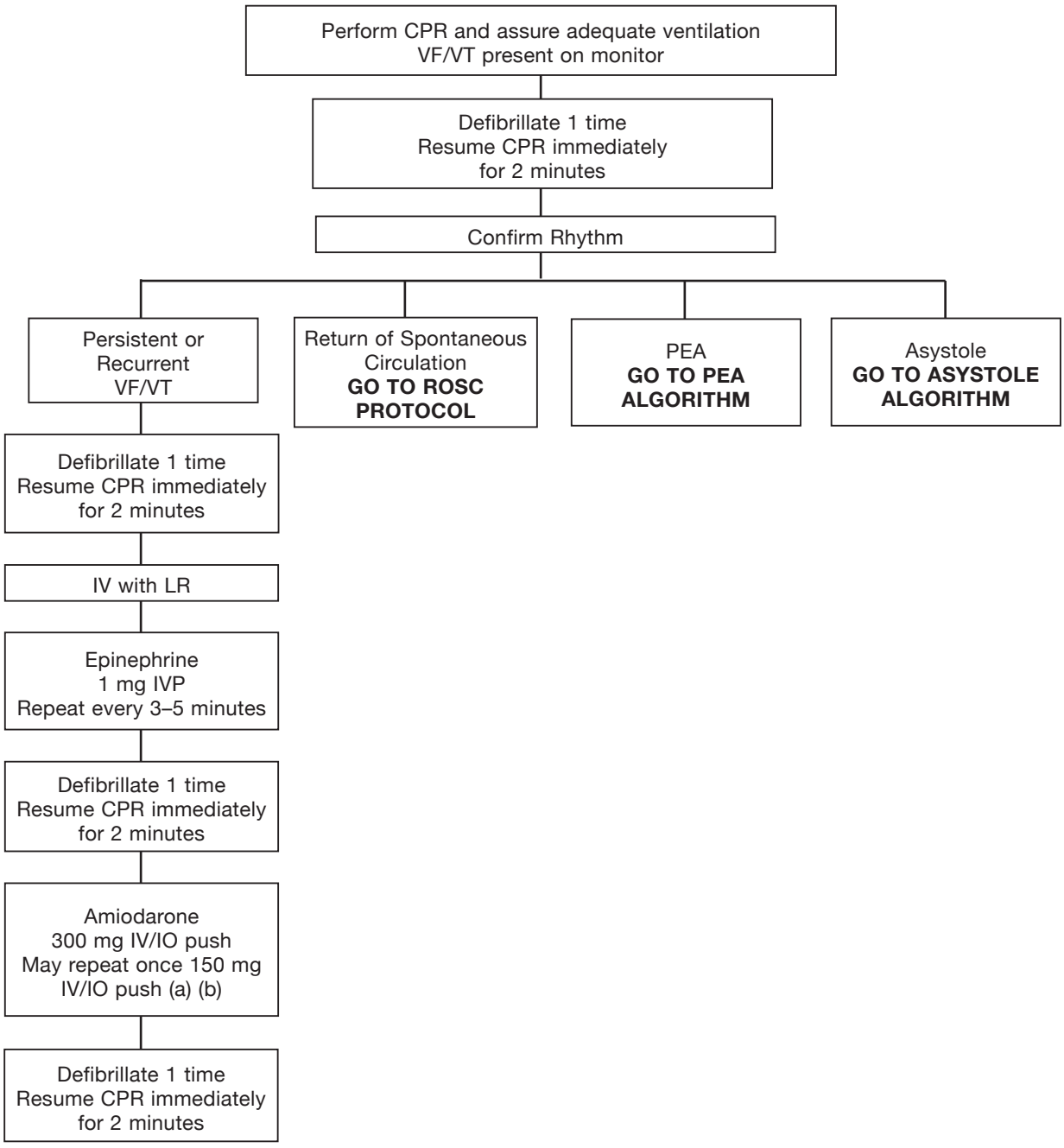
(a) - Sodium bicarbonate 1 mEq/kg, with medical consultation. See sodium bicarbonate.

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

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

7.

VENTRICULAR FIBRILLATION
PULSELESS VENTRICULAR TACHYCARDIA (NEW '18)



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

(b) - If torsades de pointes is present, give magnesium sulfate 1–2 grams IV/IO over 2 minutes before amiodarone.

J. RETURN OF SPONTANEOUS CIRCULATION (ROSC)

1. Initiate General Patient Care.

2. Presentation
   Patients revived from non-traumatic cardiac arrest.

3. Treatment
   a) Verify presence of carotid pulse. If absent, go to Cardiac Arrest Protocol.

FREQUENTLY REASSESS FOR PRESENCE OF PULSE. IF ANY DOUBT AS TO PRESENCE OF PULSE, REINITIATE CHEST COMPRESSIONS AND RETURN TO APPROPRIATE ALGORITHM FOR CARDIAC ARREST.

   b) If apneic or inadequate respirations, continue to support ventilations. Use supplemental oxygen in accordance with General Patient Care (Breathing in Initial Assessment, page 28).
   c) Reassess vital signs. Treat any abnormalities in accordance with relevant algorithms.
   d) If patient is 18 years of age or older and comatose (GCS less than 8), initiate Neuroprotective Induced Hypothermia Protocol (Medical etiology arrest only).
   e) Rendezvous with ALS or transport to nearest ED.

   f) If available and not already in place, apply mechanical CPR (mCPR) device in standby mode.
   g) Identify rhythm and treat according to appropriate algorithm.
   h) Obtain 12-lead EKG; if STEMI, treat according to STEMI protocol.
   i) Establish IV/IO access, if not yet obtained.
   j) Treat hypotension
      (1) If lungs are clear, consider fluid bolus. 20 mL/kg LR IV. Titrate to SBP of 100 mmHg.
      (2)  Consider dopamine infusion (medical etiology arrest only).
         (a) Adjust infusion rate in accordance with blood pressure and clinical response.
         (b) Adult: Administer 2–20 **mcg**/kg/min IV/IO drip titrated to BP of 100 systolic or medical consultation selected BP; initial infusion rate 2–5 **mcg**/kg/min.
         (c) Pediatric: Administer 2–20 mcg/kg/min IV/IO drip titrated to age specific BP or medical consultation selected BP; initial infusion rate is 2 **mcg**/kg/ min.
   k) Reassess need for intubation if not yet performed.
   l) Identify and treat contributing causes.

J. RETURN OF SPONTANEOUS CIRCULATION (ROSC) (continued)

m) If VF or VT was present during arrest and amiodarone not yet given, consider amiodarone 150 mg IV/IO over ten minutes. (Presence of a perfusing sinus rhythm is necessary for the administration of amiodarone for the ROSC patient post VF/VT conversion.)
n) Initiate transport to appropriate facility.
o) Arrests due to **medical** etiology:
   (1) Most patients should go to a Cardiac Interventional Center. Consider helicopter transport.
   (2) Transport to nearest ED.
      (a) If obvious non-cardiac cause for arrest (e.g., drowning, asphyxiation, opiate overdose). (If cause for arrest is in any way uncertain, patient must be transported to Cardiac Interventional Center, except as under b and c below.)
      OR
      (b) If transport time to Cardiac Interventional Center is more than 45 minutes greater than transport time to nearest ED
      OR
      (c) With medical consultation, if patient's clinical instability will not allow for safe transport to Cardiac Interventional Center due to transport time.
p) Arrests due to **trauma** etiology:
   (1) Transport to closest appropriate trauma center.

q) Arrests due to **medical** etiology:
   (1) Except as under (2) below, most pediatric patients should be transported to Children's National Medical Center or Johns Hopkins Children's Center. Consider helicopter transport.
   (2) Transport to nearest ED.
      (a) If transport time to Children's National Medical Center or Johns Hopkins Children's Center is more than 30 minutes greater than transport time to nearest ED,
      OR
      (b) With medical consultation, if patient's clinical instability will not allow for safe transport to one of the above centers due to transport time.
r) Arrests due to **trauma** etiology:
   (1) Transport to closest appropriate pediatric trauma center.

ALL POST-CARDIAC ARREST PATIENTS ARE PRIORITY 1, AND REQUIRE MEDICAL CONSULTATION. PEDIATRIC PATIENTS REQUIRE CONSULTATION WITH A PEDIATRIC BASE STATION, WHICH MAY ASSIST IN DESTINATION DETERMINATION.

4. Continue General Patient Care.

K. TERMINATION OF RESUSCITATION (Medical and Traumatic) (NEW '18)

1. **PURPOSE**

   This evidence-based protocol is designed to properly identify those patients who may benefit from prolonged resuscitation and transport to a hospital-based emergency department, as opposed to those patients whose resuscitations can be reliably and appropriately terminated in the prehospital environment.

2. **CONTRAINDICATIONS TO PREHOSPITAL TERMINATION OF RESUSCITATION**
   a) If arrest is believed to be secondary to hypothermia or submersion, treat according to appropriate protocol and transport to the nearest appropriate facility.
   b) If patient is pregnant, treat according to appropriate protocol and transport to the nearest appropriate facility.
   c) If patient has not reached their 18th birthday, treat according to appropriate protocol and transport to the nearest appropriate facility.

IF PATIENT HAS NOT REACHED THEIR 18TH BIRTHDAY, TERMINATION OF RESUSCITATION MAY BE CONSIDERED IN RARE CIRCUMSTANCES. CONTACT A PEDIATRIC BASE STATION (AT JOHNS HOPKINS CHILDREN'S CENTER OR CHILDREN'S NATIONAL MEDICAL CENTER) FOR ONLINE MEDICAL DIRECTION PRIOR TO TERMINATION. IF ONLINE CONSULTATION WITH A PEDIATRIC BASE STATION IS NOT POSSIBLE, TREAT ACCORDING TO APPROPRIATE PROTOCOL.

3. **PROCEDURE**
   a) Resuscitations started by bystanders prior to EMS arrival (traumatic or non-traumatic etiology):
      (1) EMS providers should terminate resuscitation if the patient meets the criteria listed in the Pronouncement of Death in the Field Protocol (section 2. Indications (a. – f.))
   b) BLS providers may terminate resuscitation if:
      (1) ALS resources are genuinely unavailable, **and**
      (2) The patient has received a minimum of 15 two-minute cycles of high quality CPR, **and**
      (3) During the five AED analyses immediately prior to TOR there was "no shock advised"

   c) Cardiac arrest (non-traumatic etiology)
      (1) EMS providers may terminate resuscitation
         (a) After the patient has received 15 two-minute cycles of CPR, the patients is:
            (i) in asystole, OR
            (ii) in VF, pulseless VT, or PEA with an $EtCO_2$ of less than 15 mmHg
         (b) If patient does not meet TOR criteria, continue resuscitation and reevaluate at the next rhythm check

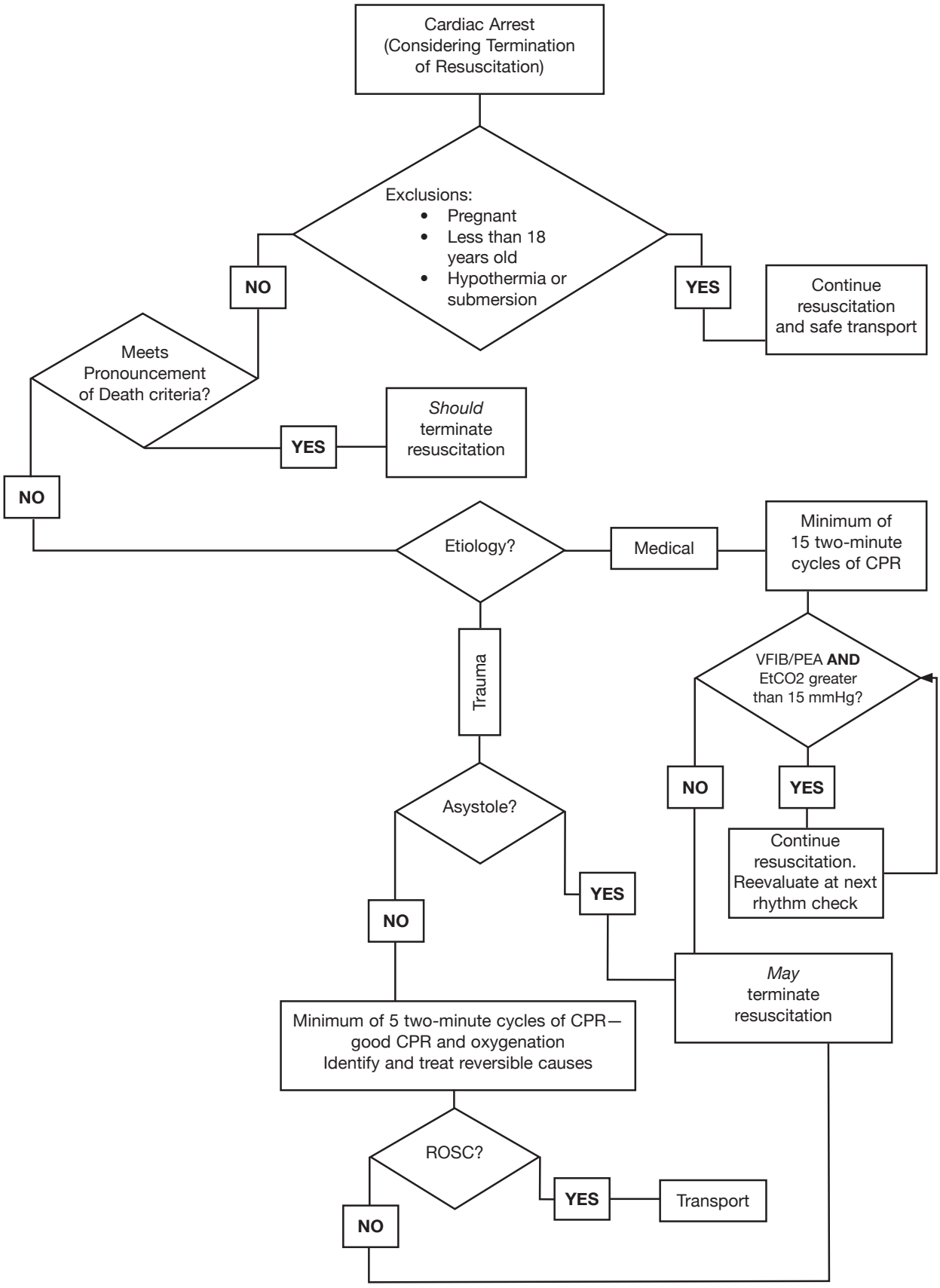
K. TERMINATION OF RESUSCITATION (Medical and Traumatic) (Continued)

d) Cardiac arrest (traumatic etiology)
   (2) EMS providers may terminate resuscitation regardless of total resuscitation time if:
      (a) The patient presents in asystole OR
      (b) The patient's cardiac rhythm changes to asystole during the resuscitation
   (3) EMS providers may terminate resuscitation following five two-minute cycles of CPR according to the Trauma Protocol: Trauma Arrest Protocol for a patient who remains in PEA or VF

ASYSTOLE AND RESUSCITATIONS LASTING LONGER THAN 10 MINUTES ARE INDEPENDENT PREDICTORS OF MORTALITY IN THE TRAUMA PATIENT. TREATMENT OF THE TRAUMA ARREST PATIENT SHOULD FOCUS ON IDENTIFYING AND TREATING REVERSIBLE CAUSES DURING THAT NARROW RESUSCITATIVE WINDOW. TOR AND TRANSPORT DECISIONS SHOULD ONLY BE MADE AFTER ADMINISTERING TIME-SENSITIVE AND APPROPRIATE THERAPIES.

e) Pronouncement of Death in the Field Protocol.

TERMINATION OF RESUSCITATION ALGORITHM (NEW '18)



L. PRONOUNCEMENT OF DEATH IN THE FIELD

1. **PURPOSE**
   This protocol is designed to guide the EMS provider in pronouncing death in the field.

   Health General Article §5-202 provides that:

   a) An individual is dead if, based on ordinary standards of medical practice, the individual has sustained either:
      (1) Irreversible cessation of circulatory and respiratory functions; or
      (2) Irreversible cessation of all functions of the entire brain, including the brain stem.

2. **INDICATIONS**
   EMS providers may pronounce the death of a patient when one or more of the following criteria has been met.
   a) Decapitation
   b) Rigor mortis
   c) Decomposition
   d) Dependent lividity
   e)  Pulseless, apneic patient in a multi-casualty incident where system resources are required for the stabilization of living patients
   f)  Pulseless, apneic patient with an injury not compatible with life (with the exception of an obviously pregnant female where resuscitation attempts should be initiated and the patient transported to the nearest appropriate facility)
   g) The EMS provider has terminated resuscitation per the Termination of Resuscitation Protocol.

3. **PROCEDURE**
   a) Confirm that the patient is unresponsive, pulseless, and apneic.
   b) The patient who meets criteria in 2.e may be “black” tagged during triage (by a BLS or ALS provider), but asystole must be confirmed by ALS provider before a formal pronouncement of death.
   c) The patient who meets criteria in 2.f must be confirmed to be in asystole by ALS provider before a formal pronouncement of death. If the condition of the remains precludes obtaining a cardiac rhythm to confirm asystole (e.g., incineration, severe disruption of the torso, etc.), this must be documented on the patient care report.
   d) Document the exact time and location of the pronouncement of death.
   e) Notify law enforcement and follow local jurisdictional policies or, if death is pronounced during transport, deliver patient to emergency department and follow hospital policies.

M. EMS DNR/MOLST (NEW ’18)

AS OF JANUARY 1, 2002, A COPY OF THE MARYLAND EMS DNR ORDER FORM CAN BE ACCEPTED IN LIEU OF THE ORIGINAL.

AS OF OCTOBER 1, 2011, THE MARYLAND MOLST FORM CAN BE ACCEPTED IN LIEU OF THE MARYLAND EMS/DNR FORM.

1. PREFACE EMS/DNR Order or MOLST forms, bracelets, and necklaces will recognize three patient options for care prior to arrest:
   a) **Option A (ALS) (MOLST A1)**—Maximal (Restorative) Care (with intubation) Before Arrest, then DNR
   b) **Option A (DNI) (MOLST A2)**—Comprehensive Efforts to Prevent Arrest But Do Not Intubate, then DNR
   c) **Option B (BLS) (MOLST B)**—Limited (Palliative) Care Only Before Arrest, then DNR

2. VALID EMS/DNR or MOLST BRACELET WITH INSERT or AUTHORIZED METAL EMBLEM HAS THE SAME EFFECT AS THE FORM.
   a) Typically only one EMS/DNR device is needed to initiate the EMS/DNR Protocol.
   b) EMS providers should only request a second instrument (e.g., a bracelet when a form has already been presented) if there is reason to question the validity of the first produced notification device.

3. RECIPROCITY
   a) A standardized EMS/DNR Order from another state may be honored.
   b) Out-of-state EMS/DNR Orders shall be followed to the full extent that is permissible by the Maryland Medical Protocols for Emergency Medical Services Providers. If there is misunderstanding with family members or others present at the scene or if there are other concerns about following the out of state EMS/DNR Order, contact online medical direction for assistance.

4. ORAL EMS/DNR ORDERS
   a) EMS providers may follow an oral EMS/DNR Order directly from a Maryland-licensed physician (MD or DO) or nurse practitioner who is physically present “on-site.” EMS shall not accept orders from private physician attendings or nurse practitioner by telephone.
   b) **EMS providers may follow an oral EMS/DNR Order from a Maryland-licensed physician “on-line” via the EMS Communications System (e.g., radio or telephone consult that is routed through a public service access point (PSAP) for audio recording).**

5. ACCEPTABLE AND UNACCEPTABLE EMS/DNR ORDERS
   a) The following are acceptable for implementing the EMS/DNR Protocol:
      (1) Original Maryland EMS/DNR Order Form

M. EMS DNR/MOLST (Continued)

(2) Copy of the Maryland EMS/DNR Order Form (including an electronic copy on a computer or device for patient care decisions. The sending facility is required to provide a copy of the EMS/DNR Order or MOLST to the transport crew (listed in the instructions of the MOLST form and COMAR 10.01.21.03)).
(3) Other State EMS/DNR Order Form
(4) Maryland EMS/DNR Bracelet Insert
(5) Medic Alert DNR Bracelet or Necklace
(6) Oral DNR Order from EMS System Medical Consultation
(7) Oral DNR Order from other on-site physician or nurse practitioner
(8) Maryland MOLST Form
(9) Maryland MOLST Bracelet

b) The following **are not** acceptable for implementing the EMS/DNR Protocol:
(1) Advance directives without an EMS/DNR Order
(2) Facility-specific DNR orders
(3) Notes in medical records
(4) Prescription pad orders
(5) DNR stickers
(6) An oral request from someone other than a physician or nurse practitioner
(7) An oral order from an attending physician or nurse practitioner who is not on site
(8) Any other device or instrument not listed above as acceptable

6. VALIDITY OF EARLIER VERSIONS OF EMS/DNR ORDERS
a) Older versions of EMS/DNR Orders — i.e., initial version (1995 and first revision, 4/1/96) — **continue to be valid and need not be updated** unless the patient or authorized decision maker wishes to take advantage of new features available in the newer forms.
b) EMS providers should treat older versions of EMS/DNR order (pre 7/1/98) as "Option B (BLS) - Limited (Palliative) Care Only Before Arrest, Then DNR."

7. REVOCATION OF AN EMS/DNR ORDER
a) An EMS/DNR Order may be revoked at any time by:
(1) Physical cancellation or destruction of all EMS/DNR Order devices; or
(2) An oral statement by the patient made directly to emergency medical services personnel requesting only palliative care or resuscitation. If the patient revokes an EMS/DNR order orally, the EMS/DNR Order notification devices do not need to be destroyed. EMS providers should thoroughly document the circumstances of the revocation. An oral revocation by a patient is only good for the single response or transport for which it was issued.
b) An authorized decision-maker, other than the patient, cannot revoke an EMS/DNR Order **orally**. Because of the difficulty in identifying authorized decision makers in emergent situations, it is incumbent upon an authorized decision maker who has authority to revoke an EMS/DNR Order to either destroy or withhold all EMS/DNR Order devices, if they wish resuscitation for the patient.

M. EMS DNR/MOLST (Continued)

c) Section 5-610 of the Health Care Decision Act (Health General Article, Annotated Code of Maryland) makes willful concealment, cancellation, defacement, obliteration, or damage of an advance directive (including EMS/DNR Orders), without the patient's or authorized decision maker's consent, a misdemeanor subject to a fine not exceeding $10,000, imprisonment not exceeding one year, or both.

8. ANTICIPATED LOCATIONS FOR EMS/DNR ORDER FORMS:
   EMS personnel shall be directed to look for an EMS/DNR Order in the following places:
   a) About a patient's wrist, hung from a necklace, or safety-pinned to a patient's clothing.
   b) At medical facilities, in the patient's chart.
   c) In residences and domicile facilities, by the bedside, behind the patient's bedroom door, or on the refrigerator door.
   d) In schools and educational institutions, in the nurse's office, health room, or with the student's attendant caregiver/aide.
   e) Family or caregivers will be expected to retrieve the original EMS/DNR Order prior to the ambulance's arrival.

9. IDENTIFICATION OF PATIENT
   a) If the patient is able, the patient can self-identify during the initial assessment.
   b) If the patient is unable to communicate, then family, caregivers, or bystanders can identify the patient for EMS providers.
   c) If an EMS/DNR vinyl bracelet with insert or metal emblem (bracelet or necklace) is attached to a patient (on wrist, pendant from neck, pinned to clothing, etc.) the patient's identity can be reasonably assumed by EMS providers.
   d) If an EMS/DNR vinyl bracelet insert or metal emblem (bracelet or necklace) is found detached from the patient, EMS personnel must treat it as an EMS/DNR Order form and identify the subject of the EMS/DNR Order as the patient. A valid bracelet insert alone, without the vinyl bracelet, is a valid EMS/DNR Order so long as EMS providers confirm the patient's identity.
   e) If EMS personnel are unable to ascertain with reasonable certainty, when required to do so, that the subject of the EMS/DNR Order is the patient, they may resuscitate the patient.

10. HEALTH PROVIDER/EMS PERSONNEL IMMUNITY
    a) General immunity provisions, such as Good Samaritan immunity for volunteers and sovereign immunity for government employees, may apply under specific circumstances.

M. EMS DNR/MOLST (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 that 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
   a) DISPATCH
      (1) Option B EMS/DNR patients (7/98 version) or patients with older version EMS/DNR orders 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 or A (DNI) 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, A (DNI), 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.

M. EMS DNR/MOLST (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 or MOLST 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 initiate the Termination of Resuscitation Protocol.
(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 they revoke 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, A (DNI), or B) arrests, withhold or withdraw further resuscitation and provide support to the family and caregivers. Consider notifying appropriate personnel.

d) **OPTION A (MOLST A1)** – MAXIMAL (RESTORATIVE) CARE PROTOCOL
(1) When Option A - "Maximal (Restorative) Care (with intubation) Before Arrest, then DNR" is selected on an EMS/DNR Order or MOLST form, 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.
(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 dextrose for diabetic emergencies and epinephrine for anaphylactic reactions in patients who, upon arrest, are not to be resuscitated.

M. EMS DNR/MOLST (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, CPR, cardiac pacing, defibrillation), withdrawal of active ventilatory assistance upon cardiac arrest, and withholding or withdrawal of drug therapy (e.g., chemical resuscitation).

e) **OPTION A (DNI) (MOLST A2)** – COMPREHENSIVE EFFORTS TO PREVENT ARREST BUT DO NOT INTUBATE, THEN DNR
   (1) Option A (DNI) is exactly the same as Option A, which may include limited ventilatory support by CPAP or BiPAP, but Do Not Intubate.
   (2) Therefore, inappropriate care for "Option A (DNI) – Comprehensive Efforts to Prevent Arrest but Do Not Intubate, then DNR" would be nasal or oral intubation.

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, THE AVAILABILITY OF AN ALS UNIT, AND ITS ABILITY TO ARRIVE OR RENDEZVOUS IN A MEDICALLY APPROPRIATE PERIOD OF TIME.

f) **OPTION B (MOLST B)**– PALLIATIVE CARE PROTOCOL
   (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_2 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.

M. EMS DNR/MOLST (Continued)

(b) External bleeding
  (i) Standard treatment (direct pressure with dressing, tourniquet)
  (ii) No IVs
(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, opioid 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 for morphine and fentanyl administration for pain control as in 1 (d) (iii))
(c) EMS-initiated medications (except oxygen, and morphine or fentanyl administration for pain control as in 1 (d) (iii))
(d) CPR
(e) Intubation (alternative airway device, endotracheal, nasotracheal, or gastric tube)
(f) Active ventilatory assistance, unless on an outpatient ventilator

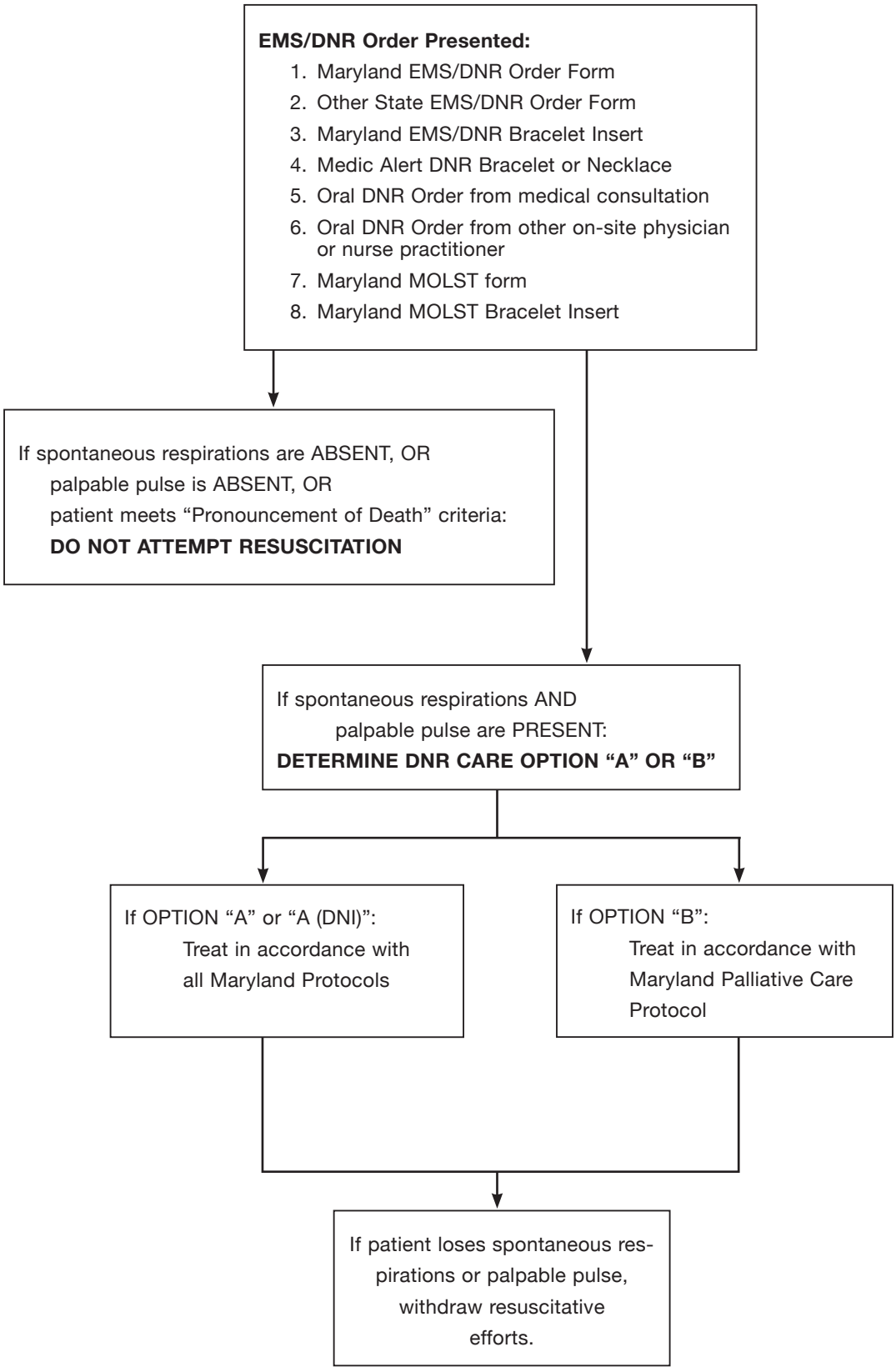
g) TRANSPORT
(1) Upon request of the patient, family, or caregivers and in lieu of transport to a hospital-based emergency department, EMS providers may transport Option B EMS/DNR patients who require transportation for pain control or symptom management or respite care to a specified inpatient hospice 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 800-492-3805.

M. EMS DNR/MOLST (Continued)

(5) If a copy of the EMS/DNR Order or MOLST form is available to EMS providers, it should be attached to the official copy of the patient care report that is retained by the EMS service.
(6) A vinyl bracelet with insert or metal emblem (bracelet or necklace) shall be left where found on the patient. Bracelets or metal emblems shall not be removed without the permission of the patient or the patient's authorized decision maker and, when possible, shall be returned with the patient to the sending facility.

j) PATIENT DISPOSITION IF NOT TRANSPORTED
If the EMS/DNR Protocol is implemented and the patient is not transported because the patient arrested at the response site, EMS personnel shall:
(1) Follow local operational procedures for handling deceased patients.
(2) Do **not** remove an EMS/DNR vinyl bracelet or metal emblem (bracelet or necklace) from the deceased patient.
(3) Law enforcement personnel or a representative of the medical examiner's office needs to be notified only in the case of sudden or unanticipated death that occurs:
(a) By violence
(b) By suicide
(c) As a result of an accident
(d) Suddenly, if the deceased was in apparent good health, or
(e) In any suspicious or unusual manner.

N. EMS DNR Flowchart



P. CARDIAC EMERGENCIES: HYPERKALEMIA (RENAL DIALYSIS/FAILURE OR CRUSH SYNDROME)

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
         (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) Continuously monitor airway and reassess vital signs every 5 minutes.

   e) Establish IV access with LR.

   f) Initiate Bradycardia Protocol.

   g) Consider calcium chloride 0.5–1 gram SLOW IVP over 3–5 minutes. Maximum dose 1 gram or 10 mL. **(NEW ’18)**

   h)  Consider sodium bicarbonate 50 mEq IV over 5 minutes.

   i)  Consider albuterol 20 mg (high dose) via nebulizer (if available).

FLUSH IV WITH 5 ML OF LR BETWEEN CALCIUM AND SODIUM BICARBONATE ADMINISTRATION.

   j) Crush syndrome or patients with functional kidneys by history

   Consider sodium bicarbonate 50 mEq SLOW IV over 5 minutes and then initiate drip of sodium bicarbonate 100 mEq in 1,000 mL to run over 30–60 minutes (reserve for patient suspected of crush syndrome or patients with functional kidneys by history).

P. CARDIAC EMERGENCIES: HYPERKALEMIA (Continued)

k) Place patient in position of comfort.

l) Assess and treat for shock, if indicated.

m) Continuously monitor airway and reassess vital signs every 5 minutes.

n) Establish IV access with LR.

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. **(NEW '18)**

q) Consider 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.

ALERT FLUSH IV WITH 5 ML OF LR BETWEEN CALCIUM AND SODIUM BICARBONATE ADMINISTRATION.

r) Crush syndrome or patients with functional kidneys by history

Consider 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.) For patients less than 1 year of age, must be diluted (1:1) with LR.

4. Continue General Patient Care.

W. ENVIRONMENTAL EMERGENCIES: HAZARDOUS MATERIALS EXPOSURE (Continued)

g) Medical Follow-Up

All public safety personnel who come into close contact with hazardous materials should receive an appropriate medical examination, post-incident, based on information from the designated poison control center. This should be completed within 48 hours of the incident and compared with the findings of any recent pre-incident examination. Personnel who routinely respond to hazardous materials emergencies should have periodic pre-incident examinations. Personnel should be advised of possible latent symptoms at the time of their exams.

4. Continue General Patient Care.

X. ENVIRONMENTAL EMERGENCIES: HEAT-RELATED EMERGENCIES

1. Initiate General Patient Care

2. Presentation
   a) **Heat Cramps:** Moist, cool skin, cramps, normal to slightly elevated temperature

   b) **Heat Exhaustion:** Moist, cool skin, cramps, weakness, dizziness, normal to elevated temperature, nausea

   c) **Heat Stroke:** Hot, dry skin (25% of patients will still be moist), seizures, altered mental status, dilated pupils, rapid heart rate, or arrhythmia

3. Treatment
   a) Remove patient from hot environment.

   b) Cool patient as appropriate.

DO NOT GIVE ANYTHING BY MOUTH TO A PATIENT WITH AN ALTERED MENTAL STATUS.

   c) If patient is fully conscious and not nauseated, give electrolyte-rich fluid by mouth if available.

   d) If **heat stroke**, aggressively cool patient and place patient in semi-fowler's position.

   e) Establish IV access with LR.

   f) Administer fluid bolus, if appropriate.
   20 mL/kg of LR IV
   Titrate to a systolic pressure of 100 mmHg.

4. Continue General Patient Care.

m) Consider obtaining blood sample using closed system, particularly if transcutaneous carboxyhemoglobin measurement is not available.

n) Establish vascular access.

(1) If hypoperfusion exists, administer 20 mL/kg bolus of LR. May repeat once without consult.

(a) Consider additional fluid administration.

(2) Consider following Overdose/Poisoning: Cyanide Protocol (if participating) for smoke inhalation patients.

o) Hyperbaric Medicine Specialty Center Referral: Indications for Referral

(1) Patients with exposure to products of combustion (smoke) or carbon monoxide who have a carboxyhemoglobin value of greater than 25% ***with or without symptoms***

OR

(2) Patients with PROVEN exposure to products of combustion (smoke) or carbon monoxide who have:

(a) ***any*** of the following diagnostic indicators:

(i) Patient (transcutaneous or blood) carboxyhemoglobin value of greater than 15%

(ii) Alarm of EMS or fire agency maintained passive carbon monoxide monitor

(iii) Targeted atmospheric carbon monoxide value 100 ppm or greater in the patient environment

(b) **and** one or more of the following:

(i) History of loss of consciousness during exposure (may have since resolved)

(ii) GCS persistently less than or equal to 13

(iii) Rapid decline of neurological symptoms including actively seizing patients with appropriate airway stabilization

(iv) Pregnancy

(v) Chest pain

(vi) Extremes of age

(vii) Per provider discretion

ALERT

FETAL HEMOGLOBIN HAS A VERY HIGH AFFINITY FOR CARBON MONOXIDE AND PREGNANT MOTHER MAY BE ASYMPTOMATIC, YET FETAL LEVELS MAY BE DANGEROUSLY HIGH. ENCOURAGE THE PATIENT TO BE EVALUATED AT HOSPITAL.

ALERT

PATIENTS WHO DO NOT MEET CRITERIA IN O)(1) OR (2) ABOVE SHOULD BE TRANSPORTED TO THE CLOSEST HOSPITAL-BASED EMERGENCY DEPARTMENT..

p) Contraindications for Referral to the Hyperbaric Medicine Specialty Center

(1) Transport time to the Hyperbaric Medicine Specialty Center greater than one hour

(2) Patients in cardiac arrest

(3) Patients who have return of spontaneous circulation post-arrest

4. Continue General Patient Care.

GG. OVERDOSE/POISONING: ABSORPTION

1. Initiate General Patient Care.

2. Presentation

   Patient may exhibit any of the following: nausea, vomiting, diarrhea, altered mental status, abdominal pain, rapid heart rate, dyspnea, seizures, arrhythmias, sweating, tearing, defecation, constricted/dilated pupils, rash, or burns to the skin.

3. Treatment

   a) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.

   b) Identify agent and mechanism of exposure.

   c) Decontaminate as appropriate.

   d) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:** Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

   Consider additional doses of naloxone.

   e) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:** Administer naloxone 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. Repeat as necessary to maintain respiratory activity. **(NEW ’18)**

   f) Consider repeating naloxone.

   g) Establish IV access with LR in a clean area, if appropriate.

   h)  If **organophosphate poisoning**, consider atropine 2–4 mg IV or IM every 5–10 minutes.

   i)  Consider antidote to specific agent if available.

   j)  Consider antibiotic specific to agent in mass casualty incident, if available.

GG. OVERDOSE/POISONING: ABSORPTION (Continued)

k) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

Consider additional doses of naloxone.

l) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.

m) Identify agent and mechanism of exposure.

n) Decontaminate as appropriate.

o) Establish IV access with LR in a clean area, if appropriate.

p) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. May be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg. **(NEW ’18)**

q)  If **organophosphate poisoning**, consider atropine 0.02 mg/kg IV/IO or IM every 5–10 minutes.

r)  Consider antidote to specific agent if available.

s)  Consider antibiotic specific to agent in mass casualty incident, if available.

4. Continue General Patient Care.

HH. OVERDOSE/POISONING: INGESTION

1. Initiate General Patient Care.

2. Presentation

   Patient may exhibit any of the following: nausea, vomiting, diarrhea, altered mental status, abdominal pain, rapid or slow heart rate, dyspnea, seizures, arrhythmias, chemical burns around or inside the mouth, or abnormal breath odors.

3. Treatment

DO NOT GIVE ANYTHING BY MOUTH WITHOUT MEDICAL CONSULTATION!

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

a) Identify substance and amount ingested.

b)  Consider activated charcoal **without** Sorbitol 1 gram/kg PO.

c) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

Consider additional doses of naloxone.

d) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Administer naloxone 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. Repeat as necessary to maintain respiratory activity. **(NEW ’18)**

e) Establish IV access with LR in a clean area, if appropriate.

f)  If **dystonic, extrapyramidal, or mild allergic reaction**, consider diphenhydramine.
25 mg IV or IM

HH. OVERDOSE/POISONING: INGESTION (Continued)

g) If **beta-blocker** overdose, consider glucagon.
1 mg every 5 minutes IVP

h) If **calcium channel blocker** overdose, consider calcium chloride.
0.5–1 gram SLOW IVP over 10 minutes
Max dose of 1 gram **(NEW '18)**

ALERT CALCIUM CHLORIDE IS CONTRAINDICATED IN A CALCIUM CHANNEL BLOCKER OVERDOSE PATIENT TAKING DIGOXIN.

i) If **organophosphate poisoning**, consider atropine.
2–4 mg IVP or IM every over 10 minutes
Max dose of 1 gram

j) If **tricyclic** overdose, consider sodium bicarbonate.
1 mEq/kg IVP bolus initially with 0.5 mEq/kg at 10 minute intervals

k) Consider antidote to specific agent if available.

l) Consider antibiotic specific to agent in mass casualty incident, if available.

m) Identify substance and amount ingested.

n) Consider activated charcoal **without** Sorbitol 1 gram/kg PO.

o) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

HH. OVERDOSE/POISONING: INGESTION (Continued)

p) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. May be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg. **(NEW '18)**

q) Establish IV/IO access with LR in a clean area, if appropriate.

r) If **dystonic, extrapyramidal, or mild allergic reaction**, consider diphenhydramine 1 mg/kg IVP/IO or IM.
Maximum single dose 25 mg

s) If **beta-blocker** overdose, consider glucagon.
1 mg IVP (5 years of age up to patient's 18th birthday)
0.5 mg IVP (28 days - 4 years of age)
Every 5 minutes as necessary

t) If **calcium channel blocker** overdose, consider calcium chloride.
20 mg/kg (0.2 mL/kg) SLOW IVP/IO (50 mg/min)
Maximum dose 1 gram **(NEW '18)**

ALERT CALCIUM CHLORIDE IS CONTRAINDICATED IN A CALCIUM CHANNEL BLOCKER OVERDOSE PATIENT TAKING DIGOXIN.

u) If **organophosphate** poisoning, consider atropine.
0.02 mg/kg IVP/IO or IM
Maximum single dose 2 mg
May be repeated every 5–10 minutes

v) If **tricyclic** overdose, consider sodium bicarbonate.
1 mEq/kg SLOW IVP/IO (for less than 1 year, dilute 1:1 with LR)

w) Consider antidote to specific agent if available.

x) Consider antibiotic specific to agent in mass casualty incident, if available.

4. Continue General Patient Care.

JJ. OVERDOSE/POISONING: INJECTION

1. Initiate General Patient Care.
2. Presentation

   Patient may exhibit any of the following: local pain, puncture wounds, reddening skin, local edema, numbness, tingling, nausea, vomiting, diarrhea, altered mental status, seizures, muscle twitching, hypoperfusion, metallic or rubbery taste.

3. Treatment

   a) Identify markings (insects, bites, needlestick, etc.).

   b) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.

   c) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine (1:1,000) 0.5 mg in 0.5 mL IM or patient's prescribed fast-acting bronchodilator.

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

   d) Immobilize extremity.

   e) Apply cool packs for relief of pain only.

   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

   Consider additional doses of naloxone.

   g) Establish IV access with LR; administer 20 mL/kg bolus in uninjured extremity. Titrate to a systolic pressure of 100 mmHg.

   h) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. Repeat as necessary to maintain respiratory activity. **(NEW '18)**
   Titrate to adequate respiratory effort.

JJ. OVERDOSE/POISONING: INJECTION (Continued)

i) If **organophosphate poisoning**, consider atropine.
2–4 mg IVP or IM every 5–10 minutes.

j) Consider antidote to specific agent if available.

k) Consider antibiotic specific to agent in mass casualty incident, if available.

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l) Identify markings (insects, bites, needlestick, etc.).

m) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.

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

o) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

Consider additional doses of naloxone.

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p) Establish IV access with LR; administer 20 mL/kg bolus in uninjured extremity. Titrate to a systolic pressure of 100 mmHg.

q) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose**:
Aged 28 days to adult: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. May be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg. **(NEW '18)**

r) If **organophosphate poisoning**, consider atropine.
0.02 mg/kg IV/IO or IM every 5–10 minutes

s) Consider antidote to specific agent if available.

t) Consider antibiotic specific to agent in mass casualty incident, if available.

4. Continue General Patient Care.

LL. EXCITED DELIRIUM SYNDROME (ExDS)

1. Initiate General Patient Care
2. Presentation:
   a) Excited delirium syndrome (ExDS) is a potentially life-threatening condition in which a person is in a psychotic and extremely agitated state. Mentally, the subject is unable to process rational thoughts or to focus their attention. Physically, the body's systems are functioning at such a high rate that they begin to shut down and fail. When these two factors occur at the same time, a person can act erratically enough that they become a danger to self and to the public.
   b) History of present illness often includes:
      (1) Ingestion of a stimulant or hallucinogenic drug
      (2) Drug/alcohol withdrawal
      (3) Psychiatric patient who is off of medication
   c) Signs and symptoms: ExDS is characterized as having a minimum of bizarre and aggressive behavior and one of the above history. The more signs and symptoms the patient exhibits, the more likely the patient is to have ExDS and the higher the risk for complications.
      (1) Tachycardia
      (2) Hypertension
      (3) High body temperature
      (4) Dilated pupil
      (5) Incoherent or nonsensical speech
      (6) Rapid or inconsistent breathing patterns
      (7) Paranoia
      (8) Skin changes:
         (a) Hot/dry skin (in the anticholinergic patient)
         (b) Profuse sweating (in the cocaine/MDMA/methamphetamine patient)
      (9) Shivering
      (10) Inappropriate removal of clothing
      (11) Patients who present after receiving multiple TASER or other less lethal energy by law enforcement

MANY LIFE-THREATENING MEDICAL EMERGENCIES PRESENT WITH SIMILAR SIGNS OF EXDS. EXAMPLES INCLUDE HYPOGLYCEMIA, HYPOXIA, SEIZURES, HEAD INJURIES, AND SEPSIS. EMS PROVIDERS MUST ALWAYS ASSESS FOR THE POSSIBILITY OF OTHER EMERGENCY MEDICAL CAUSES FOR THE PATIENT'S PRESENTATION.

ANOTHER KEY SYMPTOM THAT OCCURS JUST PRIOR TO THE ONSET OF SUDDEN DEATH IN A PATIENT EXPERIENCING EXDS IS "INSTANT TRANQUILITY." THIS SYMPTOM IS NOTED WHEN A PATIENT WHO HAS BEEN VERY VIOLENT AND AGITATED SUDDENLY BECOMES QUIET AND LETHARGIC. THIS IS A SIGN OF IMMINENT CARDIOPULMONARY ARREST. PATIENTS WHO HAVE UNDERGONE PERIODS OF PROLONGED PHYSICAL STRUGGLE WITHOUT SEDATION WITH MEDICATION ARE AT HIGH RISK FOR CARDIAC ARREST. ALL EFFORTS MUST BE MADE BY ALS PROVIDERS TO EXPEDITIOUSLY ADMINISTER MEDICATION TO THE AGITATED AND STRUGGLING EXDS PATIENT. **(NEW '18)**

LL. EXCITED DELIRIUM SYNDROME (ExDS) (Continued)

3. Treatment (BLS) **(NEW '18)**
   a) Ensure scene is secure and safe.
   b) Initiate patient care.
      (1) Obtain a measured temperature, as these patients often have severe hyperthermia.
      (2) If possible, attempt to identify the amount, route, and time of any substance ingested.
      (3) Suspected ExDS patients with evidence of head injury or traumatic mechanism of injury should receive Spinal Protection Protocol.
   c) Patients displaying signs of ExDS do not have medical capacity to refuse care.
      (1) If a suspected ExDS patient resists the delivery of care, ALS resources, EMS supervisors (where available), and law enforcement shall be requested to facilitate the treatment and transport of the patient in a safe and effective manner.
      (2) Patients who exhibit violent behavior shall require a police officer to accompany the patient during transport. Appropriate physical restraint procedures should be utilized per Restraint Protocol.

ALERT

PATIENTS DISPLAYING SIGNS AND SYMPTOMS OF EXDS SHALL BE TREATED AND TRANSPORTED AT THE ADVANCED LIFE SUPPORT LEVEL. ALS CARE AND TREATMENT WILL BE GUIDED BY THE SIGNS AND SYMPTOMS THAT THE PATIENT IS EXHIBITING, AS WELL AS POSSIBLE OCCULT INJURIES THAT MAY HAVE OCCURRED WHILE THE INDIVIDUAL WAS BEING SUBDUED. THE APPROPRIATE LIFESAVING TREATMENT FOR EXDS IS THE ADMINISTRATION OF MEDICATION, FLUID RESUSCITATION, AND DECREASING HYPERTHERMIC CORE BODY TEMPERATURE.

ALERT

PATIENTS WHO HAVE RECEIVED MULTIPLE ROUNDS OF ENERGY FROM CONDUCTED ELECTRICAL WEAPONS (INCLUDING T.A.S.E.R.) AND ARE DISPLAYING SIGNS OF EXDS ARE AT HEIGHTENED RISK FOR SUDDEN CARDIAC DEATH. THESE PATIENTS SHOULD BE TREATED WITH MEDICATION AND CLOSELY MONITORED FOR ANY EVIDENCE OF HEMODYNAMIC COLLAPSE.

   d) Establish IV/IO access. Consider blood draw if possible.
   e) Administer 20 mL/kg IV fluid bolus LR if tachycardiac and/or hyperthermic.
   f) Check glucometer and treat accordingly.
   g) Administer ketamine.
      (1) Administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg.
         (a) If severe agitation persists, administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg. Maximum total IV/IO dose 200 mg.
         (b) If agitation persists after second dose of ketamine, consider midazolam 2.5 mg IV/IO.
      (2) If IV/IO unavailable:
         (a) Administer 4 mg/kg IM. Maximum total IM dose 400 mg.
         (b) If severe agitation persists after IM ketamine dose, administer midazolam 5 mg IM.
         (c) Additional dose of 4 mg/kg IM ketamine for persistent agitation requires medical consultation.

LL. EXCITED DELIRIUM SYNDROME (ExDS) (Continued)

h) Consider the administration of cold packs to the groin, neck, and axilla for patients displaying evidence of hyperthermia.

ALERT

PATIENTS DISPLAYING SIGNS AND SYMPTOMS OF ExDS SHOULD NOT RECEIVE HALDOL AND/OR BENADRYL FOR CHEMICAL RESTRAINT. THESE MEDICATIONS MAY WORSEN AN ANTICHOLINERGIC CRISIS. HALDOL MAY INCREASE THE POSSIBILITY OF CARDIAC DYSRHYTHMIA BY PROLONGING THE QT INTERVAL, AND MAY ALSO INCREASE THE CHANCES OF A SEIZURE BY LOWERING THE BODY'S SEIZURE THRESHOLD.

i) Establish IV/IO access. Consider blood draw if possible.
j) Administer 20 mL/kg IV fluid bolus LR if tachycardiac and/or hyperthermic.
k) Check glucometer and treat accordingly.
l) Administer ketamine.
   (1) Patients who have not yet reached their 13th birthday require medical consultation: Administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg. Maximum total IV/IO dose 200 mg.
   (2) Patients aged 13 years to not yet reached their 18th birthday: Administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg. Maximum total dose 200 mg.
   (3) If severe agitation persists, administer repeat dose 1 mg/kg IV/IO to a maximum single dose of 100 mg.
   (4) If agitation persists after second dose of IV/IO ketamine, consider midazolam 0.1 mg/kg SLOW IVP/IO over 1–2 minutes. Maximum single dose 2.5 mg.
   (5) If IV/IO is unavailable:
      (a) Patients who have not yet reached their 13th birthday require medical consultation: Administer 4 mg/kg IM. Maximum IM dose 400 mg.
      (b) Patients aged 13 years to not yet reached their 18th birthday: Administer 4 mg/kg IM. Maximum IM dose 400 mg.
      (c) If severe agitation persists, administer midazolam 2.5 mg IM.
      (d) Additional dose of 4 mg/kg IM ketamine for persistent agitation requires medical consultation.
m) Consider the administration of cold packs to the groin, neck, and axilla for patients displaying evidence of hyperthermia.

4. Continue General Patient Care.

MM. PAIN MANAGEMENT

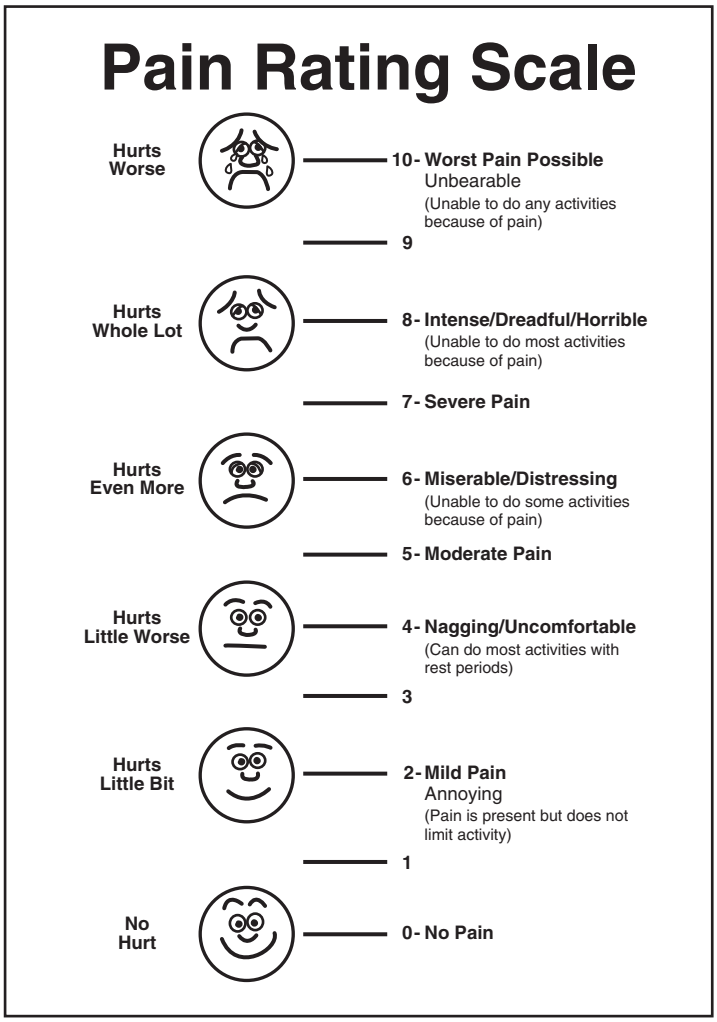
1. Initiate General Patient Care.

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.

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.



MM. PAIN MANAGEMENT (Continued)

b) Allow patient to remain in position of comfort unless contraindicated.
c) Monitor airway and vitals 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 2 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:
         (i) Less than 2 years of age: Not indicated
         (ii) 2–4 years: Unit dose 160 mg/5 mL
         (iii) 5–12 years: TWO unit doses of 160 mg/5 mL each for a total of 320 mg/10 mL
         (iv) 13 years and older: FOUR unit doses of 160 mg/5 mL each for a total of 640 mg/20 mL OR in a form of 325 mg pill or tablet X 2 for a total of 650 mg with sips of water as tolerated by the patient.

ALERT

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 THEIR PAIN AND APPROPRIATE DEFINITIVE TREATMENT.

e) Moderate to severe pain
   (1) Indications for pain management
      (a) The patient reports moderate to severe pain.
      (b) In the provider's judgment, the patient will benefit from treatment with an analgesic, including patients who are MOLST and/or EMS/DNR patients or being pre-medicated for a procedure .

MM. PAIN MANAGEMENT (Continued)

(2) Contraindications for pain management
  (a) Hypersensitivity or known allergy to the medication (morphine or fentanyl)
  (b) Uncorrected respiratory distress or hypoxemia refractory to supplemental oxygen
  (c) Uncorrected hypotension, defined as a persistent systolic pressure less than 90 mmHg

(3) Administer agent
  (a) Morphine IV/IM
    (i) Administer 0.1 mg/kg maximum single dose of 20 mg.
    (ii) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of morphine 0.05 mg/kg to a maximum additional dose of 10 mg.
    (iii) Obtain on-line medical direction for additional doses, if required.

    OR

  (b) Fentanyl IV/IO/IN/IM. IN administration max 1 mL per nare **(NEW '18)**
    (i) Administer 1 **mcg**/kg to a maximum initial dose of 200 **mcg**.
    (ii) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of fentanyl 1 **mcg**/kg to a maximum dose of 200 mcg.
    (iii) Obtain on-line medical direction for additional doses, if required.

  (c) Ketamine IV/IO/IN/IM **(NEW '18)**

ALERT INDICATED FOR MUSCULOSKELETAL EXTREMITY/BACK PAIN. NOT FOR CHEST PAIN, ABDOMINAL/FLANK PAIN, OR HEADACHE.

    (i) Administer 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.
      a. Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of ketamine 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.
      b. If IV unavailable, administer 0.5 mg/kg IN/IM (If delivery device is available; divide administration of the dose equally between the nares to a maximum of 1 mL per nare).
      c. Reassess in 15 minutes, If pain remains moderate to severe, then administer a second dose of ketamine 0.5 mg/kg IN/IM.

  (d) Morphine IV/IM
    (i) Administer 0.1 mg/kg to a maximum initial dose of 20 mg.
    (ii) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of morphine 0.05 mg/kg to a maximum additional dose of 10 mg.
    (iii) Obtain on-line medical direction for additional doses, if required.

    OR

MM. PAIN MANAGEMENT (Continued)

(e) Fentanyl IV/IO/IN/IM. IN administration max 1 mL per nare **(NEW '18)**
   (i) Administer 1 **mcg**/kg to a maximum initial dose of 200 **mcg**. Administer at a rate of 0.5 **mcg**/kg/min.
   (ii) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of fentanyl 1 **mcg**/kg to a maximum dose of 200 **mcg**.
   (iii)  Obtain on-line medical direction for additional doses, if required.

(f) Ketamine IV/IO/IN/IM **(NEW '18)**

INDICATED FOR MUSCULOSKELETAL EXTREMITY/BACK PAIN. NOT FOR CHEST PAIN, ABDOMINAL/FLANK PAIN, OR HEADACHE.

   (i) Administer 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.
      a. Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of ketamine 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.
      b. If IV unavailable, administer 0.5 mg/kg IN/IM (If delivery device is available; divide administration of the dose equally between the nares to a maximum of 1 mL per nare).
      c. Reassess in 15 minutes, If pain remains moderate to severe, then administer a second dose of ketamine 0.5 mg/kg IN/IM

CHEST PAIN THAT IS THOUGHT TO BE DUE TO ACUTE CORONARY SYNDROME SHOULD INITIALLY BE MANAGED WITH NITROGLYCERIN. IF PAIN REMAINS REFRACTORY TO NITROGLYCERIN, CONSIDER THE USE OF OPIOID ANALGESIA. AVOID OPIOIDS FOR PATIENTS WITH SUSPECTED EXACERBATION OF CONGESTIVE HEART FAILURE.

USE OPIOID ANALGESIA WITH CAUTION IN THE MANAGEMENT OF THE MULTIPLE TRAUMA PATIENT. OBSERVE FOR EVIDENCE OF HYPOTENSION AND CORRECT AS NEEDED WITH FLUID BOLUSES. REASSESS VITAL SIGNS AFTER ADMINISTRATION OF THE MEDICATION.

USE ANALGESIA WITH CAUTION IN THE MANAGEMENT OF PATIENTS WITH ALTERED MENTAL STATUS. OBSERVE FOR RESPIRATORY DEPRESSION AND TAKE STEPS AS NEEDED TO ENSURE A STABLE AIRWAY.

(4) Repeat. Measure level of pain and monitor the patient's level of pain during subsequent treatment and transport. **(NEW '18)**

PATIENTS RECEIVING A NEW OPIOID (EITHER WITHIN 1 HOUR OR GREATER THAN 1 DOSE WITHIN ANY TIME FRAME) FROM ALS OR BY THE SENDING FACILITY MUST BE TRANSPORTED BY ALS.

4. Continue General Patient Care. **(NEW '18)**

NN. ALLERGIC REACTION

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/or mild wheezing

      (3) **SEVERE:** Diffuse wheezing, pharyngeal swelling, dyspnea, hypoperfusion, abnormal skin color, stridor, and/or loss of peripheral pulses

3. Treatment
   a) Assist patient experiencing moderate 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 manual (1:1,000) 0.5 mg in 0.5 mL IM or patient's prescribed fast-acting bronchodilator.

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

   c)  Consider additional doses of epinephrine (1:1,000) 0.5 mg in 0.5 mL IM or prescribed fast-acting bronchodilator.

   d) Moderate Distress
      Administer epinephrine 1:1,000.
      0.5 mg in 0.5 mL
      May repeat every 5 minutes for total of 3 doses for severe reactions.
       Additional doses of epinephrine require medical consultation.

      (1) Establish IV access with LR; administer 20 mL/kg bolus.
      Titrate to a systolic pressure of 100 mmHg.

      (2) Administer diphenhydramine.
      50 mg SLOW IVP or IM
       Additional doses of diphenhydramine require medical consultation.

      (3) Administer a combination of albuterol/Atrovent via nebulizer.
      Albuterol 2.5 mg and Atrovent 500 **mcg**

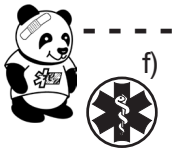
      (4) If further treatments are indicated, an additional albuterol-only nebulizer may be given.

NN. ALLERGIC REACTION (Continued)

e) Mild Allergic Reaction

(1) Consider diphenhydramine.
25 mg SLOW IVP or IM
OR
Consider epinephrine 1:1,000.
0.5 mg in 0.5 mL

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



f) Assist patient experiencing moderate or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine (1:1,000).
Less than 5 years of age: 0.15 mg in 0.15 mL IM
5 years of age or greater: 0.5 mg in 0.5 mL IM
or patient's prescribed fast-acting bronchodilator.

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

h) Consider additional doses of epinephrine (1:1,000)
Less than 5 years of age: 0.15 mg in 0.15 mL IM
5 years of age or greater: 0.5 mg in 0.5 mL IM
or fast-acting bronchodilator.

i) Moderate Distress
Less than 5 years of age: 0.15 mg in 0.15 mL IM.
5 years of age or greater: 0.5 mg in 0.5 mL IM.
May repeat every 5 minutes for total of 3 doses for severe reactions.
Additional doses of epinephrine require medical consultation.

(1) Establish IV/IO access with LR.

NN. ALLERGIC REACTION (Continued)

(2) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO.
If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.

Administer diphenhydramine.
1 mg/kg SLOW IVP/IO or IM
Maximum single dose 50 mg

Additional doses of diphenhydramine require medical consultation

(3) 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**.

(4) If further treatments are indicated, an additional albuterol-only nebulizer may be given.

j) 
Mild Allergic Reaction

Consider diphenhydramine.
1 mg/kg SLOW IVP or IM
Maximum single dose 25 mg
OR
Consider epinephrine 1:1,000.
0.15 mg in 0.15 mL

4. Continue General Patient Care.

OO. ANAPHYLAXIS

1. Initiate general patient care.

2. Presentation
   a) Anaphylaxis is a condition defined by respiratory and/or cardiovascular collapse resulting from an exaggerated response of the body's immune system to any substance.
   b) Anaphylaxis is likely to present with one or more of the following:
      (1) Acute onset of illness after exposure to a known allergen with two or more of the following:
         (a) urticaria of skin and/or mucosa or acute swelling/edema (eg, tongue, airway, stridor, lips)
         (b) respiratory compromise
         (c) hypotension
         (d) persistent GI symptoms of vomiting, abdominal pain, or diarrhea
      (2) Acute onset of illness after exposure to a **known** allergen with hypotension

3. Treatment
   a) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine auto-injector or manual (1:1,000) 0.5 mg in 0.5 mL IM or patient's prescribed fast-acting bronchodilator.
   b)  Consider additional doses of epinephrine (1:1,000) 0.5 mg in 0.5 mL IM.
   c) Additional treatments to consider AFTER administration of the initial dose of epinephrine
      (1) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.

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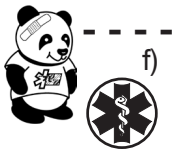
   d) Administer epinephrine
      (1) Epinephrine (1:1,000) 0.5 mg in 0.5 mL IM
      (2) May repeat every 5 minutes for a total of 3 doses for severe reactions.
      (3) For patients who are in extremis with severe hypotension or impending respiratory failure, consider initiating an epinephrine drip after having administered 3 doses of IM epinephrine.
         (a) Mix 1 mg of epinephrine (either 1:1,000 or 1:10,000) in a 1 liter bag of LR IV/IO. Initiate an infusion with a wide open macro drip titrating to a systolic pressure of greater than 90 mmHg. When drip administered, this will be reported as an exceptional call.

OO. ANAPHYLAXIS (Continued)

e) Additional treatments to consider AFTER administration of the initial dose of epinephrine
   (1) Albuterol/Atrovent via nebulizer: Albuterol 2.5 mg and Atrovent 500 mcg; may repeat albuterol neb 2.5 mg one time
   (2) Diphenhydramine 50 mg SLOW IVP or IM
   (3) Establish IV access with LR
   (4) Administer 20 mL/kg bolus for hypotension
   (5) Dexamethasone 10 mg IV/IO



f) Assist patient experiencing severe symptoms with the patient's prescribed or EMS service's epinephrine:
   (1) Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.15 mL IM
   (2) 5 and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
   (3) Consider additional doses of epinephrine (1:1,000) 0.5 mg in 0.5 mL IM.
   (4) Additional treatments to consider AFTER administration of the initial dose of epinephrine
      (a) Albuterol MDI inhaler (2 puffs) may be repeated once within 30 minutes.

   (5) Less than 5 years of age: administer 0.15 mg in 0.15 mL IM
   (6) 5 and greater: administer 0.5 mg in 0.5 mL IM
   (7) May repeat every 5 minutes for a total of 3 doses for severe reactions.

g) Additional treatments to consider AFTER administration of the initial dose of epinephrine
   (1) Albuterol/Atrovent via nebulizer
      (a) For an infant less than 1 year of age, administer albuterol 1.25 mg via nebulizer; Atrovent is contraindicated.
      (b) 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.
      (c) For a child 2 years of age or greater, administer albuterol 2.5 mg and Atrovent 500 mcg.
      (d) If further respiratory treatments are needed, an additional albuterol-only nebulizer may be given.
   (2) Diphenhydramine 1 mg/kg SLOW IVP or IM
   (3) Establish IV access with LR
   (4) Administer 20 mL/kg bolus for hypotension
   (5) Dexamethasone 0.5 mg/kg to a maximum of 10 mg IV/IO

4. Continue General Patient Care.

PP. RESPIRATORY DISTRESS: ASTHMA/COPD

1. Initiate General Patient Care.
2. Presentation

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

3. Treatment

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

a) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed fast-acting bronchodilator or prescribed epinephrine auto-injector.

b)  Use of the EMS service's manual epinephrine (1:1,000) 0.5 mg in 0.5 mL or 0.3 mg via epinephrine auto-injector IM requires medical consultation.

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

d)  Consider additional doses of patient's prescribed fast-acting bronchodilator or manual epinephrine (1:1,000) 0.5 mg in 0.5 mL or 0.3 mg via epinephrine auto-injector IM.

e) Establish IV access with LR on all Priority 1 or 2 patients and all patients with a history of cardiac disease.

f) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, continuous positive airway pressure (CPAP), or BVM while receiving medication via nebulizer.

g) Administer a combination of albuterol/Atrovent via nebulizer.
Albuterol 2.5 mg and Atrovent 500 **mcg**

h) If further treatments are indicated, an additional albuterol-only nebulizer may be given.

i) Consider CPAP if patient continues to deteriorate in spite of above nebulized treatments. Continue inline nebulizations.

j) Consider the administration of epinephrine 1:1,000.
0.3 mg IM in the lateral thigh via epinephrine auto-injector or
0.5 mg in 0.5 mL IM
May repeat every 5 minutes for a total of 3 doses for severe reactions.

k) For moderate to severe exacerbations, consider the administration of dexamethasone 10 mg IV/PO.

l)  For moderate to severe exacerbations, consider the administration of magnesium sulfate 1–2 grams, mixed in 50–100 mL of approved diluent, IV/IO over 10–20 minutes.

PP. RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)

m) Consider additional doses of epinephrine or albuterol.

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

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

o) Fast-acting bronchodilator (2 puffs) may be repeated once within 30 minutes.

p) Consider additional doses of patient's prescribed fast-acting bronchodilator or epinephrine (1:1,000) 0.15 mg in 0.15 mL IM.

q) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.

r) Administer a combination of albuterol/Atrovent via nebulizer:
   (1) **For an infant less than 1 year of age**, administer albuterol 1.25 mg via nebulizer; Atrovent is contraindicated.
   (2) **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**.
   (3) **For a patient 2 years of age or greater**, administer albuterol 2.5 mg and Atrovent 500 **mcg**.

s) If further treatments are indicated, an additional albuterol-only nebulizer may be given.
   AND/OR

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

t) Administer epinephrine 1:1,000.
   Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.15 mL IM
   5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
   May repeat every 5 minutes for a total of 3 doses for severe reactions.

u) For moderate to severe exacerbations, consider the administration of dexamethasone 0.5 mg/kg PO/IV up to a maximum dose of 10 mg.

v) Consider magnesium sulfate 50 mg/kg IV/IO to a max of 2 grams given over 10–20 minutes (mixed in 50 - 100 mL of approved diluent).

ALERT MAGNESIUM ADMINISTRATION OFTEN CAUSES HYPOTENSION IN CHILDREN. CONSIDER ADMINISTERING BOLUS 20 ML/KG OF LACTATED RINGER'S WITH THE ADMINISTRATION OF MAGNESIUM.

w) Consider additional doses of albuterol or epinephrine.

4. Continue General Patient Care.

SS. SEPSIS: ADULT

1. Initiate General Patient Care

2. Presentation
   a) Infection can cause a systemic response resulting in fever, altered mental status, shock including or excluding hypotension, and death. Early recognition and treatment with aggressive fluids, when not contraindicated, and early hospital notification may improve survival rates and patient outcomes.
   b) The following patient populations are considered especially high risk for sepsis and should have their temperature measured:
      (1) Altered mental status
      (2) Patients in long term care facilities (nursing home)
      (3) Indwelling catheters
      (4) Oncology patients
      (5) Solid organ transplant
      (6) Bed ridden
   c) For an adult patient, 18 years of age and older, to qualify for this protocol, they must have a suspected source of infection AND also present with at least two of the following criteria:
      (1) Temp greater than 100.4ºF (38ºC) or less than 95.9ºF (35.5ºC)
      (2) HR greater than 100 bpm
      (3) RR greater than 25 (or $EtCO_2$ less than or equal to 32 mmHg)
      (4) Hypotension (systolic BP less than 90 mmHg)
      (5) Point of care lactate reading greater than or equal to 4 mmol/L (if available)
   d) Patients with hypotension or altered mental status should be considered to have septic shock and treated and transported rapidly. Patients may be treated under this protocol if they do not meet the above criteria with medical consultation.

ALERT

IF PATIENT MEETS ABOVE SEPSIS CRITERIA, THIS PATIENT IS A PRIORITY 1 OR 2 PATIENT AND REQUIRES NOTIFICATION OF THE NEAREST APPROPRIATE FACILITY AS SOON AS POSSIBLE TO ALLOW FOR HOSPITAL PREPARATION. DURING THE CONSULTATION WITH THE RECEIVING FACILITY, THE PROVIDER SHALL USE THE VERBIAGE, “SEPSIS ALERT” AS THE UNIVERSAL METHOD OF NOTIFYING THE FACILITY THAT THE PATIENT MEETS THE SEPSIS INCLUSION CRITERIA

3. Treatment
   a) Place patient in position of comfort, or supine if hypotension is present.
   b) Carefully monitor airway and respiratory status, manage as required using the appropriate respiratory distress protocol (especially for patients with suspected pneumonia).

   c) Initiate large bore IV. If large bore IV not available, consider a second peripheral IV with the intention of not causing delay in transport and reserve the use of IO for priority 1 patient. If transport time is greater than 20 minutes and IV access is unsuccessful, consider placement of an IO (especially for septic shock). Consider performing a blood draw if time permits.

SS. SEPSIS: ADULT (Continued)

d) If lungs are clear, and patient does not have a history of CHF or end stage renal failure, provide 2 L of LR wide open. Reassess every 500 mL for shortness of breath, blood pressure, and SpO_2 saturation changes.
OR

e) If patient is fluid sensitive (i.e., has a history CHF, pulmonary edema, or end stage renal disease) infuse 250 mL and carefully monitor and reassess. Repeat 250 mL once if no worsening of respiratory status is noted to a max of 500 mL (consultation may be obtained to provide more fluid).

f) If available, perform point of care lactate testing (Jurisdictional Pilot Program only).

ALERT FLUID LIMITS OR DOSES MAY BE MODIFIED WITH CONSULTATION.

g) Place patient on cardiac monitor and perform 12-lead (do not delay IV therapy or fluid bolus).

h) If hypotension persists after 2 L of LR are provided, consider an additional 2 L of LR (up to a maximum of 30 mL/kg total, including the first 2 L bolus) and/or dopamine 2–20 **mcg**/kg/min (paramedic only). Titrate to a Mean Arterial Pressure of 65 mmHg or systolic BP of 90 mmHg. **(NEW ’18)**

4. Continue General Patient Care.

TT. SEPSIS: PEDIATRIC

1. Initiate General Patient Care

2. Presentation
   a) Infection can cause a systemic response resulting in fever, altered mental status, shock including or excluding hypotension, and death. Early recognition and treatment with aggressive fluids, when not contraindicated, and early hospital notification may improve survival rates and patient outcomes.
   b) The pediatric septic patient may be difficult to identify due to a poor history or providers may have difficulty identifying an obvious source of infection, as many pediatric sepsis patients are very young children or infants.
   c) The following pediatric patients are at greater risk for sepsis and should have their temperature measured:
      (1) Altered mental status
      (2) Asplenia (spleen removed from treatment of trauma or illness)
      (3) Bone marrow or solid organ transplant
      (4) Cancer patients
      (5) Cerebral Palsy
      (6) Sickle Cell Disease
      (7) Central or indwelling catheters
      (8) Immunodeficiency or immunosuppression
      (9) Bed ridden
      (10) Severe mental delay
   d) For a pediatric patient, who has not reached their 18th birthday, to qualify for this protocol, they must have a known or suspected infection AND also present with at least three of the Pediatric Sepsis Rule-In Criteria by Age.
   e) A patient not meeting three or more Pediatric Sepsis Rule-In Criteria by Age may be treated under this protocol with Pediatric Base Station approval if sepsis is suspected by the prehospital provider.

ALERT ALTERED MENTAL STATUS REQUIRES GLUCOSE CHECK.

   f) Patients who meet the sepsis rule-in criteria and have at least one of the High risk Sepsis Rule-In Criteria by Age (shaded) should receive aggressive standing order fluid therapy. Other patients meeting the pediatric sepsis rule-in criteria but not having one of the high risk signs may be treated only after contacting a Pediatric Base Station for medical consultation.

TT. SEPSIS: PEDIATRIC (Continued)

Pediatric Sepsis Rule-In Criteria by Age						
Suspected or known infection plus three criteria						
	Less than 28 days	**1-12 months**	**1 year but less than 2 years**	**2-4 years**	**5-12 years**	**13-17 years**
Heart Rate (sustained)	greater than 205 bpm	greater than 205 bpm	greater than 190 bpm	greater than 140 bpm	greater than 140 bpm	greater than 100 bpm
Respiratory Rate	greater than 60 rpm	greater than 60 rpm	greater than 40 rpm	greater than 40 rpm	greater than 34 rpm	greater than 25 rpm
Temp	greater than 38.0 C° or greater than 100.4 F°					
Cap Refill/Skin	Delayed (greater than 3 seconds), mottled					
Systolic BP (mmHg)	less than 60	less than 70	(less than 70+ (age x2))	(less than 70+ (age x2))	(less than 70+ (age x2))	less than 90
Mental Status	Unresponsive, confused, inappropriate, lethargic					
High Risk Condition	Cancer, Asplenia, Sickle Cell Disease, bone marrow or solid organ transplant, central or indwelling line/catheter, immunodeficiency or immunosuppression					
Meeting any of these criteria indicates standing order initiation of a fluid bolus.						

IF A PEDIATRIC PATIENT MEETS THE ABOVE **PEDIATRIC SEPSIS RULE-IN CRITERIA BY AGE**, THIS PATIENT IS A PRIORITY 1 OR 2 PATIENT AND REQUIRES NOTIFICATION AS "SEPSIS ALERT" TO THE NEAREST APPROPRIATE FACILITY PRIOR TO ARRIVAL.

IF A PEDIATRIC PATIENT MEETS ANY OF THE **SEPSIS RULE-IN PLUS ONE OR MORE OF THE SHADED AREAS IN THE CHART,** CONSULTATION WITH A DESIGNATED PEDIATRIC BASE STATION IS REQUIRED AND SHOULD BE COMBINED WITH LOCAL BASE STATION CONSULTATION.

3. Treatment

a) Carefully monitor airway and respiratory status. Manage as required using the appropriate respiratory distress protocol (especially for patients with suspected pneumonia).

b) Place patient on cardiac monitor.

c) If patient meets the pediatric sepsis rule-in criteria and meets one of the high risk criteria (shaded), initiate IV/IO access and provide a 20 mL/kg bolus of LR IV/IO over 5–20 min.
Maximum single dose of 2L.

d) Monitor closely for signs of respiratory distress, rales or delayed capillary refill (greater than 2 seconds). If respiratory status deteriorates rapidly, stop bolus and obtain medical consultation.

e) For volume-sensitive children administer initial fluid bolus of 10 mL/kg LR IV/IO (max of 250 mL). (Volume-sensitive children are children who 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.)

TT. SEPSIS: PEDIATRIC (Continued)

f) **If patient's vital signs do not improve after 20 mL/kg fluid,** consider additional 20 mL/kg LR boluses (up to a max of 60 mL/kg total, including first bolus, in one hour).

ALERT FLUID LIMITS OR DOSES MAY BE MODIFIED WITH CONSULTATION.

g) Dopamine 2–20 **mcg**/kg/min IV/IO. Titrate to age-specific vital signs.

h) Consider initiation of a second IV. Initiation of second IV shall not delay transport.

i) Patients with fever or known or suspected infection and hypotension or altered mental status should be considered to have septic shock and treated and transported rapidly.

4. Continue General Patient Care.

UU. STROKE: NEUROLOGICAL EMERGENCIES

1. Initiate General Patient Care.

2. Presentation
   Patient may present with numbness or weakness (often on one side only), difficulty speaking, blurred vision, dizziness, or a severe, unexplained headache. May be accompanied by seizures or altered mental status.

The Cincinnati Prehospital Stroke Scale

(Kothari R, et al. Acad Emerg Med 1997; 4:9866-990.)

Facial Droop (have patient show teeth or smile):
- Normal – both sides of face move equally
- Abnormal – one side of face does not move as well as the other side

Arm Drift (patient closes eyes and holds both arms straight out for 10 seconds):
- Normal – both arms move the same or both arms do not move at all (other findings, such as strength of grip, may be helpful)
- Abnormal – one arm does not move or one arm drifts down compared with the other

Abnormal Speech (have the patient say "you can't teach an old dog new tricks"):
- Normal – patient uses correct words with no slurring
- Abnormal – patient slurs words, uses the wrong words, or is unable to speak

If Cincinnati Prehospital Stroke Scale is positive, perform the Los Angeles Motor Scale (LAMS). Relay LAMS score to the receiving hospital during Stroke Alert notification.

The Los Angeles Motor Scale (LAMS)

Facial droop	
Absent	0
Present	1
Arm drift	
Absent	0
Drifts down	1
Falls rapidly	2
Grip strength	
Normal	0
Weak grip	1
No grip	2

3. Treatment
   a) Position patient with head elevated at 30 degrees.
   b) If the patient has a positive Cincinnati Stroke Scale AND can be delivered to the hospital **within 3.5 hours*** of when patient was last known well, transport the patient to the closest Designated Acute Stroke Ready, Primary, or Comprehensive Stroke Center. If there is not one within 30 minutes, then go to the nearest hospital. Providers should obtain and document a contact telephone number for one or more individuals who have details about the patient's medical history so that the physician may obtain and validate additional patient information. **(NEW '18)**

UU. STROKE: NEUROLOGICAL EMERGENCIES (Continued)

IF PATIENT MEETS ABOVE STROKE CRITERIA, THIS PATIENT IS A PRIORITY 1 PATIENT AND REQUIRES NOTIFICATION OF THE NEAREST DESIGNATED ACUTE STROKE READY, PRIMARY, OR COMPREHENSIVE STROKE CENTER AS SOON AS POSSIBLE TO ALLOW HOSPITAL PREPARATION. DURING THE CONSULTATION WITH THE RECEIVING FACILITY, THE PROVIDER SHALL USE THE VERBIAGE, "STROKE ALERT" AS THE UNIVERSAL METHOD OF NOTIFYING THE FACILITY THAT THE PATIENT MEETS THE STROKE INCLUSION CRITERIA.

*STROKE TREATMENTS ARE TIME SENSITIVE. REDUCTION IN TIME OF SYMPTOM ONSET TO TREATMENT IMPROVES OUTCOMES

WHILE STROKES DURING PREGNANCY OR SHORTLY AFTER GIVING BIRTH ARE RARE, THERE HAS BEEN A SIGNIFICANT RISE REPORTED IN THE LITERATURE. MOTHERS-TO-BE AND POSTPARTUM MOTHERS HAVE AN INCREASED RISK.

c) Use glucometer and treat if glucose less than 70 mg/dl.
d) Establish IV access with LR.
e) If the patient is hypotensive, obtain medical consultation.
f) Consider obtaining blood sample using closed system.
g) Do not treat hypertension in the field.

THE CAUSES OF STROKES IN CHILDREN ARE DIFFERENT FROM ADULTS. WHILE STROKES ARE UNCOMMON IN CHILDREN, THEY DO OCCUR AND ARE MOST OFTEN CAUSED BY ONE OF THE FOLLOWING CONDITIONS: CONGENITAL HEART DEFECTS, INFECTIONS (INCLUDING CHICKEN POX, MENINGITIS, OR ENCEPHALITIS), BRAIN INJURY, OR BLOOD DISORDERS (SUCH AS SICKLE CELL DISEASE). STROKES IN CHILDREN ARE MOST OFTEN SEEN IN INFANTS BUT DO OCCUR IN CHILDREN OF ANY AGE.

CHILDREN WITH STROKE SYMPTOMS WHO HAVE NOT REACHED THEIR 18TH BIRTHDAY SHALL BE TREATED UNDER THE PEDIATRIC PROTOCOL. CONSULT WITH A LOCAL BASE STATION AND A PEDIATRIC BASE STATION TO ARRANGE TRANSPORT TO A MARYLAND PEDIATRIC TRAUMA CENTER

h) Administer oxygen at 2–6 liters via nasal cannula (unless hypoxic or in respiratory distress).
i) Position patient with head elevated at 30 degrees.
j) If a child presents with a SUSPECTED stroke (e.g., sickle cell patient), consult with the nearest Pediatric Base Station and local Base Station. Providers should obtain and document a contact telephone number for one or more individuals who have details about the patient's medical history so that the physician may obtain and validate additional patient information. **(NEW '18)**
k) Use glucometer and treat accordingly.
(See Section IV, Glucometer Protocol.)

UU. STROKE: NEUROLOGICAL EMERGENCIES (Continued)

l) Establish IV access with LR.

m)  If the patient is hypotensive, obtain medical consultation.

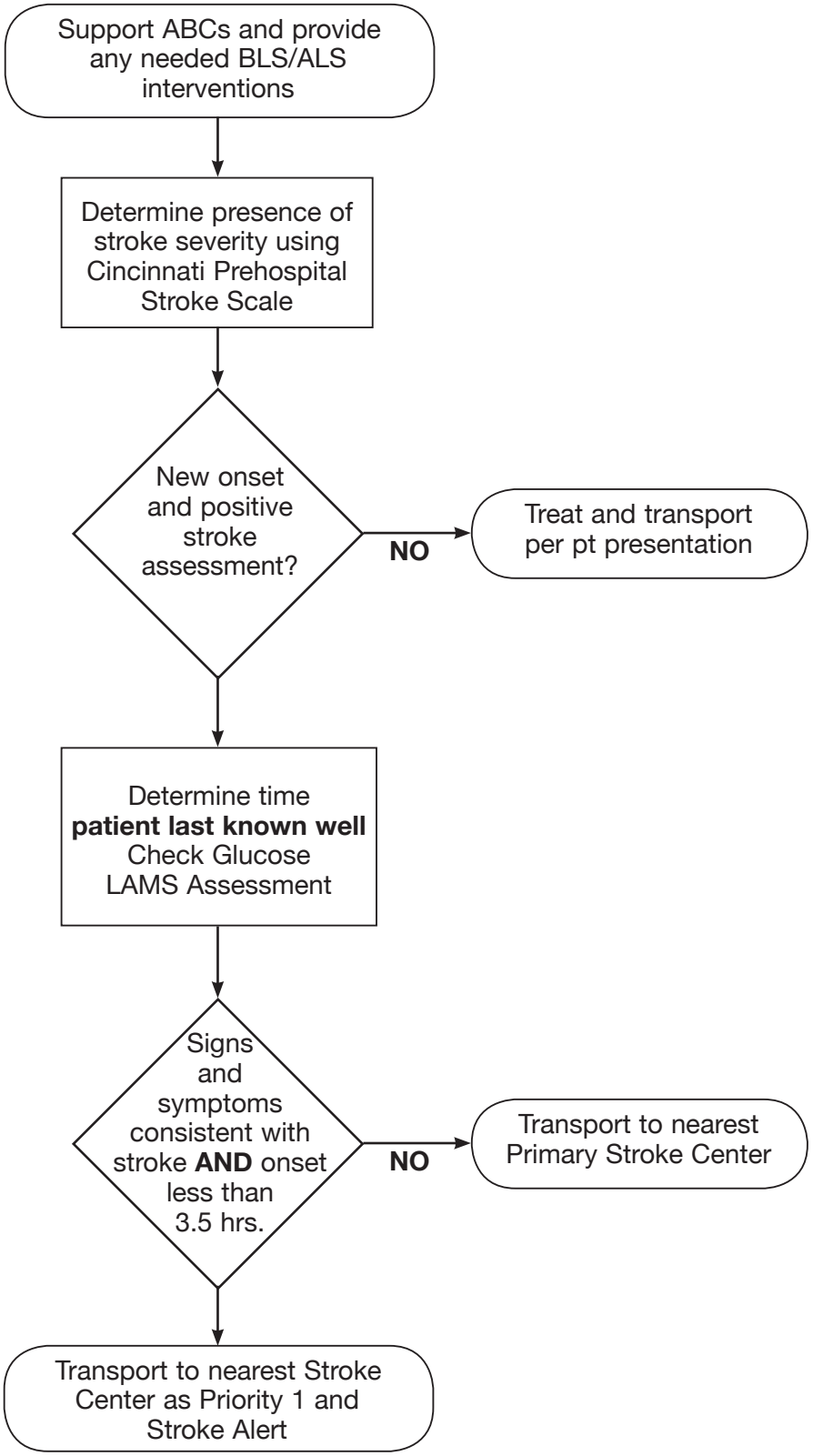
n) Consider obtaining blood sample using closed system.

o) Do not treat hypertension in the field.

4. Continue General Patient Care.

UU. STROKE: NEUROLOGICAL EMERGENCIES (Continued)

EMS STROKE ALGORITHM



UU2. SYNCOPE

1. Initiate General Patient Care.

2. Presentation

   A patient of greater than 24 months of age who has had a loss of consciousness associated with an inability to maintain postural tone. The episode may spontaneously and completely resolve without medical intervention. **For children less than 24 months of age, refer to ALTE Protocol.**

3. Treatment

   a) Place patient in position of comfort.
   b) Perform Cincinnati Stroke Scale. If any segment is positive, go to Stroke: Neurological Emergencies Protocol.

   c) Place patient on cardiac monitor.
   d) Obtain 12-lead EKG.

HISTORY, PHYSICAL EXAMINATION, AND 12-LEAD EKG SHOULD ALL BE USED TO DETERMINE THE PATIENT'S RISK OF AN ADVERSE OUTCOME. PATIENTS WITH HISTORY OR EVIDENCE OF HEART FAILURE, STRUCTURAL CARDIAC ANOMALY, AND/OR ABNORMAL FINDING ON EKG ARE AT HIGHER RISK FOR ADVERSE OUTCOMES.

   e) Establish IV access.
   f) Use glucometer and treat accordingly.
   g) Administer 20mL/kg bolus of LR to treat systolic blood pressure persistently less than 90 mmHg.

   h) Place patient in position of comfort.

   i) Place patient on cardiac monitor.
   j) Obtain 12-lead EKG for patients 13 years of age and older, or have not returned to baseline, or high risk factors as listed in the ALERT.

SYNCOPE IN CHILDREN CAN SOMETIMES BE ASSOCIATED WITH SERIOUS MEDICAL CONDITIONS. PATIENTS WITH HISTORY OR EVIDENCE OF HEART FAILURE, STRUCTURAL CARDIAC ANOMALY, AND/OR ABNORMAL FINDING ON EKG ARE AT HIGHER RISK FOR ADVERSE OUTCOMES.

   k) Establish IV access, if appropriate.
   l) Use glucometer and treat appropriately.
   m) Administer 20mL/kg bolus of LR to treat age-defined hypotension..

4. Continue General Patient Care

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

1. Initiate General Patient Care.

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

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

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

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

   (Hand Center and/or nearest appropriate trauma center)

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

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

   LIFE BEFORE LIMB.

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

   d) Contraindications for referral to a Hand Center
      (1) Patients with unstable or abnormal vital signs
      (2) Patients with major and/or multiple system trauma

   e) Contraindication for referral to Pediatric or Adult Trauma Center
   Patients with toe amputation (partial or complete)

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

3. Treatment

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

ALERT

DO NOT SUBMERGE IN WATER OR FREEZE AMPUTATED PART.

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

   b) Establish IV access with LR, if appropriate.

   c) Administer fluid bolus, if appropriate.
   20 mL/kg of LR IV
   Titrate to a systolic pressure of 100 mmHg.

   d) Administer analgesia per Pain Management Protocol.

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

   f) Establish IV/IO access with LR, if appropriate.

   g) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.

   h) Third and subsequent fluid boluses at 20 mL/kg LR IV/IO.

   i) Administer analgesia per Pain Management Protocol.

4. Continue General Patient Care.

AAA. TRAUMA PROTOCOL: SPINAL PROTECTION

1. Initiate General Patient Care.

2. Presentation **(NEW '18)**
   a) **"Full Spinal protection"** refers to the act of protecting the spinal cord from further injury.
   b) **"Spinal immobilization"** is the act of placing a patient on a backboard with cervical collar for the purpose of trying to prevent excessive movement of the spinal column.
   c) Indications for initiating spinal protection:
      (1) Patients who have a blunt trauma with a high-energy mechanism of injury that has potential to cause spinal cord injury or vertebral instability ***AND*** one or more the following should receive spinal protection:
         (a) Midline cervical, thoracic, or lumbar spinal pain, tenderness, or deformity
         (b) Signs and symptoms of new paraplegia or quadriplegia
         (c) Focal neurological deficit (sensory or motor)
         (d) Altered mental status or disorientation
         (e) Distracting injury: Any injury (e.g., fracture, chest, or abdominal trauma) associated with significant discomfort that could potentially distract from a patient's ability to accurately discern or define spinal column pain or tenderness.
      (2) Indications for referral to an Adult Specialty Spinal Center.
         (a) 15 years of age or older **AND**
         (b) Signs and symptoms of new paraplegia or quadriplegia in the presence of trauma **AND**
         (c) Patent airway **AND**
         (d) Hemodynamically stable
         If considering referral to Adult Specialty Spinal Center, consult with both the nearest Trauma Center and the Adult Spinal Specialty Center, when possible.

3. Treatment

   a) Initiate General Patient Care.

   b) All patients meeting the Spinal Protection Protocol shall have manual in-line cervical spine stabilization and application of a correctly sized cervical collar.

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

   d) Patients meeting the Spinal Protection Protocol who are with neurological deficit, or not able to ambulate on their own accord, **shall** be immobilized with cervical collar and a backboard.

AAA. TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)

e) The following patients only need application of a cervical collar and do not need to be placed in full immobilization with a backboard:
   (1) Patients who are found by EMS providers to be standing or ambulatory,
   (2) Patients who have a GCS of 15 and are able to safely extricate themselves from the environment (e.g., vehicle seat) without gross movement (flexion, extension, or rotation) of the spinal column, and
   (3) Patients who do not have evidence of a neurological deficit.

f) Patients who are placed in a cervical collar without a need for immobilization on a backboard should be assisted in minimal movement to the EMS stretcher and allowed to lie down supine on their own accord.

g) Patients meeting Spinal Protection Protocol and not requiring immobilization with a backboard should be secured to the EMS stretcher in a supine position with the head elevated at 30 degrees.

h) Backboards may be used for patient extrication and patient transfer for patients not meeting Spinal Protection Protocol; however, other devices are preferred (e.g., sheet, Reeves sleeve, or scoop stretcher).

i) If the backboard is used for extrication from the scene to an ambulance, the patient should be removed from the backboard as soon as possible. The stretcher mattress will provide support in place of the backboard.

j) Interfacility transport patients who have already been removed from a backboard should not be placed back on the backboard prior to transport.

k) Helmet Removal
   (1) If patient is wearing a helmet, the goals are assessment and management of the airway, breathing, and circulation followed by protection of the spinal column by maintaining neutral alignment of the spinal column.
   (2) If patient is wearing helmet and no shoulder pads, removal of the helmet is indicated.
   (3) If patient is wearing helmet with shoulder pads, removal of the helmet is acceptable only with concurrent removal of shoulder pads. Under these conditions, removal of the helmet is indicated for management of the airway or other facial trauma.

l) Patients found with backboard applied before EMS arrival
   (1) If EMS providers find patient immobilized on a backboard applied prior to arrival, the principles of the Spinal Protection Protocol still apply.

AAA. TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)

cc) Patients found with backboard applied before EMS arrival
(2) If EMS providers find patient immobilized on a backboard applied prior to arrival, the principles of the Spinal Protection Protocol still apply.

dd) Establish IV/IO access with LR, if appropriate.

ee) Administer fluid bolus, if appropriate.
20 mL/kg of LR IV
Titrate to a systolic blood pressure of 100 mmHg.

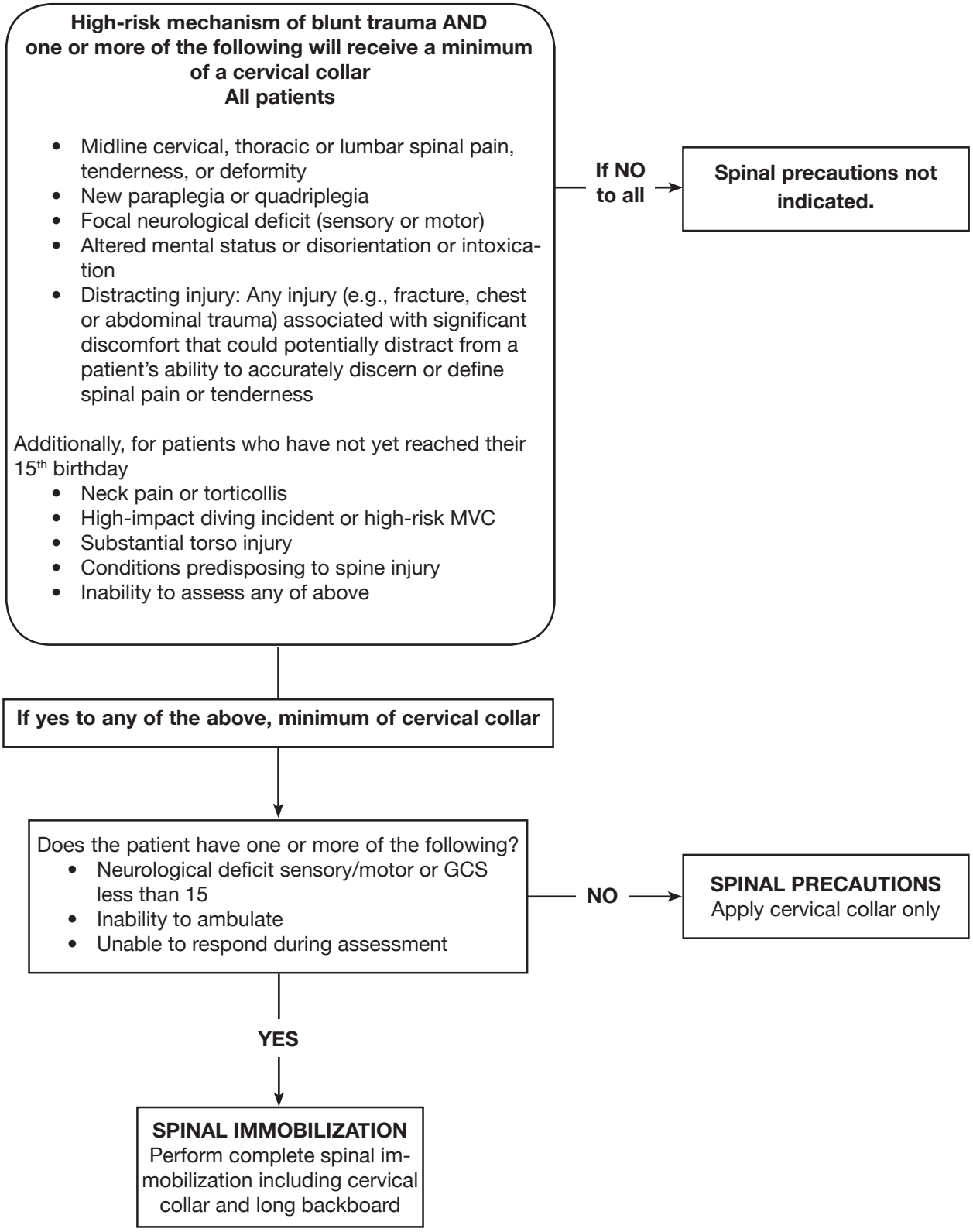
ff) Consider dopamine.
2–20 **mcg**/kg/min IV/IO
Titrate to a systolic blood pressure of 100 mmHg.

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

4. Continue General Patient Care.

AAA. TRAUMA PROTOCOL: SPINAL PROTECTION (Continued)

SPINAL PROTECTION ALGORITHM (NEW '18)



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BBB. TRAUMA PROTOCOL: TRAUMA ARREST (NEW '18)

1. Initiate General Patient Care.
2. Presentation

   Early cardiac arrest secondary to trauma is usually due to severe hypoxia, neurologic injury, or massive hemorrhage. The patient is unresponsive, pulseless, and apneic.

3. Treatment

   a) Rapid assessment and extrication
   b) Determine if patient meets the criteria for termination of resuscitation for a patient in traumatic arrest. If patient meets criteria, discontinue resuscitation. If criteria are not met, continue resuscitation.
   c) Perform spinal immobilization for blunt trauma patients only. Patients with isolated penetrating trauma should not have spinal immobilization performed. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization.
   d) CPR with high-quality chest compressions and minimal interruptions.
   e) Consider AED if arrest is believed to be medical in nature and the patient meets the criteria.
   f) Treat reversible causes of traumatic arrest.
      (1) Open airway and ensure adequate ventilation, insert necessary adjunct; consider the need for advanced airway earlier in the resuscitation of the trauma arrest patient.
      (2) Seal open chest wounds with occlusive dressings.
      (3) Control life-threatening external hemorrhage.

PENETRATING TRAUMA PATIENTS HAVE AN IMPROVED CHANCE OF SURVIVAL WITH THE IMMEDIATE APPLICATION OF HEMORRHAGE CONTROL AND ALS BILATERAL NEEDLE DECOMPRESSIONS WHILE PREPARING AND LOADING THE PATIENT FOR IMMEDIATE TRANSPORT. IF THE PENETRATING TRAUMA PATIENT IS FOUND IN A RHYTHM OTHER THAN ASYSTOLE, AND THE TRAUMA CENTER IS WITHIN 15 MINUTES, COMPLETE THE TREATMENTS FOR REVERSIBLE CONDITIONS AND TRANSPORT THE PATIENT. IF TRANSPORT TIME EXCEEDS 15 MINUTES, GO TO LOCAL EMERGENCY DEPARTMENT OR FREESTANDING EMERGENCY MEDICAL FACILITY. BLUNT TRAUMA ARREST SHOULD HAVE ALL THE REVERSIBLE CAUSES OF ARREST PERFORMED ON SCENE BEFORE TERMINATION OF RESUSCITATION OR TRANSPORT IF ROSC IS ACHIEVED.

   g) Establish IV/IO access with LR. Begin rapid administration of 20 mL/kg bolus of LR IV/IO.
   h) Treat reversible causes of traumatic arrest.
      (1) Open airway and ensure adequate ventilation, insert necessary adjunct; consider the need for advanced airway earlier in the resuscitation of the trauma arrest patient.
      (2) Seal open chest wounds with occlusive dressings.
      (3) Control life-threatening external hemorrhage.
      (4) Bilateral Needle Decompression Thoracostomy. Catheters should not be removed once placed.
      (5) Establish IV/IO access with LR. Begin rapid administration of 20 mL/kg bolus of LR IV/IO.
      (6) Identify rhythm and refer to appropriate algorithm.

BBB. TRAUMA PROTOCOL: TRAUMA ARREST (Continued)

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

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

m) Establish IV/IO access with LR.
n) 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.
o) If traumatic arrest is suspected due to multi-system blunt trauma, or due to penetrating neck, chest, or abdominal trauma, bilateral needle decompressions should be performed. Once manufacture assembled pneumothorax kit catheters are placed, **do not remove.**

4. Continue General Patient Care.

CCC. TRAUMA DECISION TREE

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

Category Alpha

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

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

NO → Assess for other injuries.

Category Bravo

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

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

NO → Evaluate for evidence of mechanism of injury and high-energy impact.

Category Charlie

- ❑ High Risk Auto Crash
  - Intrusion (including roof) greater than 12 in. occupant site; greater than 18 in. any site
  - Ejection (partial or complete) from vehicle
  - Death in same passenger compartment
  - Vehicle telemetry data consistent with high risk of injury
  - Rollover without restraint
  - Auto v. pedestrian/bicyclist thrown, run over, or with significant (greater than 20 mph) impact
  - Motorcycle crash greater than 20 mph
- ❑ Falls
  - Adult: greater than 20 feet (one story is equal to 10 feet)
  - Pediatric: greater than 10 feet or 3 times the child's height
- ❑ Exposure to blast or explosion

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

NO → Evaluate for other considerations.

Category Delta

- ❑ Older adults
  - Risk of injury/death increases after age 55
  - SBP less than 110 may indicate shock after age 65
  - Low-impact mechanisms (e.g., ground-level falls) may result in severe injury
- ❑ Children (Should be triaged to Pediatric Trauma Center)
- ❑ Burns
  - Without trauma mechanism, triage to Burn Center
  - With trauma mechanism, triage to Trauma Center
- ❑ Pregnancy greater than 20 weeks
- ❑ EMS provider judgment
- ❑ Anticoagulants and bleeding disorders (Patients with head injury are at high risk for rapid deterioration)

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

NO → Transport according to protocol.

IV. APPENDICES

A. GLOSSARY

AED: Automated External Defibrillation or Automated External Defibrillator

Alternative Airway Device: An airway adjunct other than an endotracheal tube that may include the laryngeal tube airway device (e.g., King LTS-D™) or laryngeal mask airway with design to facilitate hospital endotracheal intubation **(NEW '18)**

AMI: Acute Myocardial Infarction

APGAR score: An acronym and method of scoring to determine the condition of a newly born infant (see APGAR chart on page 114)

Apnea: An absence of spontaneous respirations

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

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

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

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

BPM: Breaths per minute

BSI: Body Substance Isolation

BVM: Bag-Valve-Mask

Carte blanche: Full discretionary power

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

CISM: Critical Incident Stress Management

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

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

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

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

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

CRT-(I): Cardiac Rescue Technician-Intermediate

CVA: Cerebral Vascular Accident/Stroke

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

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

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

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

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

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 in an awake and alert person with no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., anti-psychotic, anti-vomiting).

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

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

Emetic: Referring to a substance that causes vomiting

Spinal Protection: The act of protecting the spinal cord from further injury

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

Sublingually: Under the tongue

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

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

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

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

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

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

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

VF: Ventricular Fibrillation

Volume-Sensitive Children: Children who need smaller fluid bolus volumes due to special needs including: neonates (1 hour to 28 days of age), congenital heart diseases, chronic lung disease, or chronic renal failure

VT: Ventricular Tachycardia

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

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

PROCEDURE	EMR	EMT	CRT-(I)	PM
ADMINISTRATION OF MEDICATIONS				
Buccal, Oral, Sublingual	–	SO	SO	SO
SC, IV, Rectal, Nebulizer	–	–	SO	SO
Intramuscular	–	OSP	SO	SO
Intranasal **(NEW '18)**	SO	SO	SO	SO
Intraosseous	–	–	SO	SO
Intradermal PPD (Public Safety Personnel only)	–	–	–	OSP
AIRWAY MANAGEMENT				
Alternative Airway Device (King Airway®) **(NEW '18)**	–	–	SO	SO
BiPAP	–	–	–	OSP
Carbon Dioxide Detector (ALS required)	–	SO	SO	SO
Capnograph **(ALS required since 2015)**	–	–	SO	SO
CPAP	–	–	SO	SO
Cricothyroidotomy	–	–	–	PP
Direct Laryngoscopy	–	–	SO	SO
Gastric Tube (BLS "Burp," ALS insert)	–	–	SO	SO
Laryngeal Mask Airway Device **(NEW '18)**	–	–	OSP	OSP
Nasotracheal Intubation	–	–	–	SO
Oropharyngeal/Nasopharyngeal Airway	SO	SO	SO	SO
Orotracheal Intubation	–	–	SO	SO
Needle Decompression Thoracostomy (NDT)	–	–	SO/MC	SO/MC
Pulse Oximeter	–	SO	SO	SO
Suction	SO	SO	SO	SO
Ventilator	–	–	–	OSP
Video Laryngoscopy	–	–	PP	PP
CHEMICAL RESTRAINT	–	–	SO/MC	SO
ELECTROCARDIOGRAM				
Standard Limb Leads	–	–	SO	SO
12-Lead	–	PP	SO	SO
ELECTRICAL THERAPY				
Automated External Defibrillator	SO	SO	SO	SO
Cardioversion	–	–	SO/MC	SO/MC
Defibrillation	–	–	SO	SO
Transcutaneous Cardiac Pacing	–	–	SO	SO
GLUCOMETER	–	OSP	SO	SO
HIGH PERFORMANCE CPR	SO	SO	SO	SO
INTRAVENOUS THERAPY				
External Jugular Access & Maintenance	–	–	SO	SO
Intraosseous Infusion & Maintenance	–	–	SO	SO
Peripheral IV Access/Saline Lock/Blood Drawn	–	OSP	SO	SO
Peripheral IV Maintenance	–	SO	SO	SO
PRONOUNCEMENT OF DEATH	–	SO	SO	SO
SKELETAL STABILIZATION/IMMOBILIZATION	SO	SO	SO	SO
BLEEDING MANAGEMENT: TOURNIQUET / HEMOSTATIC DRESSING	SO	SO	SO	SO

SO Standing Order
OSP Optional Supplemental Program
MC Medical Consultation Required
PP Pilot Program
REA Research

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

PROCEDURE	EMR	EMT	CRT-(I)	PM
VALSALVA MANEUVER	–	–	**SO**	**SO**
Apnea Monitors	–	**SO**	**SO**	**SO**
Arterial Lines and Cardiac Sheaths	–	–	–	–
Chemotherapy Administration/Drip	–	–	–	–
Chest tubes with Chest Drainage System	–	–	–	–
Chest tubes with Heimlich Valve	–	–	**SO**	**SO**
Colostomy Bag	–	**SO**	**SO**	**SO**
External Orthopedic Fixators	–	**SO**	**SO**	**SO**
Foley Catheter	–	**SO**	**SO**	**SO**
Foley Catheter with Irrigation	–	**SO**	**SO**	**SO**
Gastrostomy and Jejunal Feeding Tubes (Non-infusing)	–	**SO**	**SO**	**SO**
HALO Cervical Immobilization	–	**SO**	**SO**	**SO**
IABP InterAortic Balloon Pump	–	–	–	–
Ileostomy Tube (Non-infusing)	–	**SO**	**SO**	**SO**
iStat	–	–	–	**REA**
PICC–peripherally inserted central catheter or **CVA**–central venous access line, capped only	–	**SO**	**SO**	**SO**
PICC–peripherally inserted central catheter or **CVA**–central venous access line, subclavian/femoral or internal jugular may be monitored if fluid/medication being administered meets protocol. The ALS provider may access the line in a life-threatening emergency.	–	–	**SO**	**SO**
Intraventricular/Intracranial Monitor	–	–	–	–
Left Ventricular Assist Device (LVAD) Scene (BLS & ALS)	–	**SO**	**SO**	**SO**
Left Ventricular Assist Device (LVAD) Interfacility	–	–	–	–
Nasogastric and Orogastric Tubes (Existing, Non-infusing, or Capped)	–	**SO**	**SO**	**SO**
Nephrostomy Tubes	–	**SO**	**SO**	**SO**
Peak Expiratory Flow Meter	–	–	**SO**	**SO**
Pelvic Binder Device	–	**PP**	**PP**	**PP**
Portable Outpatient Fixed Medication Pump/PCA Pump	–	**SO**	**SO**	**SO**
Peritoneal Dialysis (Non-active, Capped)	–	**SO**	**SO**	**SO**
Physical Restraint	–	**SO**	**SO**	**SO**
Sengstaken-Blakemore Tube	–	–	–	–
Suprapubic Catheter	–	**SO**	**SO**	**SO**
Surgical Drains	–	**SO**	**SO**	**SO**
Swan-Ganz	–	–	–	–
Tracheostomy (Existing)	–	**SO**	**SO**	**SO**
Transtracheal O_2 (Outpatient/Existing)	–	**SO**	**SO**	**SO**
Transvenous Pacemaker (Temporary Transvenous)	–	–	–	–
Ventilators (Acute, Chronic, Scene)	–	–	–	**OSP**
Ventricular Peritoneal Shunt	–	**SO**	**SO**	**SO**
Wound Vacuum Device	–	**SO**	**SO**	**SO**

SO Standing Order
MC Medical Consultation Required
OSP Optional Supplemental Program
PP Pilot Program
REA Research

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

MEDICATIONS	EMR	EMT	CRT-(I)	PM
Acetaminophen	–	SO	SO	SO
Activated Charcoal (Without Sorbitol)	–	MC	MC	MC
Adenosine	–	–	SO	SO
Albuterol/Fast-acting Bronchodilator MDI (patient's prescribed)	–	SO/MC	SO/MC	SO/MC
Albuterol Sulfate Nebulizer	–	–	SO/MC	SO/MC
Amiodarone	–	–	SO/MC	SO/MC
Antimicrobial (Pre-established interfacility only)	–	–	–	OSP
Aspirin	–	SO	SO	SO
Atropine Sulfate	–	–	SO/MC	SO/MC
Atrovent	–	–	SO	SO
Calcium Chloride (10% Solution) **(NEW '18)**	–	–	SO	SO
Dexamethasone	–	–	SO	SO
Dextrose	–	–	SO	SO
Diazepam	–	–	MC	SO/MC
Diltiazem	–	–	MC	MC
Diluent D5W, NS, LR	–	–	SO	SO
Diphenhydramine Hydrochloride	–	–	SO/MC	SO/MC
Dopamine Hydrochloride	–	–	MC	MC
Epinephrine Auto-Injector	OSP	SO/MC	SO	SO
Epinephrine Nebulizer	–	–	MC	MC
Epinephrine (1:1,000) Vial or Syringe	–	OSP	SO	SO
Epinephrine 1:10,000	–	–	SO	SO
Etomidate (Amidate)	–	–	–	PP
Fentanyl	–	–	OSP	OSP
Glucagon	–	–	SO/MC	SO/MC
Glycoprotein IIb/IIIa	–	–	–	OSP
Haldol	–	–	SO	SO
Hemophilia Blood Factor (VIII or IX)	–	–	SO	SO
Heparin (Interfacility transport only)	–	–	–	OSP
Hydroxocobalamin	–	–	OSP	OSP
Lidocaine	–	–	SO	SO
Magnesium Sulfate	–	–	SO/MC	SO/MC
MARK I/DuoDote (Atropine & 2 PAM)	OSP	OSP	OSP	OSP
Midazolam (Versed)	–	–	SO/MC	SO/MC
Morphine Sulfate	–	–	SO/MC	SO/MC
Morphine Sulfate (Infusion)	–	–	–	MC
Naloxone (IN) Public Safety **(NEW '18)**	SO	SO	SO	SO
Naloxone (IV, IM, ET)	–	–	SO	SO
Nitroglycerin Paste	–	–	SO	SO
Nitroglycerin (tablet /spray) (patient's prescribed)	–	SO	SO	SO

SO Standing Order **MC** Medical Consultation Required
OSP Optional Supplemental Program **PP** Pilot Program **REA** Research

7. NALOXONE (NARCAN) PUBLIC SAFETY AND EMR (NEW ’18)

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

To reverse respiratory depression induced by opioid/narcotic agent.

d) Contraindications

Patients under 28 days of age

e) Adverse Effects

Opioid withdrawal

f) Precautions

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

ALERT

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

g) Dosage

(1) Adult: Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare.
(2) Pediatric (child aged 28 days to adult): Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare.
(3) Repeat as necessary to maintain respiratory activity.

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9. CALCIUM CHLORIDE (10% SOLUTION)

a) Pharmacology

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

b) Pharmacokinetics

Rapid onset of action with IV administration

c) Indications

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

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 (NEW ’18)

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

10. DEXAMETHASONE

a) Indications
(1) Moderate to severe asthma exacerbation
(2) Croup

b) Adverse Effects
(1) Headache
(2) Edema
(3) Vertigo
(4) Fluid retention
(5) Adrenal insufficiency and immunosuppression with long-term use
(6) HTN
(7) CHF
(8) Nausea and vomiting
(9) Dyspepsia
(10) Anaphylaxis

c) Precautions
(1) Caution with diabetes
(2) Known TB
(3) Osteoporosis
(4) Hepatic impairment
(5) CHF
(6) Seizure disorder

d) Contraindications
(1) Hypersensitivity to drug
(2) Known systemic fungal infection
(3) Premature infants

e) Dosage (IV solution used for PO administration)
(1) Adult: 10 mg IV (preferred, if established) or PO
(2) Pediatric:
(a) Asthma: 0.5 mg/kg PO (preferred) or IV to a maximum of 10 mg
(b) Croup: 0.5 mg/kg PO/IM/IV to a maximum of 10 mg

11. DEXTROSE

a) Pharmacology

Dextrose is a water-soluble monosaccharide found in corn syrup and honey.

b) Pharmacokinetics

(1) Dextrose restores circulating blood sugar and is rapidly utilized following IV injection.

(2) Excess dextrose is rapidly excreted unchanged in the urine.

c) Indications

Correction of altered mental status due to low blood sugar (hypoglycemia) seizures and cardiac arrest

d) Contraindications

Known hyperglycemia

e) Adverse Effects

May worsen hyperglycemia (high blood sugar)

f) Precautions

(1) May worsen preexisting hyperglycemia

(2) Tissue necrosis if extravasation occurs

g) Dosage

(1) Adult:

(a) If blood glucose is less than 70 mg/dL, administer 10% dextrose in 50 mL (5 grams) boluses, one minute apart, to a maximum of 250 mL **OR** 25 grams of 50% dextrose IVP, until:

(i) the patient has a return to normal mental status, and

(ii) the patient's blood glucose is at least 90 mg/dL.

(iii) If, following 250 mL of 10% dextrose or 25 grams of 50% dextrose, patient has persistently altered mental status and blood glucose less than 90 mg/dL, repeat dosing regimen in (a).

(2) Pediatric:

(a) **Patient less than 28 days -** if blood glucose is less than 40 mg/dL administer 2 mL/kg of 10% dextrose IV/IO.
D10W is prepared by mixing one part of D50W with four parts LR.
Recheck glucose after first dose.
If blood glucose is less than 40 mg/dL, obtain medical consultation to administer second dose of D10W.

(b) **(NEW '18) Patients 28 days up to 4 years -** if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
Recheck glucose after first dose.
If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W.

(i) If unable to start IV and blood glucose is less than 70 mg/dL, administer 0.5 mg glucagon IM/IN.

(ii) Medical consult for additional dosing to a maximum of 3 mg IM/IN

(c) **(NEW ’18) Patients 5 years up to patient’s 18th birthday -**if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
Recheck glucose after first dose.

 If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W.

(i) If unable to start IV and blood glucose is less than 70 mg/dL, administer 1 mg glucagon IM/IN.

(ii)  Medical consult for additional dosing to a maximum of 3 mg IM/IN

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12. DIAZEPAM (VALIUM)

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 20–90 minutes.

c) Indications

(1) Sustained and/or recurrent seizures
(2) Severe nerve agent 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 may perform without consult for patients with active seizures if midazolam is not available.)

(1) Adult: Administer 2.5–10 mg in 2.5 mg increments SLOW IVP/IM
(IM requires all providers to obtain medical consultation.)
Maximum total dose 10 mg
(2) Pediatric: Administer 0.1 mg/kg in 2.5 mg increments SLOW IVP/IO/IM (IM requires all providers to obtain medical consultation.)
Maximum total dose 5 mg
Rectal Dose: Administer up to 0.2 mg/kg; maximum total dose 10 mg

Severe nerve agent exposure (providers may administer without consult):

(3) Adult: Administer 10 mg IM.
(4) Pediatric: greater than 30 kg: Administer 10 mg via auto-injector or 0.1 mg/kg IM, maximum of 10 mg.

13. DILTIAZEM (CARDIZEM)

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 mmHg, second or third degree heart block, hypersensitivity to the drug
(2) Patients less than 18 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 18 years of age. If needed, consult Pediatric Base Station.

i) Overdose or Toxicity Presentation

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

j) Treatment of Overdose or Other Adverse Reactions

(1) Give general supportive measures, monitor vitals, administer oxygen.

(2) Hypotension: Consider calcium chloride 500 mg SLOW IVP and IV fluid bolus with LR; evaluate legs.

(3) Bradycardia: Consider atropine (0.5 to 1 mg); if necessary, consider pacing.

e) Adverse Effects

(1) Anginal pain
(2) Tachydysrhythmias
(3) Nausea and vomiting
(4) Hypertension
(5) Undesirable degree of vasoconstriction

f) Precautions

(1) Extravasation should be reported to the hospital staff on arrival.
(2) Patients receiving monoamine oxidase (MAO) inhibitors are extremely sensitive to the effects of dopamine and should receive a much lower dosage than is usually given.
(3) Patients with pheochromocytoma are extremely sensitive to dopamine and may develop profound hypertension in response to minimal doses.

g) Dosage

(1) For IV infusion use only
(2) In general, the infusion rate is adjusted to blood pressure and clinical response.
(3) Adult: Administer 2–20 **mcg**/kg/min IV drip titrated to BP of 100 systolic or medical consultation selected BP; initial infusion rate 2–5 **mcg**/kg/min
(4) Pediatric: Administer 2–20 **mcg**/kg/min IV drip titrated age specific BP or medical consultation selected BP; initial infusion rate is 2 **mcg**/kg/min

16. EPINEPHRINE 1:10,000/1:1,000

a) Pharmacology

(1) The administration of epinephrine causes increases in:
  (a) Systemic vascular resistance
  (b) Systemic arterial pressure
  (c) Heart rate (positive chronotropic effect)
  (d) Contractile state (positive inotropic effect)
  (e) Myocardial oxygen requirement
  (f) Cardiac automaticity
  (g) AV conduction (positive dromotropic effect)

(2) Causes bronchial dilation by smooth muscle relaxation

b) Pharmacokinetics

(1) IV administered epinephrine has an extremely rapid onset of action.
(2) Is rapidly inactivated by the liver
(3) Subcutaneous administration of epinephrine results in slower absorption due to local vasoconstriction.
(4) Local massage will hasten absorption.
(5) Topically applied nebulizer within the respiratory tract, epinephrine has vasoconstrictor properties that result in reduction of mucosal and submucosal edema. It also has bronchodilator properties that reduce airway smooth muscle spasms.

c) Indications

(1) Cardiac arrest
(2) Moderate to severe allergic reaction/anaphylaxis
(3) IV epinephrine should be reserved for cardiac arrest patients and for impending cardiac arrest due to anaphylactic shock.
(4) Bronchial asthma
(5) Respiratory stridor (suspected croup)
(6) Dopamine replacement indications for epinephrine drip **(NEW ’18)**

d) Contraindications

(1) Hypertension
(2) Preexisting tachydysrhythmias with a pulse (ventricular and supraventricular)
(3) Use with pregnant women should be avoided whenever possible.

e) Adverse Effects

(1) Tachydysrhythmias (supraventricular and ventricular)
(2) Hypertension
(3) May induce early labor in pregnant women

(4) Headache
(5) Nervousness
(6) Decreased level of consciousness
(7) Rebound edema may occur 20–30 minutes after administration to croup patients.

f) Precautions

(1) Do not mix with sodium bicarbonate as this deactivates epinephrine.
(2) Epinephrine causes a dramatic increase in myocardial oxygen consumption.
(3) Its use in the setting of an acute MI should be restricted to cardiac arrest.
(4) IVP epinephrine (1:1,000) should not be administered to any patient with a pulse.

g) Dosage

(1) Cardiac Arrest
  (a) Adult:
    (i) Administer 1 mg (1:10,000) IVP/IO every 3–5 minutes
  (b) Pediatric:
    (i) Administer 0.01 mg/kg (0.1 mL/kg) of 1:10,000 IVP/IO; repeat every 3–5 minutes
    (ii) ET: 0.1 mg/kg of 1:1,000, diluted with 5 mL of LR; repeat every 3–5 minutes
  (c) Neonate:
    (i) Administer 0.01 mg/kg (0.1 mL/kg) of 1:10,000 IVP/IO; repeat every 5 minutes
    (ii) ET: 0.03 mg/kg of 1:10,000, diluted with 1 mL of LR
(2) Bradycardia
  (a) Adult: not indicated
  (b) Pediatric:
    (i) Administer 0.01 mg/kg (0.1 mL/kg) of the 1:10,000 IVP/IO; repeat every 3–5 minutes
    (ii) ET: 0.1 mg/kg of 1:1,000, diluted with 5 mL of LR; repeat every 3–5 minutes
  (c) Neonate:
    (i) Administer 0.01 mg/kg (0.1 mL/kg) of 1:10,000 IVP/IO; repeat every 3–5 minutes
    (ii) ET: 0.03 mg/kg of 1:10,000, diluted with 1 mL of LR

(3) Allergic Reaction/Anaphylaxis/Asthma
  (a) FOR ANAPHYLAXIS (ADULT ONLY)
  For patients who are in extremis with severe hypotension or impending respiratory failure, consider initiating an epinephrine drip after having administered 3 doses of IM epinephrine.
    (i) Mix 1 mg of epinephrine (either 1:1,000 or 1:10,000) in a 1 liter bag of LR IV/IO. Initiate an infusion with a wide open macro drip titrating to a systolic pressure of greater than 90 mmHg. When drip administered, this will be reported as an exceptional call.
  (b) Epinephrine: 1:1,000
    (i) Less than 5 years of age: administer 0.15 mg in 0.15 mL IM
    (ii) 5 years and greater: administer 0.5 mg in 0.5 mL IM

(4) Croup
  (a) Adult: not indicated
  (b) Pediatric
    (i) Administer 2.5 mL of epinephrine 1:1,000 via nebulizer.
    (ii) If patient does not improve, administer a second dose of 2.5 mL of epinephrine 1:1,000 via nebulizer.

(5) As replacement for dopamine with the following dosing by indication **(NEW '18)**
  (a) Cardiogenic (post-ROSC or acute heart failure)
    (i) Adult: 0.05 – 0.3 mcg/kg/min.
    (ii) Pediatric: 0.05 – 0.3 mcg/kg/min.
  (b) Sepsis
    (i) Adult: 0.05 – 0.3 mcg/kg/min.
    (ii) Pediatric: 0.05 – 0.3 mcg/kg/min.
  (c) Hypovolemic shock (after sufficient volume replacement)
    (i) Adult: 0.05 – 0.3 mcg/kg/min.
    (ii) Pediatric: 0.05 – 0.3 mcg/kg/min.
  (d) Anaphylaxis
    (i) Adult: 0.5 mcg/kg/min.
    (ii) Pediatric: 0.5 mcg/kg/min

ALERT ALL PATIENTS WHO RECEIVE NEBULIZED EPINEPHRINE MUST BE TRANSPORTED BY AN ALS UNIT TO AN APPROPRIATE FACILITY.

17. FENTANYL

(Optional Supplemental Protocol, which allows for jurisdictional selection of both morphine and fentanyl OR replacement of morphine by fentanyl as the opioid of choice)

a) Pharmacology

(1) Synthetic opioid binds with opiate receptors in the CNS, altering both perception and emotional response to pain.

(2) Fentanyl is significantly more potent than morphine. 100 mcg of fentanyl is equivalent to 10 mg of morphine.

b) Pharmacokinetics

Onset of action is 2–3 minutes after IV dose and effects last 30 minutes to 1 hour.

c) Indications

(1) The patient reports moderate to severe pain.

(2) In the provider's judgment the patient will benefit from treatment with an opioid analgesic, including patients who are MOLST and/or EMS/DNR patients or being pre-medicated for a procedure.

d) Contraindications

(1) Hypersensitivity or known allergy to fentanyl

(2) Uncorrected respiratory distress or hypoxemia refractory to supplemental oxygen

(3) Uncorrected hypotension, defined as a persistent systolic pressure less than 90 mmHg.

e) Adverse Effects

(1) Respiratory depression/arrest

(2) Altered mental status

(3) Increased vagal tone due to suppression of sympathetic pathways (slowed heart rate)

(4) Constricted pupils (pinpoint)

(5) Increased cerebral blood flow

f) Precautions

(1) Naloxone reverses all effects.

(2) To reduce the risk of chest wall rigidity (especially in children), fentanyl should be administered slowly and titrated to effect.

(3) Vital signs should be monitored frequently.

(4) Hypotension is a greater possibility in volume-depleted patients.

(5) Elderly patients and those with impaired renal function may be more sensitive to the medication's effects.

g) Dosage

(1) Adult: IV/IO/IN/IM. IN administration max 1 mL per nare **(NEW '18)**

(a) Administer 1 **mcg**/kg to a maximum initial dose of 200 **mcg**.

(b) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of fentanyl 1 **mcg**/kg to a maximum dose of 200 **mcg**. (Divide IN administration of the dose equally between the nares to a maximum of 1 mL per nare.)

(c) Obtain on-line medical direction for additional doses, if required.

(2) Pediatric: IV/IO/IN/IM. IN administration max 1 mL per nare. **(NEW ’18)**

(a) Administer 1 **mcg**/kg to a maximum initial dose of 200 mcg. Administer at a rate of 0.5 **mcg**/kg/min. (Divide IN administration of the dose equally between the nares to a maximum of 1 mL per nare.)

(b) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of fentanyl 1 **mcg**/kg to a maximum dose of 200 **mcg**.

(c) Obtain on-line medical direction for additional doses, if required.

18. GLUCAGON

a) Pharmacology

(1) Hormone synthesized by the pancreas
(2) Increases blood glucose concentration
(3) Inhibits gastric and pancreatic secretions
(4) May increase heart rate and cardiac output
(5) May decrease blood pressure
(6) Increases metabolic rate

b) Pharmacokinetics

(1) Destroyed by the GI tract and is not effective orally
(2) Maximum hyperglycemic activity occurs within 30 minutes and disappears after 1–2 hours.
(3) Relaxation of smooth muscle occurs within 8–10 minutes and persists for 12–27 minutes.
(4) The half-life is 3–10 minutes.
(5) Degraded in liver and kidneys

c) Indications

(1) Patients with altered mental status who are suspected of being hypoglycemic where IV access is not obtainable
(2) Beta blocker overdose

d) Contraindications

Known hypersensitivity

e) Adverse Effects

Nausea and vomiting

f) Precautions

Glucagon only works if liver has significant glycogen stores.

g) Dosage

(1) For suspected hypoglycemia without IV access:
  (a) Adult: Administer 1 mg IM/IN (Medical consult for additional dosing to a maximum of 3 mg IM)
  (b) Pediatric:
    (i) 1 mg IM/IN (5 years of age up to patient's 18th birthday) (Medical consult for additional dosing to a maximum of 3 mg IM/IN)
    (ii) 0.5 mg IM/IN (28 days–4 years of age) (Medical consult for additional dosing to a maximum of 3 mg IM/IN)

(2) For suspected beta blocker overdose:
  (a) Adult: Administer 1 mg IVP every 5 minutes
  (b) Pediatric: Administer every 5 minutes
    (i) 1 mg IVP (5 years of age up to patient's 18th birthday) every 5 minutes
    (ii) 0.5 mg IVP (28 days–4 years of age) every 5 minutes

19. HALOPERIDOL (HALDOL)

a) Pharmacology

(1) An effective anxiolytic agent. Very effective in the management of aggressive and violent patients.

(2) Also has anti-emetic properties. Useful in the management of severe nausea and vomiting.

(3) Weak anticholinergic (atropine-like) and alpha-blocking agent (vasodilation).

b) Pharmacokinetics

Onset of action is within 10 minutes of the IM administration.

c) Indications

Chemical restraint for violent, agitated, and aggressive patients who present a danger to themselves or to others and who cannot be safely managed otherwise. Most violent/agitated patients can be handled with verbal or physical restraint alone.

d) Contraindications

(1) Children under 5 years of age

(2) Parkinson's disease

(3) CNS depression

(4) Acute CNS injury

(5) Excited delirium **(NEW '18)**

e) Adverse Effects

(1) Extrapyramidal symptoms (dystonic reaction) are the most common side effects. These are generally not encountered with short-term use. In the event that they should develop, a single dose of diphenhydramine 25–50 mg (1 mg/kg for pediatrics to a max of 25 mg) will generally relieve symptoms.

(2) Hypotension and tachycardia are common (20–25%) but usually self-limiting side effects. Fluid bolus is indicated with a significant drop blood pressure or hypotension.

(3) Haloperidol has been known to cause torsades de pointes ventricular tachycardia. Once the patient has been medicated, place the patient on a cardiac monitor and monitor for dysrhythmias.

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 18–69 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 5 years of age:**
Contraindicated

(b) **Child 5–12 years of age:**
0.05 mg/kg IM or IV, max of 2.5 mg

(c) **Patient 13 up to 18th birthday:**
2.5–5 mg IM or IV

20. KETAMINE (KENTANEST, KETASET, KETALAR) (NEW '18)

a) Pharmacology

Hypnotic analgesic

b) Pharmacokinetics

A rapid-acting nonbarbiturate hypnotic analgesic agent characterized by normal pharyngeal-laryngeal reflexes, normal or enhanced skeletal muscle tone, and possible cardiovascular and respiratory stimulation.

ONSET OF ACTION FOR **IV/IO** KETAMINE MAY BE 5–10 MINUTES.
ONSET OF ACTION FOR **IN/IM** KETAMINE MAY TAKE UP TO 15–20 MINUTES.

c) Indications

(1) The patient reports moderate to severe pain.
(2) The patient displaying signs and symptoms of excited delirium syndrome.

d) Contraindications

(1) Known hypersensitivity to ketamine
(2) Penetrating eye injury

INDICATED FOR MUSCULOSKELETAL EXTREMITY/BACK PAIN. NOT FOR CHEST PAIN, ABDOMINAL/FLANK PAIN, OR HEADACHE.

e) Adverse Effects

(1) Although respiration is frequently stimulated, respiratory depression may occur with rapid IV administration. Laryngospasm has been known to occur.
(2) Although hypotension may occur, blood pressure and heart rate are frequently stimulated.
(3) Involuntary myoclonus that may mimic seizure activity
(4) Possible enhanced secretions
(5) Possible unpleasant dreams and delirium upon emergence from sedation

f) Precautions

(1) The likelihood of respiratory depression and undesired pressor effects is increased by too rapid IV administration.
(2) Myoclonic movements are possible and should not be confused for, seizure activity, or emergence from sedation.
(3) Some patients who have received ketamine for control of excited delirium syndrome go on to requiring advanced airway management. ALS providers should closely monitor such patients to anticipate airway needs.

TO AVOID DOSING ERRORS, PROVIDERS SHOULD BE AWARE AND CONFIRM PROPER SELECTION OF CONCENTRATION PRIOR TO ADMINISTRATION. KETAMINE IS PROVIDED FOR IM OR IN ADMINISTRATION IN 100 MG PER ML CONCENTRATION. FOR IV ADMINISTRATION, KETAMINE IS PROVIDED IN 10 MG PER ML.

g) Dosage

(1) Pain Management

(a) Adult: Administer 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.

(i) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of ketamine 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.

(ii) If IV unavailable, administer 0.5 mg/kg IN/IM (if delivery device is available; divide administration of the dose equally between the nares to a maximum of 1 mL per nare).

(iii) Reassess in 15 minutes. If pain remains moderate to severe, then administer a second dose of ketamine 0.5 mg/kg IN/IM.

(b) Pediatric: Administer 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.

(i) Reassess in 5-10 minutes. If pain remains moderate to severe, then administer a second dose of ketamine 0.2 mg/kg IV/IO over 1–2 minutes. Maximum single dose 20 mg.

(ii) If IV unavailable, administer 0.5 mg/kg IN/IM (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare).

(iii) Reassess in 15 minutes. If pain remains moderate to severe, then administer a second dose of ketamine 0.5 mg/kg IN/IM.

(2) Excited Delirium Syndrome

(a) Adult

(i) IV dosing: Administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg.

a. If severe agitation persists, administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg. Maximum total IV/IO dose 200 mg.

b. If agitation persists after second dose of IV/IO ketamine, consider midazolam 2.5 mg IV/IO.

(ii) IM dosing: 4 mg/kg IM. Maximum total IM dose 400 mg.

a. If severe agitation persists after IM ketamine dose, administer midazolam 5 mg IM.

b.  Additional dose of 4 mg/kg IM ketamine for persistent agitation requires medical consultation.

(b) Pediatric

(i) IV dosing: For children 13 to 18 years of age, administer 1 mg/kg IV/IO. Maximum single IV/IO dose 100 mg. Maximum total IV/IO dose 200 mg.

a.  Patients who have not yet reached their 13th birthday require medical consult: Administer 1 mg/kg IV/IO. Maximum single IV dose 100 mg. Maximum total IV/IO dose 200 mg.

b. If severe agitation persists, administer 1 mg/kg IV/IO. Maximum single IV dose 100 mg.

c. If agitation persists after second dose of IV ketamine, consider midazolam 0.1 mg/kg in 2.5 mg increments SLOW IVP/IO over 1–2 minutes. Maximal single dose of midazolam 2.5 mg.

(ii) IM dosing: Patients aged 13 to 18 years, administer 4 mg/kg IM. Maximum IM dose 400 mg.

a.  Patients who have not yet reached their 13th birthday require medical consult: Administer 4 mg/kg IM. Maximum IM dose 400 mg.

b. If severe agitation persists, administer midazolam 2.5 mg IM.

c.  Additional dose of 4 mg/kg IM ketamine for persistent agitation requires medical consultation.

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21. LACTATED RINGER'S

a) Pharmacology

(1) Isotonic crystalloid solution

(2) Lactated Ringer's (LR) contains:

(a) Sodium (Na+)	130 mEq/liter
(b) Potassium (K+)	4 mEq/liter
(c) Calcium (Ca++)	3 mEq/liter
(d) Chloride (Cl-)	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 mmHg.

(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.

(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

22. LIDOCAINE (XYLOCAINE)

a) Pharmacology

(1) Anesthesia for IO infusions
(2) 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) Anesthesia for IO infusions
(2) Nasal tracheal intubation
(3) Decrease intracranial pressure with Rapid Sequence 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

(2) Reduce the dosage in patients with decreased cardiac output, liver dysfunction, and the elderly (age over 70).

g) Dosage

(1) Adult/Adolescent with an IO infusion: To prevent or treat pain during an IO infusion in patients greater than or equal to 13 years of age, administer 20–40 mg (1–2 mL) of 2% (preservative free) lidocaine IO.

(2) IO infusion in patients less than 13 years of age: To prevent or treat pain during an IO infusion for patients under 13 years of age, consult a Pediatric Base Station.

(3) Nasal Pharyngeal Anesthesia (age 13 years and greater)
Draw up 4 mL of lidocaine 4% (40 mg/mL) and using mucosal atomization device, administer 2 mL per nare. The patient IV, gel, and intranasal dosing should not exceed 3 mg/kg.

h) Interfacility 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 Interfacility Transport.)

23. MAGNESIUM SULFATE

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

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

d) Contraindications

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

e) Adverse Effects

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

f) Precautions

(1) May exaggerate effects of CNS depressants and neuromuscular blocking agents
(2) Due to concern of hypotension, IV fluid bolus should be initiated if hypovolemia is suspected.
(3) Magnesium toxicity is a concern with higher doses and would present with respiratory depression, decreased reflexes, flaccid paralysis, and apnea. Calcium chloride 500 mg SLOW IVP for above indications of toxicity. **(NEW ’18)**

g) Dosage

(1) Adult:

(a) Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of approved diluent)

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

(c) Moderate to severe asthma/bronchospasm exacerbation: 1–2 grams IV/IO over 10–20 minutes (mixed in 50–100 mL of approved diluent)

(d) Torsades de pointes: 1–2 grams IV/IO over 2 minutes

(2) Pediatric (under 18 years old):

(a) Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of approved diluent)

(b) Moderate to severe asthma/bronchospasm exacerbation: consider magnesium sulfate 50 mg/kg IV/IO (mixed in 50 - 100 mL of approved diluent) to max of 2 grams given over 10–20 minutes

ALERT

MAGNESIUM ADMINISTRATION OFTEN CAUSES HYPOTENSION IN CHILDREN. CONSIDER ADMINISTERING BOLUS 20 ML/KG OF LACTATED RINGER'S WITH THE ADMINISTRATION OF MAGNESIUM.

(c) Torsades de pointes: 25 mg/kg to a max of 2 grams IV/IO over 2 minutes

h) Interfacility Transport

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

(2) Magnesium sulfate used for tocolytic control is a RN level indication.

24. MIDAZOLAM (VERSED)

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 1.5 minutes, and for IM approximately 15 minutes.
(3) Duration of effect is 1–4 hours with half-life of 1.5 to 3 hours in healthy adult.

c) Indications

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

d) Contraindications

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

e) Adverse Effects

(1) Respiratory depression or apnea
(2) Hypotension

f) Precautions

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

g) **Dosage** (paramedic and CRT-(I) may perform without consult for patients with active seizures.)

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

(1) Adult:

ALERT

REDUCE THE BELOW IV/IO/IN/IM BY 50% FOR PATIENTS 69 YEARS OR OLDER.

(a) 0.1 mg/kg in 2 mg increments SLOW IVP over 1–2 minutes per increment with maximum single dose 5 mg.

(b) If IV unavailable, 5 mg IN/IM may be administered.
IN administration max 1 mL per nare

(c) 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.

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

(2) Pediatric:

(a) 0.1 mg/kg in 2 mg increments. SLOW IVP over 1–2 minutes per increment to a maximum single dose of 5 mg.

(b) If IV unavailable, 0.2 mg/kg IN/IM
IN administration max 1 mL per nare
Maximum total dose 5 mg

(c) 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.

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

(3) Chemical Restraint

(a) 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

(b) Pediatric: Not indicated

(4) Bucking Endotracheal Intubated patient

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

(b) Pediatric: Administer 0.05 mg/kg SLOW IVP over 1–2 minutes, while maintaining systolic BP greater than 60 in neonates, 70 in infants, [70 + (2 x years) = systolic BP] for patients greater than 1 year of age. Maximum total dose 5 mg.

ALERT

ADMINISTER UP TO 0.05 MG/KG IV WHEN TREATING ENDOTRACHEAL TUBE BUCKING, STOPPING ONCE BUCKING HAS RESOLVED AND VENTILATION IS RELAXED.

(5) Excited Delirium Syndrome (ExDS) **(NEW '18**)

(a) If severe agitation persists after second dose of IV/IO ketamine, consider midazolam 2.5 mg IV/IO.

(b) If IV/IO unavailable:

(i) If severe agitation persists after IM ketamine dose, administer midazolam 5 mg IM.

(c) Patients aged 13 to not yet reached their 18th birthday:

(i) If severe agitation persists after second dose of IV/IO ketamine, consider midazolam 0.1 mg/kg SLOW IVP/IO over 1–2 minutes. Maximum single dose 2.5 mg.

(ii) If IV/IO unavailable:

a. If severe agitation persists after IM ketamine dose, administer midazolam 2.5 mg IM.

25. MORPHINE SULFATE

(Required unless Fentanyl OSP approved)

a) Pharmacology

(1) Decreases pain perception and anxiety
(2) Relaxes respiratory effort
(3) Causes peripheral dilation, which decreases preload
(4) Decreases left ventricular afterload

b) Pharmacokinetics

(1) Binds with opiate receptors in the CNS, altering both perception and emotional response to pain
(2) Onset of action is in less than 5 minutes after IV dose and effects last 4–5 hours.
(3) Causes peripheral arterial and venous vasodilation

c) Indications

(1) The patient reports moderate to severe pain.
(2) In the provider's judgment the patient will benefit from treatment with an opioid analgesic, including patients who are MOLST and/or EMS/DNR patients or being pre-medicated for a procedure.
(3) Pulmonary Edema/Congestive Heart Failure (Pediatric only)

d) Contraindications

(1) Hypersensitivity or known allergy to morphine
(2) Uncorrected respiratory distress or hypoxemia refractory to supplemental oxygen
(3) Uncorrected hypotension, defined as a persistent systolic pressure less than 90 mmHg

e) Adverse Effects

(1) Respiratory depression/arrest
(2) Altered mental status (decreased level of consciousness)
(3) Increased vagal tone due to suppression of sympathetic pathways (slowed heart rate)
(4) Nausea and vomiting
(5) Constricted pupils (pinpoint)
(6) Increased cerebral blood flow

f) Precautions

(1) Naloxone reverses all effects.
(2) Should be administered slowly and titrated to effect.
(3) Vital signs should be monitored frequently.
(4) Hypotension is a greater possibility in volume-depleted patients.

g) Dosage

(1) Adult: IV/IM
  (a) Administer 0.1 mg/kg to a maximum initial dose of 20 mg.
  (b) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of morphine 0.05 mg/kg to a maximum additional dose of 10 mg.
  (c) Obtain on-line medical direction for additional doses, if required.
(2) Pediatric: IV/IM
  (a) Administer 0.1 mg/kg to a maximum initial dose of 20 mg.
  (b) Reassess in 5–10 minutes. If pain remains moderate to severe, then administer a second dose of morphine 0.05 mg/kg to a maximum additional dose of 10 mg.
  (c) Obtain on-line medical direction for additional doses, if required.
(3) Pediatric Pulmonary Edema/CHF
  (a) 0.1 mg/kg SLOW IVP/IO/IM (1–2 mg/min). Maximum dose 5 mg.

26. NALOXONE (NARCAN)

a) Pharmacology

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

b) Pharmacokinetics

(1) Onset of action is within a few minutes if administered IVP and within 5 minutes if administered IN.
(2) Intramuscular and pediatric/neonatal endotracheal administration results in a slower onset of action.
(3) Patients responding to naloxone may require additional doses and transportation to the hospital since most opioids last longer than naloxone.
(4) Has no effect in the absence of opioids

c) Indications

To reverse respiratory depression induced by opioids

d) Contraindications

Patients under 28 days of age.

e) Adverse Effects

Opioid withdrawal

f) Precautions

(1) Naloxone may induce opioid withdrawal in patients who are physically dependent.
(2) Certain drugs may require much higher doses of naloxone for reversal than are currently used.
(3) Should be administered and titrated so respiratory efforts return, but not intended to restore full consciousness

g) Dosage (NEW '18)

(1) Adult: Administer 0.4–2 mg IVP/IO (titrated)/IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. Repeat as necessary to maintain respiratory activity.
(2) Pediatric: Administer 0.1 mg/kg IVP/IO (titrated)IM/IN (if delivery device is available, divide administration of the dose equally between the nares to a maximum of 1 mL per nare); **OR** administer 4 mg/0.1 mL IN in one nare. May be repeated as necessary to maintain respiratory activity. ET dose: 0.2–0.25 mg/kg

27. NITROGLYCERIN

a) Pharmacology

(1) Vasodilator-effect on veins more than arteries

(2) Decreases right heart return (preload) by venous pooling, thereby decreasing myocardial workload and oxygen consumption

b) Pharmacokinetics

(1) Absorbed through oral mucosa

(2) Antianginal and vasodilation effects within 1–2 minutes after administration. Half-life is 1–4 minutes.

(3) Duration of action is less than 5 minutes.

c) Indications

(1) For treatment of angina

(2) Congestive heart failure, acute pulmonary edema

d) Contraindications

(1) Known hypersensitivity

(2) Pediatric patient under the age of 13

(3) Any patient having taken medication for Pulmonary Artery Hypertension (e.g., Adcirca™ or Revatio™) or erectile dysfunction (e.g., Viagra™, Levitra™, or Cialis™) within the past 48 hours. Medical consultation is required to override this contraindication.

(4) Asymptomatic hypertension

(5) Blood pressure below 90 mmHg systolic

(6) Heart rate less than 60

e) Adverse Effects

Headache, hypotension, nausea, vomiting, dizziness, and decreased level of consciousness

f) Precautions

May cause hypotension

g) Dosage

(1) Adult: Chest pain

(a) If patient has a prescription or previous history of nitroglycerin use, administer nitroglycerin: 0.4 mg SL (may repeat dose 2 times at 3–5 minute intervals)
May be repeated if symptoms persist, BP is greater than 90 mmHg, and pulse is greater than 60 bpm, to a maximum dose of 1.2 mg

(b) If patient does **not** have a prescription or previous history of nitroglycerin use, establish IV prior to the administration of nitroglycerin, then administer nitroglycerin as above.

(c) Additional doses may be administered with medical consultation.

(2) Adult: Pulmonary Edema/Congestive Heart Failure
   (a) Low dose - Administer 0.4 mg SL at 3–5 minute intervals to a maximum dose of 1.2 mg.
   (b) High dose - (until CPAP is applied or if CPAP is not tolerated)
      (i) Administer 1 dose of 0.4 mg SL and apply 1 inch of NTG paste.
      (ii) Administer 1 dose of 0.8 mg SL.
      (iii) Continue 0.8 mg NTG dosing to achieve a 20% reduction in systolic blood pressure.
(3) Pediatric: Requires medical consultation from Pediatric Base Station.

28. NITROGLYCERIN PASTE

a) Pharmacology

Nitroglycerin paste contains a 2% solution of nitroglycerin in a special absorbent paste. When placed on the skin, nitroglycerin is absorbed into the systemic circulation. In many cases, it may be preferred over nitroglycerin tablets because of its longer duration of action.

b) Pharmacokinetics

Nitroglycerin is a rapid smooth-muscle relaxant that reduces cardiac work and, to a lesser degree, dilates the coronary arteries. This results in increased coronary blood flow and improved perfusion of the ischemic myocardium. Relief of ischemia causes reduction and alleviation of chest pain. Pain relief following transcutaneous nitroglycerin administration usually occurs within 5 to 10 minutes, and therapeutic effects can be observed up to 30 minutes later. Nitroglycerin also causes vasodilation, which decreases preload. Decreased preload leads to decreased cardiac work. This feature, in conjunction with coronary vasodilation, reverses the effects of angina pectoris.

c) Indications

Patients in respiratory distress with moderate or severe symptoms and elevated systolic blood pressure.

d) Contraindications

(1) Known hypersensitivity
(2) Pediatric patient under the age of 13
(3) Any patient having taken medication for Pulmonary Artery Hypertension (e.g., Adcirca™ or Revatio™) or erectile dysfunction (e.g., Viagra™, Levitra™, or Cialis™) within the past 48 hours. Medical consultation is required to override this contraindication.
(4) Asymptomatic hypertension
(5) Blood pressure below 90 mmHg systolic
(6) Heart rate less than 60

e) Adverse Effects

Headache, dizziness, weakness, tachycardia, hypotension, orthostasis, skin rash, dry mouth, nausea, and vomiting.

f) Precautions

Patients taking the drug routinely may develop a tolerance and require an increased dose. Headache is a common side effect of nitroglycerin administration and occurs as a result of vasodilation of the cerebral vessels.

Postural syncope sometimes occurs following the administration of nitroglycerin. This should be anticipated and the patient kept supine when possible. It is important to monitor the blood pressure continuously.

g) Dosage

(1) Adult: 1 inch of the NTG paste is applied. Measuring applicators are supplied.
(2) Pediatric: Requires medical consultation from Pediatric Base Station.

29. ONDANSETRON (ZOFRAN)

a) Pharmacology

A selective blocking agent of the serotonin 5-HT3 receptor type

b) Pharmacokinetics

Anti-nausea and anti-emetic with onset of action within 5–15 minutes IV and 30 minutes IM

c) Indications

(1) Prevention and control of nausea and/or vomiting
(2) Ondansetron can be administered in an effort to reduce the nausea or vomiting complications associated with certain existing injuries, medical illness, or medication side effects (e.g., penetrating eye injury, high risk for aspiration, or following opioid administration).

d) Contraindications

Known hypersensitivity to ondansetron
Patients less than 28 days

e) Adverse Effects

(1) Hypotension
(2) Tachycardia
(3) Extrapyramidal reactions
(4) Seizures
(5) QT interval prolongation

f) Precautions

(1) Monitor EKG, pulse oximetry, and blood pressure.
(2) Have emesis basin and suction ready.

g) Dosage

(1) Adult: 8 mg SLOW IV over 2–5 minutes OR 4-8 mg IM OR 8 mg orally disintegrating tablet (ODT)
May repeat once without medical consultation.
For third repeat dose to a patient with maximum total dose of 24 mg.

(2) Pediatric:
Patients 28 days to 12 years old: 0.1 mg/kg SLOW IV over 2–5 minutes
Patients who are 13 to 18 years old: 8 mg ODT OR 8 mg SLOW IV over 2–5 minutes
OR
If no IV: 0.1 mg/kg IM (with max single dose of 8 mg);
May repeat once without medical consultation.
For third repeat dose to a patient with maximum total dose of 0.3 mg/kg or 24 mg, whichever is lower.

30. OXYGEN

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

(1) If evidence of hypoxia (Less than 94% SpO_2)
(2) Respiratory distress
(3) Cardiopulmonary arrest
(4) Trauma
(5) Suspected CO exposure
(6) Dyspnea

d) Contraindications

Not clinically significant

e) Adverse Effects

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

f) Precautions

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

g) Dosage

(1) Adult: Administer 12–15 lpm via NRB mask or 2–6 lpm via nasal cannula, as needed. CO exposure: Administer 100% oxygen via NRB mask. Maintain SpO_2 at 100%
(2) Pediatric: Administer 12–15 lpm via NRB mask or 2-6 lpm via nasal cannula, as needed. CO exposure: Administer 100% oxygen via NRB mask. Maintain SpO_2 at 100%

Percent O_2 Saturation	Ranges	General Patient Care
94–100%	Normal	Give oxygen as necessary
91–93%	Mild Hypoxia	Give oxygen as necessary
86–90%	Moderate Hypoxia	Give 100% oxygen Assisting Ventilations if necessary
less than or equal to 85%	Severe Hypoxia	Give 100% oxygen Assist Ventilations If indicated, Intubate

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

31. 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
(4) Pretreatment for patients with decreased renal function who will be receiving IV contrast dye

d) Contraindications

Preexisting 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.

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

ALERT FLUSH IV WITH 5 ML OF LR BETWEEN CALCIUM AND BICARBONATE ADMINISTRATION.

(a) Adult:

Consider sodium bicarbonate 50 mEq SLOW over 5 minutes and then initiate drip of sodium bicarbonate 100 mEq in 1,000 mL LR to run over 30–60 minutes.

(b) Pediatric:

Consider sodium bicarbonate 1 mEq/kg IV over 5 minutes. For patients less than 1 year of age, must be diluted 1:1 with LR.

(5) IV drip for diuresis prior to receiving IV contrast dye:
Continue the sodium bicarbonate drip at the rate ordered by the sending physician. Document the base solution and the amount of sodium bicarbonate that was added to the solution and the total volume infused.

Do not administer IVP medications through the same IV line as the bicarbonate drip unless compatibility has been established. Flush the line well before and after giving any IVP medication.

32. VERAPAMIL (Isoptin) (NEW '18)

(CRT-I & Paramedic only)

a) Pharmacology

Calcium channel blocker

b) Pharmacokinetics

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

c) Indications

(1) Narrow complex symptomatic atrial fibrillation or atrial flutter

d) Contraindications

(1) Hypotension below 90 mmHg, second or third degree heart block, hypersensitivity to the drug
(2) Patient with history of Wolf-Parkinson-White syndrome
(3) Ventricular tachycardia
(4) Patients less than 18 years of age

e) Precautions

Use cautiously in patients with renal failure, congestive heart failure or on beta blockers.

f) Adverse Effects

(1) Hypotension (see Treatment of Overdose or Other Adverse Reactions)
(2) Bradycardia
(3) Vomiting
(4) Nausea
(5) Headache

g) Significant Interactions

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

h) Dosage

(1) Adult:
  a) 2.5–10 mg slow IV over 2 minutes; if response is not adequate, repeat in 15 minutes with a dosage of 2.5–10 mg slow IV over 2 minutes with medical consultation.
(2) Pediatric:
  Contraindicated for patients less than 18 years of age.

i) Overdose or Toxicity Presentation

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

j) Treatment of Overdose or Other Adverse Reactions

(1) Give general supportive measures, monitor vitals, administer oxygen
(2) Hypotension:
  (a) If lungs are clear, administer fluid bolus 20 mL/kg of LR; titrate to a systolic blood pressure of 100 mmHg.
  (b) If rales are present, administer fluid bolus, maximum of 250 mL of LR. Titrate to a systolic of 100 mmHg.
  (c) Administer calcium chloride 500 mg SLOW IVP
(3) Bradycardia: Consider atropine (0.5–1 mg); if necessary, consider pacing

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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
5–12 years	Pediatric
Greater than 13 years of age	Small adult
Adult	Adult

g) SUGGESTED SIZES FOR RESUSCITATION BAGS

Age	Bag Size
Infant to less than 1 year of age	Infant (450–500 mL)
Child 1-12 years	Pediatric (750 mL)
Adolescent/Adult	Adult (1,000–1,200 mL)

3. AIRWAY MANAGEMENT: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

a) INDICATIONS

(1) Respiratory distress or failure, due to cardiogenic pulmonary edema or COPD/asthma, in which the patient demonstrates spontaneous respirations and a patent, self-maintained airway
(2) Patients who are 13 years of age or older
(3) Exception: EMT may transport a patient who is chronically on CPAP who is going for routine medical care and has in attendance a patient provided attendant who can manage the patient's own CPAP.

ALERT

PROVIDER MUST ASSURE THAT THE CPAP MASK FITS THE PATIENT APPROPRIATELY.

b) CONTRAINDICATIONS

(1) Circumstances in which endotracheal intubation or a surgical airway is preferred or necessary to secure a patent airway
(2) Circumstances in which the patient does not improve or continues to deteriorate despite CPAP administration

c) PROCEDURE

(1) Assure patent airway.
(2) Administer 100% O_2 via appropriate delivery system.
(3) Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter (SpO_2) reading, and cardiac rhythm.
(4) Apply CPAP device per manufacturer's instructions.
(5) Continuously reassess the patient.
(6) Monitor continuous pulse oximetry.
(7) Monitor continuous $EtCO_2$ with nasal prongs (if available).
(8) Follow the appropriate set of standing orders for continued treatment.
(9) Contact the medical control as soon as possible to allow for prompt availability of hospital CPAP equipment and respiratory personnel.

ALERT

FOR CIRCUMSTANCES IN WHICH THE PATIENT DOES NOT IMPROVE OR CONTINUES TO DETERIORATE DESPITE CPAP AND/OR MEDICATIVE THERAPY, TERMINATE CPAP ADMINISTRATION AND PERFORM BVM VENTILATION AND ENDOTRACHEAL INTUBATION IF NECESSARY.

CPAP MAY BE CONSIDERED FOR NON-CARDIOGENIC PULMONARY EDEMA.

4. AIRWAY MANAGEMENT: LARYNGEAL TUBE AIRWAY DEVICE (KING LTS-D™) (NEW ’18)

a) PURPOSE

To provide an alternative means of ventilating patients who cannot be intubated via laryngoscopy.

b) 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).

c) CONTRAINDICATIONS

(1) Responsive patients with an intact gag reflex
(2) Lack of an appropriately-sized device
(3) Known esophageal disease or ingestion of caustic substances

d) 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.

e) PROCEDURE

(1) Inspect all components of the LTS-D for visible damage.
(2) Select appropriately sized LTS-D airway as specified by manufacturer.
(3) Test cuffs by injecting the maximum volume of air (by size) as specified by manufacturer and lubricate with water soluble jelly.
(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 using a lateral approach and advance the tip behind the base of the tongue while rotating the tube back to midline so the blue line faces the patient’s chin.
(6) Without exerting excessive force, advance tube until base of connector is aligned with teeth and gums.
(7) Inflate cuff and ventilate patient. Gently withdraw the tube until ventilation becomes easy and free-flowing.
(8) Adjust cuff inflation to obtain a seal of the airway.
(9) Ventilate and evaluate lung ventilation (breath sounds, absence of gastric sounds, chest rise, EtCO2, oxygen saturation).
(10) Once effective ventilation is confirmed, continue to monitor oxygen saturation and ventilate to desired EtCO2 level.
(11) If unable to achieve adequate ventilation using LTS-D airway, remove device, reinsert, and attempt again. If unable to ventilate, reattempt bag-valve-mask ventilation and consider obstructed airway maneuvers.

5. 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 (e.g., 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.

Paramedic ONLY

6. 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 13 years of age

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 preexisting 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.

(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) $EtCO_2$ 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 (e.g., pupillary response, skin color, etc.)

(3) Nasal intubation may require facilitation with sedation. When hypovolemia is unlikely and hypotension is not present, morphine/fentanyl or midazolam, or a combination of both, may be given by direct medical consultation to achieve mild sedation. (NEW ’18)

7. AIRWAY MANAGEMENT: NEEDLE DECOMPRESSION THORACOSTOMY (NDT)

a) PURPOSE (NEW '18)

Needle Decompression Thoracostomy is the procedure of introducing a needle/catheter with a minimum length of 3.25 inches and a minimum diameter of 14 gauge (with add-on 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 IS 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 reaccumulation, catheter occlusion, or dislocation is evident.

8. OBSTRUCTED AIRWAY FOREIGN BODY REMOVAL: DIRECT LARYNGOSCOPY

a) PURPOSE

The attempted correction of a foreign-body airway obstruction through direct laryngoscopy should be accomplished only by a Maryland licensed CRT-(I) or paramedic. This is accomplished after the ALS provider has determined (by noting repeated unsuccessful attempts at dislodging the object by applying the standard basic method of foreign body removal by BLS providers or the ALS provider) that the object cannot be dislodged by these means. The patient must be unconscious and supine before this method is attempted.

b) INDICATIONS

Patient must be unconscious due to foreign body upper airway obstruction that has not resolved with standard basic methods for foreign body removal.

c) CONTRAINDICATIONS

None

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

Trauma to the oral pharynx, vocal cords, esophagus, or trachea

e) PRECAUTIONS

It is important to distinguish the foreign body from portions of the patient's anatomy.

12. AIRWAY MANAGEMENT: VENTILATORY DIFFICULTY SECONDARY TO BUCKING OR COMBATIVENESS IN INTUBATED PATIENTS

a) INDICATIONS

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

b) CONTRAINDICATIONS

Unsecured airway

c) PROCEDURE (NEW '18)

(1) Midazolam up to 0.05 mg/kg IVP over 1–2 minutes, titrated to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg. Maximum single dose is 5 mg.
(2) If ventilatory difficulty is thought to be the result of pain response, opioid may be used per Pain Management Protocol in addition to or instead of midazolam: Titrate to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg.
(3) Continue to monitor oxygen saturation and ventilate to desired $EtCO_2$ level.
(4) Obtain on-line medical direction if further problems present.

(5) Midazolam up to 0.05 mg/kg IVP over 1–2 minutes, titrated to abate bucking and relax ventilation while maintaining systolic BP: greater than 60 in neonates, 70 in infants, and [70 + (2 x years) = systolic BP] for patients greater than 1 year of age. Maximum single dose is 5 mg.
(6) If ventilatory difficulty is thought to be the result of pain response, opioid may be used per Pain Management Protocol in addition to or instead of midazolam: Titrate to abate bucking and relax ventilation while maintaining systolic BP: greater than 60 in neonates, 70 in infants, and [70 + (2 x years) = systolic BP] for patients greater than 1 year of age.
(7) Continue to monitor oxygen saturation and ventilate to desired $EtCO_2$ level.
(8) Obtain on-line medical direction if further problems present.

13. VENTILATORY MANAGEMENT

a) PURPOSE

(1) Manual ventilation using a bag-valve-mask (BVM) or mechanical (machine) ventilation can be an effective method for managing a patient in the pre-hospital environment when performed correctly. Ventilatory management is important at both the BLS and ALS levels.

(2) Special considerations such as etiology of respiratory failure and method of achieved airway management, including intubation (e.g., rapid sequence intubation), may require the advanced life support provider to provide additional care.

b) INDICATIONS

(1) Any condition requiring assisted or artificial ventilation with a bag-valve-mask or mechanical (machine) ventilation

(2) All patients will require manual ventilation after the placement of an advanced airway. Inadequate respiratory rate may be secondary to underlying respiratory pathology or the result of pharmacologic intervention secondary to medications used in rapid sequence intubation.

c) CONTRAINDICATIONS

None

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

(1) Gastric distension, vomiting, and/or aspiration

(2) Hypoxemia

(3) Secretions and tube/bag obstruction

(4) Barotrauma

(5) Patient agitation

(6) Equipment failure

e) PROCEDURE/PRECAUTIONS:

(1) Have suction available and ensure a patent airway using a BLS airway adjunct (OPA or NPA).

(2) Rate of **initial** ventilation by single hand bag-valve technique should generally be the following:

(a) For all ages except neonates, 1 breath every 5 seconds (8–12 breaths/min)

(b) For a neonate, 1 breath every 3 seconds (higher rates may be required)

(3) AVOID hyperventilating unless patient exhibits signs of brainstem herniation (e.g., unequal pupils, posturing). Hyperventilation is associated with increased mortality.

20. GLUCOMETER PROTOCOL

a) PURPOSE

The glucometer should be utilized by ALS providers to determine the blood glucose level in an attempt to determine the etiology of the patient's condition and provide treatment tailored to the needs of the patient.

b) INDICATIONS

The glucometer should be utilized for any patient presenting with an altered mental status, seizure activity, or unresponsiveness, stroke, combative, suspected cyanide poisoning, reported history of high or low blood sugar, and pediatric bradycardia or cardiac arrest.

ALERT IN ADDITION FOR PEDIATRIC PATIENTS: DIZZINESS, SYNCOPAL EPISODES, VOMITING IN KNOWN DIABETIC, OR ALCOHOL INGESTION

c) TREATMENT

(1) ADULT

(a) If blood glucose is less than 70 mg/dL administer 10% dextrose in 50 mL (5 gram) boluses, one minute apart, to a maximum of 250 mL OR 25 grams of 50% dextrose IVP, until:

(i) the patient has a return to normal mental status, and;

(ii) the patient's blood glucose is at least 90 mg/dl or

(iii) if, following 250 mL of 10% dextrose or 25 grams of 50% dextrose, patient has persistently altered mental status and blood glucose less than 90 mg/dl, repeat dosing regimen in (a).

(b) If unable to initiate an IV and blood glucose is less than 70 mg/dL, administer glucagon 1 mg IM/IN.

ALERT IF, 20 MINUTES AFTER IM/IN GLUCAGON ADMINISTRATION, THE PATIENT HAS PERSISTENTLY ALTERED MENTAL STATUS **AND** BLOOD GLUCOSE LESS THAN 90 MG/DL, CONSIDER IO ADMINISTRATION OF 10% **OR D25W** DEXTROSE CONSISTENT WITH THE DOSING REGIMEN OUTLINED IN (a).

(c) If blood glucose is greater than 300 mg/dl, administer 10 mL/kg LR bolus unless rales, wheezing, pedal edema, or history of renal failure or CHF is present.

(2) PEDIATRIC

Patient less than 28 days - if blood glucose is less than 40 mg/dL administer 2 mL/kg of 10% dextrose IV/IO.
D10W is prepared by mixing one part of D50W with four parts LR.
Recheck glucose after first dose.


If blood glucose is less than 40 mg/dL, obtain medical consultation to administer second dose of D10W.

(NEW '18) Patient 28 days or greater until the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
Recheck glucose after first dose.


If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W.

(i) If unable to start IV and blood glucose is less than 70 mg/dL, administer glucagon IM/IN:
5 years of age up to patient's 18th birthday: 1 mg
28 days–4 years of age: 0.5 mg

21. HIGH PERFORMANCE CPR (NEW '18)

a) PURPOSE

To improve survival of sudden out-of-hospital cardiac arrest patients in Maryland. High Performance Cardio-Pulmonary Resuscitation (HPCPR) employed with Code Resource Management (CRM) is a proven concept based on a team approach that ensures effective and efficient use of EMS resources. This systematic change in treatment and management of cardiac arrest patients has demonstrated effectiveness in Maryland, and provides an example for systems embarking on measuring and improving care that is based upon proven research and practices.

b) INDICATIONS

Patients in cardiac arrest who are greater than 24 hours old.

c) CONTRAINDICATIONS

(1) Patients meeting the criteria for Pronouncement of Death in the Field Protocol
(2) Patients who are less than 24 hours old

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

None

e) PRECAUTIONS

None

f) IMPORTANT ROLE OF DISPATCHER TELEPHONE CPR (T-CPR)

(1) Immediate recognition of unresponsiveness, activation of EMS system response via 9-1-1, and initiation of CPR by the lay rescuer is essential to maximize survival.
(2) In an unresponsive patient, rapid recognition of agonal (gasping) respirations, or no respirations should prompt dispatcher-directed compressions to the caller (Dispatch-directed T-CPR).
(3) Dispatch-directed T-CPR delivers CPR prior to EMS system arrival and presents a patient more responsive to EMS interventions, thus providing the ability to improve survival.

g) PROCEDURE FOR HIGH PERFORMANCE CPR

(1) The first provider at the patient's side will assess and initiate compressions.
(2) **Effective Compressions** - Manual chest compressions should be initiated immediately upon identification of cardiac arrest, as long as the scene is safe. When compressions are done manually, compressors should be rotated **every 2 minutes** in order to maintain high-quality compressions. Ideally, one compressor is on each side of the patient's chest: one person compressing the chest and the other person ready to start. Chest compressions will be performed at a depth of at least 2 inches allowing for complete recoil of the chest after each compression.

For patients **less than one year of age**, compressions will be performed at a depth of 1½ inches. For patients **greater than one year old up to age 13**, compressions will be at a depth of 2 inches.

(3) Compressions should be accomplished with equal time given for the down and up motion and achieve a rate of 100–120 per minute.

(4) **Continuous Compressions** - Chest compressions will be performed at a rate of 100–120 per minute and will NOT be interrupted during the two-minute cycle for any reason. Other treatments such as ventilations, IV access, or intubation attempts will be done while compressions are ongoing. After completion of a two-minute cycle, a brief pause to assess pulses and/or defibrillate will be limited to less than 10 seconds.

(5) **Defibrillation** – placement of the defibrillator pads will not interrupt chest compressions

(a) Automatic External Defibrillation

The AED will be powered on as soon as the cardiac arrest is confirmed. Do not interrupt chest compressions to remove clothing or place defibrillation pads. If the AED charges after analyzing, chest compressions will be performed while the device charges, then the patient will be "cleared" and defibrillated. Compressors will hover over the patient with hands ready during defibrillation so compressions can start immediately after a shock. Another two-minute cycle of compressions will be immediately performed. Pulse checks will not occur after a shock, but only after the AED prompts "no shock advised." If no pulse is palpated, or if unsure, immediately perform another two minutes of CPR.

(b) Cardiac Monitor/Defibrillator

When a manual defibrillator is in use, it will be charged to the appropriate energy level as the end of the compression cycle nears (approximately 1 minute and 45 seconds into a two-minute cycle). At the end of the two-minute cycle, the patient will be cleared, the rhythm will then be interpreted rapidly, and the patient will either be defibrillated or the defibrillator energy charge will be cancelled. This sequence must be performed within 10 seconds. During this sequence, the compressors will hover over the patient with hands ready. If a shock is delivered, the compressor will immediately resume CPR. Rhythm interpretation will not occur after a shock, but only occur after the two-minute cycle of CPR is performed. If a shock is not indicated, check for a pulse. If patient remains pulseless, immediately resume HPCPR.

(6) **Ventilations** - Ventilations will be performed without stopping chest compressions. Ventilations are important but can impede the cardiac output from compressions. Thus, rescuers should not provide too many breaths or use excessive force. One ventilation will be given every 10th compression during recoil (upstroke). Once an advanced airway is in place, ventilations will be interposed asynchronously with uninterrupted compressions (1 ventilation every 6 seconds, for all ages). Ventilation volume should be low volume (approximately 500 cc), best approximated by a three finger or end of bag squeeze. High performance, continuous compressions remain the priority. Ensure ventilations are adequate with bag-valve-mask attached to 100% oxygen. Providers will not interrupt compressions to obtain an advanced airway.

For children **up to age 13**, maintain a ratio of 2 ventilations every 30th compression for single rescuer CPR or 2 ventilations every 15th compression for two or more rescuer CPR.

Rescuers Should	Rescuers Should Not
Perform chest compressions at a rate of 100-120/min	Compress at a rate slower than 100/min or faster than 120/min
Compress to a depth of at least 2 inches (5 cm)	Compress to a depth of less than 2 inches (5 cm) or greater than 2.4 inches (6 cm)
Allow full recoil after each compression	Lean on the chest between compressions
Minimize pauses in compressions	Interrupt compressions for greater than 10 seconds
Ventilate adequately (2 breaths after 30 compressions, each breath delivered over 1 second, each causing chest rise)	Provide excessive ventilation (ie, too many breaths or breaths with excessive force)

(7) **Advanced Life Support** - ALS providers will address defibrillation, IV/IO access, medication administration, and advanced airway placement, as indicated within these protocols; however, the placement of an advanced airway is no longer an early focus of cardiac arrest management and will not interrupt chest compressions. Nasal capnography may be utilized to optimize CPR performance and evaluation of ROSC, with use of bag-valve-mask ventilation.

(8) **Return of Spontaneous Circulation (ROSC)** – Refer to ROSC Protocol.

(9) **Quality Improvement/Performance Metrics** – Time to CPR, time to defibrillation, and quality of CPR are all factors that have been shown to have a positive impact on survival. One metric that field crews can use to evaluate performance is CPR Fraction.

(a) CPR Fraction – The time CPR is being performed divided by the total time of the cardiac arrest. This fraction is typically reported as a percentage.

(i) A target goal for crews, that has been associated with improvements in survival, is a CPR fraction of equal to or greater than 80%.

(ii) Minimizing pre-shock pauses (e.g., charging defibrillator while providers performing chest compressions)

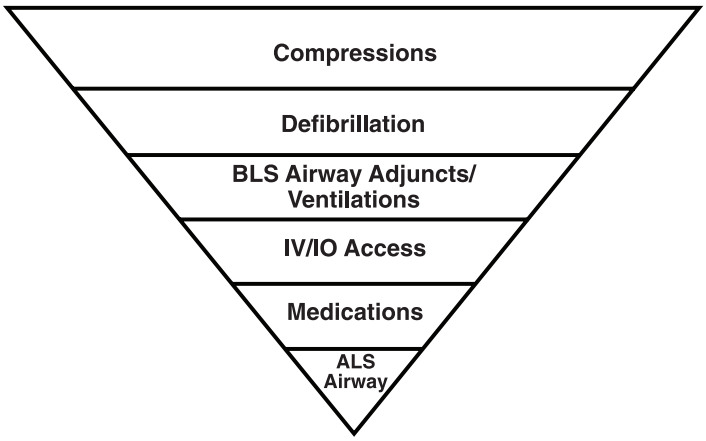
(iii) Feedback is best provided in real time or as close to the provision of care as possible.

(b) CPR compression rates should be between 100 and 120 per minute.

(c) Compression pauses should always be less than 10 seconds.

h) PROCEDURE: CODE RESOURCE MANAGEMENT (CRM)

Crews should coordinate their duties keeping the call priorities in mind. Intervention priorities are (in order of highest to lowest):



The number of personnel on a given incident and the qualifications of those personnel can vary; however, the priorities remain the same. Appropriate crew roles are outlined below:

2 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate, attach/operate AED/defibrillator, assume crew leader responsibilities (providers rotate positions every two minutes)
Roles remain the same even if providers are ALS equipped

3 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate
Provider 3 – Crew Leader, attach/operate AED/defibrillator
(Providers 1 and 2 rotate every two minutes)
Roles remain the same even if providers are ALS equipped

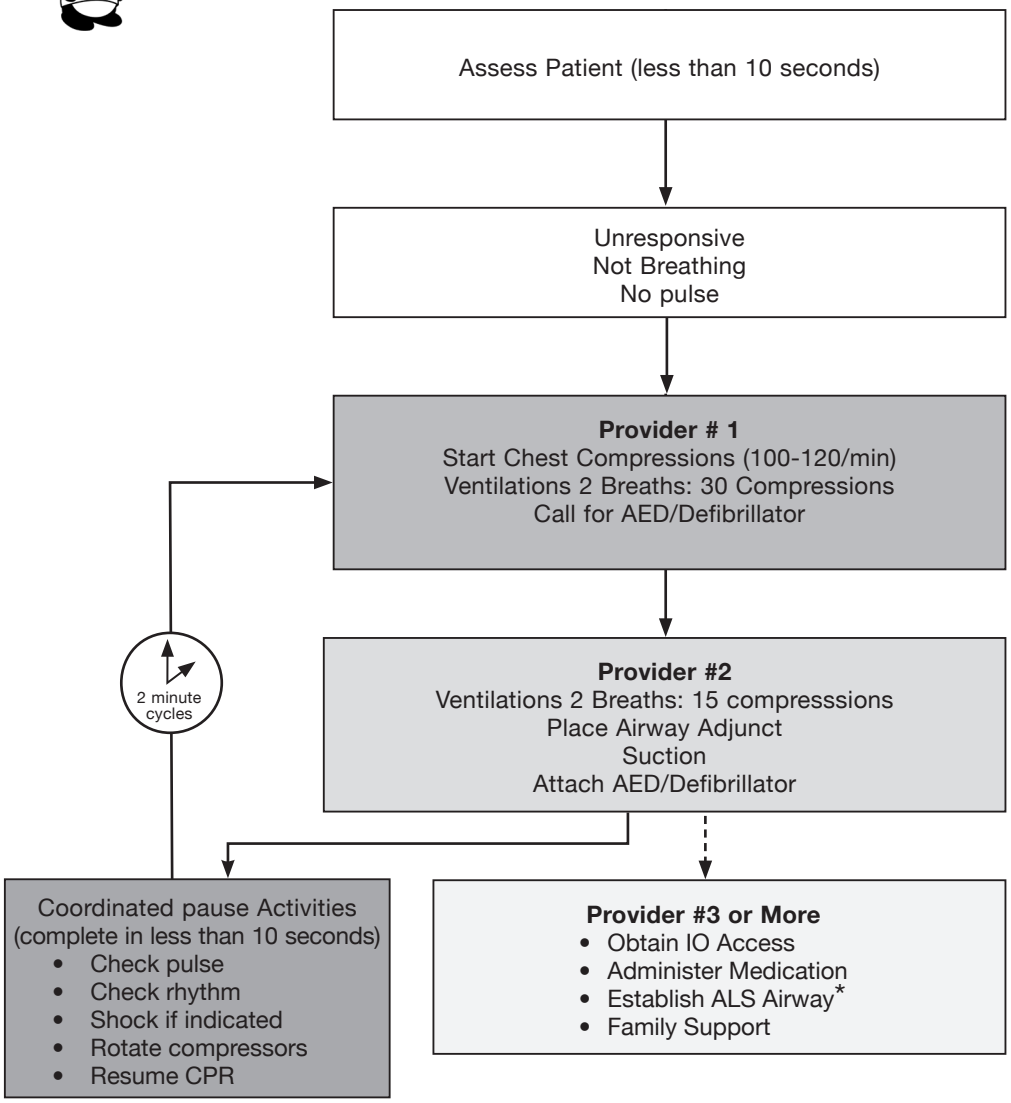
4 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate
Provider 3 – Attach/operate AED/defibrillator
Provider 4 – Crew leader
(Providers 1, 2, and 3 rotate every two minutes)

*** Once first two roles have begun treatment, ALS providers will establish IV/IO and administer medications.*

Greater than 4 providers - Utilize the same initial assignments as the four provider crew. The crew leader will assign additional roles such as informing the family of patient status, gathering patient information, and documenting the medical interventions performed on the call. If resources allow, rotate additional providers to do chest compressions to achieve optimal performance.

Crew leader - The crew leader will keep time, record interventions performed during the arrest, give compression feedback and ensure rotation of personnel doing compressions every two minutes. Verbal announcements of time should occur at one minute, 30 seconds before reassessment, 15 seconds left, and countdown to reassessment at 10 seconds.

PEDIATRIC HIGH PERFORMANCE CPR (HPCPR)



Pediatric HPCPR Team Member Initial Roles

Provider #1:

- Chest compressions at 100-120 per minute
- Call for AED

Provider #2:

- Ventilate at 2 breaths:15 compressions
- Attach AED

Provider #3 or MORE:

- Assume timekeeper role
- Assume AED role
- IO Access
- Medications
- Establish ALS Airway
- Family Support

Essentials of High Performance CPR for Pediatrics

1. Ensure proper chest compression rate
   - 100-120/min
2. Ensure proper compression depth
   - Less than 1year – 1 ½ inches (4 cm)
   - Greater than or equal to 1 year – 2 inches (5 cm)
3. Minimize interruptions (less than 10 second pause)
4. Ensure full chest recoil
5. Coordinate 2 minute cycles
6. Rotate Compressor

* Once an advanced airway is in place, one ventilation every 6 seconds interposed asynchronously

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22. INTRAOSSEOUS INFUSION

a) PURPOSE

The administration of fluids and medications via intraosseous (IO) infusion has long been known to be a relatively safe and effective procedure in the treatment of critically ill patients.

b) INDICATIONS

Patients in which the following conditions are present:

(1) Cardiac arrest, **OR**

(2) Profound hypovolemia, **OR**

(3) No available vascular access, or following two unsuccessful peripheral IV attempts for patients with any other life-threatening illness or injury requiring immediate pharmacological or volume intervention **OR**

(4) In pediatric patients in cardiac arrest, go directly to IO if no peripheral sites are obvious and without having to attempt peripheral access.

c) PROCEDURES

Allowable sites for IO:

(1) Sites for manual placement of IO needle

(a) IO needle with 18 gauge should be used in patients less than 3 kg.

(b) Patients 6 years of age or less, use the proximal tibial site: locate the preferred site of 1–3 cm distal to the tibial tuberosity on the anteromedial surface of the tibia.

(c) Patients greater than 6 years of age, use the distal tibial site: locate the medial surface of the distal tibia just proximal to the medial malleolus.

(2) Sites for mechanical placement of IO needle

(a) Select appropriate site :

(i) Patients 3–39 kg or who have not yet reached their 13th birthday: use the proximal tibial site. Extend the leg. Insertion site is approximately 1 cm **medial** to the tibial tuberosity, or just below the patella (approximately 1 cm or one finger width) and slightly **medial** (approximately 1 cm or one finger width), along the flat aspect of the tibia. Pinch the tibia between your fingers to identify the center of the medial and lateral borders. Aim the needle set at a 90-degree angle to center of the bone.

(ii) Patients 40 kg and greater and who have reached their 13th birthday:

a. Preferred site: use the proximal humerus site: Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated). Secure the arm in place across the abdomen.

i. Place your palm on the patient's shoulder anteriorly. The area that feels like a "ball" under your palm is the general target area. You should be able to feel this ball, even on obese patients, by pushing deeply.

ii. Place the ulnar aspect of your hand vertically over the axilla.
iii. Place the ulnar aspect of your other hand along the midline of the upper arm laterally.
iv. Place your thumbs together over the arm. This identifies the vertical line of insertion on the proximal humerus.
v. Palpate deeply up the humerus to the surgical neck. This may feel like a golf ball on a tee. The spot where the "ball" meets the "tee" is the surgical neck.
vi. The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle. Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial.

b. If proximal humerus site is not available, use the proximal tibial site. Extend the leg. Insertion site is approximately 2 cm medial to the tibial tuberosity, or approximately 3 cm (two finger widths) below the patella, and approximately 2 cm medial, along the flat aspect of the tibia. Aim the needle set at a 90-degree angle to the center of the bone.
c. If proximal site is not available, use the lower extremity distal tibia site. Insertion site is located approximately 3 cm (2 finger widths) proximal to the most prominent aspect of the medial malleolus. Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone. Aim the needle set at a 90-degree angle to the center of the bone.

(b) Select the appropriate needle :
(i) There are three lengths of 15 gauge mechanical IO needles.
(ii) Estimate tissue depth at selected site and select appropriate needle (15 mm, 25 mm, or 45 mm). Always use the 45 mm needle for the proximal humerus site. Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial.
(iii) Insert so needle is touching bone.
(iv) Check the IO needle hub to assure that the 5 mm mark on the needle is visible when the tip of the needle touches the bone. The black line closest to the hub should be visible.
(v) Gently drill into the humerus 2 cm or until the hub is close to the skin. Gently drill, into the tibia approximately 1-2 cm after entry into the medullary space or until the needle set hub is close to the skin. Hold the hub in place and pull the driver straight off. Continue to hold the hub while twisting the stylet off the hub with counter-clockwise rotations. The catheter should feel firmly seated in the bone (1st confirmation of placement).
a. Place the stylet in a sharps container.
b. Place the dressing over the hub.
c. Attach an extension set to the hub if available; firmly secure by twisting clockwise.
d. Aspirate for blood/bone marrow (2nd confirmation of placement). For patients unresponsive to pain:
e. Flush the IO catheter with 5-10 mL IV fluid.

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

33. EMERGING INFECTIOUS DISEASE

1. Initiate General Patient Care.

2. Presentation
   An emerging infectious disease (EID) is an infectious disease for which incidence in humans has increased in the past two decades or threatens to increase in the near future. These diseases, which respect no national boundaries, include
   a) New infections resulting from changes or evolution of existing organisms
   b) Known infections spreading to new geographic areas or populations
   c) Previously unrecognized infections appearing in areas undergoing ecologic transformation
   d) Old infections reemerging as a result of antimicrobial resistance in known agents or breakdowns in public health measures.

   The most recent example is Ebola Viral Disease (EVD). EIDs that meet this protocol will be posted on the MIEMSS website under the Infectious Disease Tab. Seasonal influenza is not considered an EID, but some of the same principles of infection control may apply to the more common infectious diseases.

   e) Signs and Symptoms of an EID are based on specific case definitions for the disease:
      (1) EVD case definition includes:
          Travel history or exposure **and** a set of signs and symptoms that are included in the case definition, which has evolved over time.
      (2) Other future EID diseases may vary in their signs and symptoms, and could include:
          (a) Respiratory congestion
          (b) Sneezing/Coughing
          (c) Nausea/Vomiting
          (d) Skin rashes, hives, or “poxes”
          (e) Swollen lymph nodes
          (f) General malaise
          (g) Loss of appetite
          (h) Hemorrhage from mucosal membranes
          (i) Descending neurological deficits
   f) Case Definition
      As EIDs become more prevalent, the Centers for Disease Control and Prevention (CDC) typically publish a description of each disease, which is utilized to determine whether to include or exclude a Patient Under Investigation (PUI) for specific testing or treatment and specific isolation or quarantine measures. These case definitions will be posted on the MIEMSS website and include specific guidance on the identification, treatment, and appropriate transport of these patients and the appropriate use of PPE.
   g) Modes of transmission

H. ADULT RAPID SEQUENCE INTUBATION PROTOCOL PACKAGE

1. Rapid Sequence Intubation (RSI) Pilot Program

a) Indications

(1) Inability to tolerate laryngoscopy, and:
  (a) GCS less than or equal to 8 with respiratory rate less than or equal to 8 or greater than or equal to 35 or
  (b) GCS less than or equal to 8 with oxygen saturation less than or equal to 90% on non-rebreather face mask

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

b) Contraindications

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

c) Preparation

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

d) RSI Procedure

(1) Sedation

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

(NEW '18) Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia.

Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. If the patient is hypotensive or 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 in 2–3 minutes if inadequate sedation.

OR

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

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

OR

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

Dose: Administer 0.05 mg/kg IVP over 1–2 minutes.
Maximum single dose is 5 mg.

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

(2) For patients with head injury or suspected increased intracranial pressure, administer lidocaine 1 mg/kg (40–100 mg) IVP over 1–2 minutes.

(3) In-line cervical spine stabilization by second caregiver (in trauma setting)

(4) Apply cricoid pressure (by third caregiver).

(5) Succinylcholine: Administer 1.5 mg/kg rapid IVP. Maximum single dose is 200 mg.

(6) Intubate trachea and verify ET placement.

(7) If inadequate relaxation after 2–3 minutes, administer atropine 1 mg to avoid bradycardic response and repeat succinylcholine 1 mg/kg IVP. Maximum single dose is 200 mg.

e) Successful Endotracheal Tube Placement

(1) Release cricoid pressure and secure ET.

(2) Ventilate to $EtCO_2$ 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 "If Unable to Ventilate" below.

(3) Reattempt oral ET intubation.

(4) If unsuccessful, resume BVM ventilation for 30 seconds.

(5) Insert an approved alternative airway device (refer to Laryngeal Mask Airway Optional Supplemental Program or Laryngeal Tube Airway Device procedure). **(NEW '18)**
(6) Attach capnograph and ventilate to desired $EtCO_2$ 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.

g) If Unable to Ventilate

Insert an approved alternative airway device (refer to Alternative Airway Device Protocol).

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

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

b) Contraindication

Unsecured airway

c) Procedure

(1) **(NEW '18) Etomidate**, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia.

Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. If the patient is hypotensive or 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 every 15 minutes to a total of three doses.

OR

Ketamine may be used if etomidate is unavailable, and may be preferred for patients who have hypotension or possible hypovolemia, or if ventilatory difficulty is thought to be the result of pain response.

Dose: Administer 2 mg/kg IVP over 60 seconds. May repeat 1 mg/kg for IVP every 10–15 minutes to a total of three doses as necessary.


Additional doses require medical consultation.

OR

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

Dose: Administer 0.05 mg/kg IVP over 1–2 minutes, titrated to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg. Maximum single dose is 5 mg.

Additional doses require medical consultation. **(NEW '18)**

(2) If ventilatory difficulty is thought to be the result of pain response,
Ketamine: Dose 2 mg/kg IVP over 60 seconds. May repeat 1 mg/kg IVP every 10–15 minutes as necessary to a total of three doses as necessary.

Additional doses require medical consultation.

OR

Opioid may be used per Pain Management Protocol in addition to, or instead of, midazolam, ketamine, or etomidate. Titrate to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg.

(3) If significant resistance to ventilation continues, the paramedic may administer:
(a) Vecuronium 0.05 mg/kg IVP. Maximum single dose is 10 mg.

ALERT

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 $EtCO_2$ MONITORING. 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.
(c) **Maintenance of amnesia**
Follow above dosing of either **etomidate** or **ketamine** with required repeat dosing every 10–15 minutes.

(4) Continue to monitor oxygen saturation and ventilate to desired $EtCO_2$.
(5) Obtain on-line medical direction if further problems present.

c) Preparation

(1) Pre-oxygenate with 90–100% oxygen.
(2) Monitor oxygen saturation with pulse oximetry and EKG.
(3) Ensure functioning IV and fluid therapy as per protocol.
(4) Evaluate for difficult airway.
(5) Perform focused RSI neurologic exam.
(6) Prepare equipment
  (a) Intubation kit: Recommended to carry both cuffed and uncuffed ET tubes for patients less than 8 years of age or 25 kg.
  (b) Bag-Valve-Mask (BVM) with manometer. (Manometer may be part of the BVM or separate.)
  (c) Suction
  (d) RSI kit
    (i) Prepare medications
    (ii) Alternative airway device, Cricothyroidotomy equipment
  (e) Capnograph

d) RSI Procedure

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

(NEW '18) Etomidate, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia.

Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. If the patient is hypotensive or 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 in 2–3 minutes if inadequate sedation.

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

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

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

Dose: Administer 0.05 mg/kg IVP over 1–2 minutes. Maximum single dose is 5 mg.

(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 x years) = systolic BP] for patients greater than 1 year of age.

(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 (or if age unknown and using ET tube smaller than 6.0), pretreat patient with atropine 0.02 mg/kg IVP.

(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 1.0 mg/kg IVP.

e) Successful Endotracheal Tube Placement

(1) Release cricoid pressure and secure ET.
(2) Ventilate to $EtCO_2$ 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 "If Unable to Ventilate" below.
(3) Reattempt oral ET intubation.
(4) If unsuccessful, resume BVM ventilation for 30 seconds. **(NEW '18)**
(5) Insert a laryngeal mask airway designed to facilitate hospital placement of an endotracheal tube (see Airway Management: Laryngeal Mask Airway Optional Supplemental Program). **(NEW '18)**

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) **(NEW '18) Etomidate**, if available, will be the preferred agent for patients who are aware of their surroundings and do not have hypotension or possible hypovolemia.

Dose: Administer 0.3 mg/kg IVP over 30–60 seconds. If the patient is hypotensive or 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 in 2–3 minutes if inadequate sedation.

OR

Ketamine may be used if etomidate is unavailable, and may be preferred for patients who have hypotension or possible hypovolemia, or if ventilatory difficulty is thought to be the result of pain response.

Dose: Ketamine: 2 mg/kg IVP over 60 seconds. May repeat 1 mg/kg for IVP every 10–15 minutes to a total of three doses as necessary.

Additional doses require medical consultation.

OR

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

Dose: Administer 0.05 mg/kg IVP over 1–2 minutes, titrated to abate bucking and relax ventilation while maintaining systolic BP: greater than 60 in neonates, 70 in infants, [70 + (2 x years) = systolic BP] for patients greater than 1 year of age. Maximum single dose is 5 mg.

(2) If ventilatory difficulty is thought to be the result of pain response,
Ketamine: Dose: 2 mg/kg IVP over 60 seconds. May repeat 1 mg/kg IVP every 10–15 minutes as necessary to a total of three doses as necessary.

Additional doses require medical consultation.

OR

Opioid may be used per Pain Management Protocol in addition to, or instead of, midazolam, ketamine, or etomidate. Titrate to abate bucking and relax ventilation while maintaining systolic BP greater than 60 in neonates, 70 in infants, [70 + (2 x years) = systolic BP] for patients greater than 1 year of age.

(3) If significant resistance to ventilation continues, the paramedic may administer:

(a) Vecuronium 0.05 mg/kg IVP (may not be used for patients with needle cricothyroidotomy because of inability to monitor breath to breath $EtCO_2$). Maximum single dose is 10 mg.

ALERT

PRE-SEDATION MUST BE PROVIDED WHEN VECURONIUM IS ADMINISTERED TO A PATIENT WHO IS EITHER RESPONSIVE TO STIMULUS OR 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.

(c) **Maintenance of Amnesia**
Follow above dosing of either **etomidate** or **ketamine** with required repeat dosing every 10–15 minutes.

(4) Continue to monitor oxygen saturation and ventilate to desired $EtCO_2$.
(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

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 <u>for 8 years old or greater</u>
(1) Stabilize thyroid cartilage and make vertical incision (1–1 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.
(6) Monitor oxygen saturation and $EtCO_2$ 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.

ALERT ONLY NEEDLE CRICOTHYROIDOTOMY SHOULD BE PERFORMED FOR PATIENTS LESS THAN AGE 8 WHO MAY REQUIRE CRICOTHYROIDOTOMY.

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

(1) 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.
(2) Documentation of the quarterly verification process shall be submitted to the State EMS Medical Director on an annual 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:
  (a) Immediate notification to jurisdictional RSI supervisor for all RSI attempts
  (b) Medical Director evaluation of all RSI attempts within 12 hours
  (c) Maintenance of detailed RSI database
  (d) All individual RSI attempts shall be documented after the jurisdictional review process on the approved RSI QA form and submitted to the State EMS Medical Director on a quarterly basis.

J. RAPID SEQUENCE INTUBATION PHARMACOLOGY

1. ETOMIDATE (AMIDATE)

a) Pharmacology
Hypnotic

b) Pharmacokinetics
A short-acting nonbarbiturate hypnotic agent without analgesic properties

c) Indications
Pre-sedation of responsive patients prior to administration of neuromuscular blocking agents

d) Contraindications
Known hypersensitivity to etomidate

e) Adverse Effects
(1) Respiratory depression or apnea
(2) Hypotension (infrequent)
(3) Involuntary myoclonus
(4) Adrenal suppression (possible with repeated dosing)

f) Precautions
(1) The effects of etomidate can be accentuated by CNS depressants such as opioids and alcohol.
(2) Myoclonic movements are common and should not be confused for fasciculations due to a depolarizing neuromuscular blocking agent or seizure activity.

g) Dosage (NEW '18)
(1) Adult:

Administer 0.3 mg/kg IVP over 30–60 seconds.
If the patient is hypotensive or the provider suspects hypovolemia, the initial dose will be 0.15 mg/kg IVP over 30–60 seconds.
Ventilatory Difficulty Secondary to Bucking or Combativeness in Intubated Patients:
Administer 0.3 mg/kg IVP over 30–60 seconds. If the patient is hypotensive or 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 every 15 minutes to a total of three doses.

Pediatric:

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.

K. TACTICAL EMS (NEW '18)

1. INTRODUCTION

a) Scope and Applicability

(1) These protocols are intended for use during high-risk, large-scale, and extended law enforcement or homeland security operations.

(2) The Tactical Emergency Medical Services (TEMS) provider is not directly responsible for any person(s) outside the direct field of operations, whose care may safely be provided by the local EMS Operational Program.

(3) These protocols supplement the current version of *Maryland Medical Protocols for Emergency Medical Services Providers* and, at the Tactical Physician's discretion, may incorporate other EMS protocol components such as: Wilderness, Interfacility, Pilot/Optional, and WMD sections.

(4) The Tactical Emergency Medical Services Protocols shall be used only by Tactical EMS providers sponsored by a law enforcement agency and operating under law enforcement command.

(5) To be approved, there must be a written, integrated relationship between the EMS Operational Program and the TEMS program, with both the EMS Operational Program Medical Director and the TEMS Medical Director having signed off on the agreement.

(6) Tactical EMS Providers at the EMT or ALS levels may administer the medications and perform the procedures listed in these protocols only after receiving specific training on their use and only under the medical direction of a Tactical Physician.

(7) The primary function of the Tactical EMS Provider is to support law enforcement or homeland security operations by facilitating the health and safety of critical public safety personnel inside the perimeter of high-risk, large-scale, and extended operations.

(8) Once the patient is removed from the law enforcement perimeter of operations, the TEMS Protocol will end, the Maryland Medical Protocols for EMS Providers will be implemented, and the transition of care will be made to the local EMS agency.

(9) An exception may be made when the Tactical EMS Provider's specialized training is needed to manage a specific illness/injury.

(a) If the Tactical EMS Provider's specialized training is needed to manage the patient's illness/injury, then the highest-trained Tactical EMS Provider shall ride to the hospital with the patient to maintain medications that are not allowed by Maryland Medical Protocols for EMS Providers.

(b) If, during transport, Tactical EMS personnel encounter a significant conflict between TEMS Protocols and those of the transporting EMS agency, they should attempt to contact their own Tactical Physician and request a dual consult with the local Base Station Physician.

(c) If they cannot reach a Tactical Physician, they should contact the local EMS Base Station for on-line medical consultation.

b) Definition of Tactical Environment
   (1) Any law enforcement or homeland security operation where deployed personnel are in a large-scale operation or where the risk of injury is sufficiently high as to warrant the presence of on-scene emergency medical services providers.
   (2) Types of operations may include: high-risk warrant service, hostage-barricade situations, emergency ordinance disposal, executive protection details, civil demonstration or protest, dynamic training operations, aquatic operations, high-angle, search and rescue missions, and acts of terrorism.
   (3) Any prolonged law enforcement deployment, where performance decrement or environmental issues may arise and the safety of the public and deployed law enforcement personnel would benefit from the presence of a Tactical EMS Provider to monitor these circumstances.

c) Demonstration of Need
   (1) Jurisdictions that seek approval for a Tactical EMS Program shall submit a demonstration-of-need letter outlining the necessity for the program.
   (2) The letter shall be submitted to the State EMS Medical Director for approval and include the following:
      (a) Name of organization and scope of the proposed Tactical EMS Team
      (b) Name and qualifications of the Tactical Medical Director and other Tactical Physicians
      (c) Name and qualifications of the Tactical EMS Coordinator and other Tactical EMS Providers

d) Sponsoring Law Enforcement Agency Requirements
   (1) Sponsoring Law Enforcement Agencies shall be responsible for
      (a) Completing background investigations appropriate for medical providers working in and around law enforcement operations
      (b) Providing appropriate personal protective equipment, to accommodate conditions that the team may reasonably encounter, to the Tactical EMS Providers and Tactical Physician(s) and ensure adequate training in the equipment's use and capabilities
      (c) Providing written documentation to MIEMSS that addresses the medical liability and personal injury considerations of the Tactical EMS Providers/Physician(s)

e) Tactical EMS Provider/Tactical Physician Minimum Training Requirements
   (1) The Tactical EMS Provider shall be a Maryland-certified EMT or Maryland-licensed ALS provider and have successfully completed a nationally-recognized Counter-Narcotic Tactical Operation Medical Support/Integrated Force Health Provider Program (CONTOMS/IFHP) or equivalent Tactical Provider course that includes instruction and training in
      (a) Team wellness and health management, including preventive medicine
      (b) Providing care under fire/basic weapons safety
      (c) Officer rescue
      (d) Planning medical operations and medical intelligence
      (e) Response to the active shooter

(f) Orientation to specialized medical gear personal protective equipment used in tactical medical operations
(g) Remote medical assessment ("medicine across the barricade")
(h) Response and management of WMD events, including field-expedient decontamination ("hasty decon") procedures
(i) Operational security, light and sound discipline, helicopter operations, pyrotechnic and other chemical agents, as utilized by law enforcement teams
(j) Less-than-lethal weaponry, the injuries they may cause, and any specific interventions required

(2) The Tactical EMS Provider shall have responsibilities for part or all of these protocols, as summarized as follows, based on either EMT or ALS (CRT-I or paramedic) level certification.

INTERVENTION	EMT	ALS
Provision of access to medications: ibuprofen, naproxen, fexofenadine, cetirizine, pseudoephedrine, oxymetazoline nasal spray, Mylanta, cimetidine, loperamide, clove oil, acetaminophen, tramadol, caffeine, modafinil, ondansetron ODT, scopolamine patch, ophthalmologic proparacaine/tetracaine and fluorescein, prednisone PO, dexamethasone PO, albuterol MDI, aspirin, epinephrine 1 mg/mL IM, naloxone IN, glucose PO	●	●
Administration of medications in Protocol, not listed above		●
Cyanoacrylate tissue adhesive	●	●
Field expedient wound closure (stapling)		●
Conducted electrical weapon (CEW) dart removal	●	●

(3) The Tactical EMS Provider shall document each patient contact utilizing a patient care report (PCR) (eMEDS®). The documentation must be consistent with current MIEMSS regulations for interventions, as summarized in the above table.
(4) The Tactical Physician shall possess an unrestricted Maryland License (preferred Emergency Medicine, General/Orthopedic/Trauma Surgery, or Critical Care), have experience in on-line medical direction, and have completed a nationally-recognized (CONTOMS/IFHP or equivalent) tactical medical director's course that includes instruction and training in the following topics:
(a) History of/need for tactical EMS provision
(b) Administrative/command concerns and responsibilities
(c) Care under fire
(d) Special equipment/hazards in the tactical environment
(e) Forensic examination
(f) Medicine "across the barricade"
(g) Medical threat assessment

f) Quality Assurance Properties
   (1) Individual Tactical EMS Providers must be approved for TEMS Program Participation by the TEMS Medical Director.
   (2) Classroom lecture
   (3) Mannequin instruction
   (4) Must demonstrate proficiency through skills testing and written test
   (5) Ongoing demonstration of proficiency
   (6) A verification of all TEMS skills and review of TEMS principles of safety will be performed on an annual basis by the Medical Director, or the provider may document utilization of skills in the field
   (7) Review of each call
      (a) Upon completion of the tactical incident, notification of any implementation of the TEMS Protocol will be made to your jurisdictional TEMS supervisor, who will ensure notification to TEMS Medical Director.
      (b) TEMS Medical Director will review and evaluate all TEMS interventions within 48 hours of resolution of the tactical incident and provide feedback.
   (8) The TEMS program will maintain a detailed TEMS database and will provide an annual report to the State EMS Medical Director.

2. GENERAL PROTOCOLS

a) Medical Direction
   (1) Tactical EMS Providers may provide medical care using Tactical Medical Protocols only under the medical direction of a Tactical Physician.
   (2) Immediately available telephone or radio contact during an operation shall be considered a reasonable substitute for in-person supervision of Tactical EMS Providers.
   (3) In the absence of medical direction by a Tactical Physician, jurisdictional trained and designated Tactical EMS Providers should defer to their usual EMS protocols.

b) Operational Command
   (1) Operational command within a law enforcement perimeter of operation lies with the law enforcement commander. At times, the safety and success of the law enforcement objectives may override the need to care for casualties. The law enforcement commander is responsible for the care and movement of casualties within a law enforcement operation.

3. SPECIAL CONSIDERATION FOR TACTICAL EMS

a) The execution of some law enforcement operations may require that minor illness or injury in essential public safety personnel be treated and, to the extent that it is medically safe to do so, that those treated personnel return to duty. Fitness for duty of public safety personnel with minor injuries or illnesses shall be determined by the law enforcement commander in consultation with a Tactical Physician.

b) Prescription and over-the-counter (OTC) medications may be used for the treatment (or “symptomatic relief”) of constitutional symptoms as required to

promote the health, safety, and functionality of persons necessary to the operation. The Tactical EMS Provider(s) under the Tactical Physician will know the indications/contraindications for the medications available to them (as will be delineated under "Additional Medications for Tactical EMS," to follow). At the EMT level, medications will be made available to those persons under the Tactical Provider's care to self-select and self-medicate at the individual requesting person's own discretion regarding appropriateness of use.

c) The Tactical EMS Provider may provide care to all persons associated with the operation, and shall be responsible for initial access, assessment, and stabilization (within the scope of The Maryland Medical Protocols for EMS Providers) of those victims, bystanders, and suspects within the "warm" or "hot" zones until they may be extracted to local EMS providers. The Tactical EMS provider is not directly responsible for any person(s) outside the direct field of operations, whose care may safely be provided by the local EMS Operational Program.

4. SPECIFIC PROCEDURES

a) Cyanoacrylate tissue adhesive
   (1) Purpose: To limit blood loss, pain, and risk of secondary contamination/injury to a minor open wound
   (2) Indications
      (a) Clean wounds
      (b) Minor bleeding wounds difficult to control with other interventions
      (c) Wounds in personnel who must remain operational
   (3) Contraindications
      (a) Grossly contaminated wounds
      (b) Greater than two hours since infliction of wound
      (c) Macerated/crushed surrounding tissue
      (d) Wounds near the eyes
   (4) Potential adverse effects/complications
      (a) This is not intended to constitute definitive wound closure; however, if properly cleaned prior to procedure, may be reviewed by physician without further intervention.
      (b) Transient local pain at application site may be reported.
   (5) Precautions
      (a) Ask regarding previous reaction/exposure to agent.
      (b) Advise patient of requirement for further evaluation by physician.

b) "Field expedient" wound closure (stapling)
   (1) Purpose: To limit blood loss and risk of secondary contamination injury to an open wound.
   (2) Indications
      (a) Clean wounds
      (b) Delay in transportation to definitive care will be or is anticipated to be several hours
      (c) Bleeding wounds difficult to control with other interventions
      (d) Wounds in personnel who must remain operational

(3) Contraindications
  (a) Grossly contaminated wounds
  (b) Greater than six hours since infliction of wound
  (c) Macerated/crushed surrounding tissue
  (d) Situations with less than two hours anticipated time to transportation to definitive care
  (e) Facial wounds
(4) Potential adverse effects/complications
  (a) This is not intended to constitute definitive wound closure—this will minimize the risk for increased infection and increased foreign body retention.
(5) Precautions
  (a) Ask regarding local anesthetic allergies.
  (b) Advise patient of requirement for further evaluation by physician.

c) Impaled conducted electrical weapon dart removal
(1) ANY conducted electrical weapon dart impalement to the head, neck, hands, feet, or genitalia must be stabilized in place and evaluated by a physician.
(2) In order to safely transport the patient, attempted extraction may be made one time by a Tactical EMS Provider as long as the dart is not lodged in a location listed in (1) above and is not fully embedded up to the hub in tissue.
(3) All patients receiving conducted electrical weapon intervention will need to be transported to the emergency department for assessment.

5. SUPPLEMENTAL FORMULARY FOR TACTICAL EMS

a) Tactical EMS providers may administer the following medications to support and maintain Tactical personnel in the operation environment. Bolded medications are required as part of the standardized TEMS load-out at the EMT or ALS level; the others are optional.
(1) Antihistamines/Decongestants
  (a) Pseudoephedrine (Sudafed)
  (b) Cetirizine (Zyrtec)
  (c) Diphenhydramine (Benadryl)
  (d) Fexofenadine (Allegra)
  (e) Oxymetazoline nasal spray (Afrin)
(2) Gastrointestinal
  (a) Antacid (Mylanta or other equivalent antacid)
  (b) Cimetidine (Tagamet—or other equivalent H2 blocker)
  (c) Loperamide (Imodium)
  (d) 5-HT3 Antagonist (Zofran ODT/Ondansetron, 5-HT3 antagonist)
  (e) Metoclopramide (Reglan) (injectable)
  (f) Dimenhydrinate (Dramamine),
  (g) Meclizine (Antivert) (for motion sickness)
  (h) Scopolamine transdermal

(3) Opthalmologicals
- **(a) Proparacaine or Tetracaine (Alcaine) ophthetic**
- **(b) Fluorescein stain (and blue light)**
- **(c) Eye irrigation solution**
- **(d) Erythromycin ophthalmic ointment**
- **(e) pH paper**

(4) Antimicrobials/antiviral (agent-specific training)
- **(a) Ciprofloxacin (following exposure or prophylaxis)**
- **(b) Triple Antibiotic Ointment (Bacitracin/Polymyxin/Neomycin)**
- (c) Amoxicillin/Clavualic acid (Augmentin)
- (d) Cefazolin (Ancef) (PO or IV) (for trauma applications when transport delayed)
- (e) Clindamycin (Cleocin)
- (f) Trimethaprin/Sulfamaziode (Bactrim)
- (g) Azithromycin (Zithromax)
- (h) Doxycycline
- (i) Mupirocin topical ointment (Bactroban)
- (j) Emtricitabine and tenofovir (Truvada) (high-risk post-exposure management)

(5) Steroids
- **(a) Prednisone (PO)**
- (b) Dexamethasone (Decadron) (IV/IM and/or PO)

(6) Analgesics/Anesthetics
- **(a) Acetaminophen (PO)**
- **(b) Ibuprofen (Motrin/Advil)**
- **(c) Naproxen (Aleve/Naprosyn) (PO)**
- **(d) Tramadol (Ultram) (PO)**
- **(e) Ketamine**
- **(f) Naloxone (Narcan) (IN and/or IV)**
- (g) Lidocaine (transdermal for muscular relief, or IM/SQ for stapling as temporizing measure only, alternate dosing regimen)
- (h) Fentanyl Transmucosal (PO)
- (i) Clove oil (for topical dental analgesia)
- (j) Ketorolac (Toradol) (injectable)

(7) Sleep/Wake
- **(a) Caffeine (No-Doz)**
- (b) Zaleplon (Sonata) (sleeper)
- (c) Modafinil (Provigil)

(8) Wound Management
- **(a) Cyanoacrylate tissue adhesive (Dermabond)**
- **(b) Topical hemostatic agent**
- **(c) Steri-strips**
- (d) Staples

(9) ACLS/Resuscitation
- **(a) Albuterol MDI**

(10) Anti-hypoglycemics

(a) Oral glucose

(11) Additional Medications for Tactical EMS: The following is a list of medications from the Maryland Medical Protocols that is strongly encouraged to be readily accessible to complement the Tactical Medic's Formulary.

Aspirin (EMT, ALS)..... Non-Operational
Atropine Multi-Dose (ALS) ..... Non-Operational
Dexamethasone (ALS) .....Operational
Dextrose (ALS) ..... Non-Operational
Epinephrine 1:1,000, (EMT, ALS) ..... Non-Operational
Haldol (ALS) ..... Non-Operational
Morphine or Fentanyl for injection (ALS)..... Non-Operational
Midazolam (ALS)..... Non-Operational
Nitroglycerin (ALS) ..... Non-Operational

OPERATIONAL: THE MEDICATION MAY BE GIVEN TO A LAW ENFORCEMENT MEMBER WHO MAY CONTINUE TO PERFORM THEIR ASSIGNED DUTIES.

NON-OPERATIONAL: ONCE THE MEDICATION HAS BEEN ADMINISTERED, THE LAW ENFORCEMENT MEMBER IS REMOVED FROM THEIR ASSIGNED DUTIES SINCE THE MEDICATION OR THE ASSOCIATED MEDICAL/TRAUMATIC COMPLAINT FOR WHICH THE MEDICATION IS INDICATED MAY IMPAIR THEIR ABILITY TO PERFORM CRITICAL LAW ENFORCEMENT TASKS AND DUTIES.

b) Tactical EMS Medical Formulary

(1) Antihistamines/Decongestants

(a) Pseudoephedrine (Sudafed)

(i) AVAILABILITY.....30 mg or 60 mg tablets (OTC)
(ii) ACTION.....Decongestant
(iii) INDICATIONS.....Nasal congestion; rhinorrhea
(iv) CONTRAINDICATIONS.....Known hypersensitivity; hypertension
(v) PRECAUTIONS.....
(vi) OPERATIONAL STATUS? .....Operational
(vii) SIDE EFFECTS.....Insomnia
(viii) INTERACTIONS.....
(ix) DOSAGE.....30–60mg, every 4–6 hours, as needed

(b) Cetirizine (Zyrtec)

(i) AVAILABILITY.....10 mg tablet
(ii) ACTION.....Non-sedating antihistamine
(iii) INDICATIONS.....Allergic symptoms
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Hypertension; liver/kidney dx
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....Dry mouth, urinary retention
(viii) INTERACTIONS.....
(ix) DOSAGE.....10 mg/once daily

(c) Diphenhydramine (Benadryl)

(i) AVAILABILITY.....25 mg or 50 mg tablets
(ii) ACTION .....Sedating antihistamine
(iii) INDICATIONS .....Allergic symptoms
(iv) CONTRAINDICATIONS .....Known hypersensitivity
(v) PRECAUTIONS.....Hypertension; liver/kidney dx
(vi) OPERATIONAL STATUS?.....NON-OPERATIONAL
(vii) SIDE EFFECTS.....Dry mouth, urinary retention,somnolence
(viii) INTERACTIONS.....
(ix) DOSAGE.....25–50mg every 4–6 hours, as needed; per MD/DO

(d) Fexofenadine (Allegra)

(i) AVAILABILITY.....60 mg tablet
(ii) ACTION .....Non-sedating antihistamine
(iii) INDICATIONS .....Allergic symptoms
(iv) CONTRAINDICATIONS .....Known hypersensitivity
(v) PRECAUTIONS .....Hypertension history; aLK CC [a]+
(vi) OPERATIONAL STATUS.....Operational
(vii) SIDE EFFECTS .....Dry mouth, urinary retention
(viii) INTERACTIONS.....
(ix) DOSAGE .....60mg/once or twice daily

(e) Oxymetazoline nasal spray (Afrin)

(i) AVAILABILITY.....Nasal spray 0.05%
(ii) ACTION .....Nasal vasoconstriction; decongestant
(iii) INDICATIONS .....Rhinorrhea; sinus congestion and pain
(iv) CONTRAINDICATIONS .....Known hypersensitivity
(v) PRECAUTIONS .....aL CC [a]?
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....Nose bleed (minor) possible; often used in treatment of nose bleed
(viii) INTERACTIONS.....
(ix) DOSAGE .....Two sprays per nare, 2–3 times per day

(2) Gastrointestinal

(a) Antacid (Mylanta or other equivalent antacid)

(i) AVAILABILITY.....Liquid (OTC)
(ii) ACTION .....Antacid
(iii) INDICATIONS .....GI upset, GERD, PUD, gastritis, esophagitis
(iv) CONTRAINDICATIONS .....Known hypersensitivity

(v) PRECAUTIONS.....Some medications require acidic pH and should not be taken at same time with this medication: aK C+ (? 1st trimester) [a]?
(vi) OPERATIONAL STATUS? .....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....Loose stools possible
(ix) DOSAGE.....15–45 mL every 4–8 hours

(b) Cimetidine (Tagamet—or other equivalent H2 blocker)

(i) AVAILABILITY .....200/300/400 mg tablets; 300 mg IV/IM
(ii) ACTION.....H2 blocker
(iii) INDICATIONS PUD, GERD, esophagitis, gastritis
(iv) CONTRAINDICATIONS.....Known hypersensitivity; concomitant Proton Pump Inhibitor (PPI) use
(v) PRECAUTIONS.....aL CC [a]?
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....
(ix) DOSAGE.....300 mg IV/IM/PO every 6–8 hours; 400 mg twice daily

(c) Loperamide (Imodium)

(i) AVAILABILITY .....2 mg tablet (OTC) and 1mg/5mL suspension
(ii) ACTION.....Anti-diarrheal
(iii) INDICATIONS.....Diarrhea
(iv) CONTRAINDICATIONS.....Known hypersensitivity; hypertension; bloody diarrhea
(v) PRECAUTIONS.....aL CB [a]+
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....ENT dryness
(viii) INTERACTIONS.....
(ix) DOSAGE.....4 mg first dose; 2 mg each subsequent episode until stool formed; maximum 16 mg per day

(d) 5-HT3 Antagonist (Zofran ODT/Ondansetron, 5-HT3 antagonist)

(i) AVAILABILITY .....IM/IV injectable; tablets
(ii) ACTION.....Anti-emetic; anti-motion sickness
(iii) INDICATIONS.....Nausea/vomiting
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....aK CB [a]?
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....
(ix) DOSAGE.....Per MD/DO

(e) Metoclopramide (Reglan) (injectable)
- (i) AVAILABILITY ..... IM/IV injectable; 10 mg
- (ii) ACTION ..... Anti-emetic; promotes GI motility
- (iii) INDICATIONS ..... Nausea/vomiting
- (iv) CONTRAINDICATIONS ..... Known hypersensitivity
- (v) PRECAUTIONS ..... Dystonic reaction risk (treat with diphenhydramine); may see sedation; aK CB [a]?
- (vi) OPERATIONAL STATUS? ..... NON-OPERATIONAL
- (vii) SIDE EFFECTS ..... Sedation; dystonia
- (viii) INTERACTIONS .....
- (ix) DOSAGE ..... 10–20 mg IM/IV/PO every 4 hours, as needed; per MD/DO

(f) Dimenhydrinate (Dramamine)
- (i) AVAILABILITY ..... IM/IV injectable; 50 mg tablet
- (ii) ACTION ..... Anti-emetic; anti-motion sickness
- (iii) INDICATIONS ..... Nausea/vomiting
- (iv) CONTRAINDICATIONS ..... Known hypersensitivity
- (v) PRECAUTIONS ..... May see sedation; aK CB [a]?
- (vi) OPERATIONAL STATUS? ..... NON-OPERATIONAL
- (vii) SIDE EFFECTS ..... Sedation
- (viii) INTERACTIONS .....
- (ix) DOSAGE ..... 50–100 mg IM/IV/PO every 4 hours, as needed; per MD/DO

(g) Meclizine (Antivert) (for motion sickness)
- (i) AVAILABILITY ..... 25–50 mg tablet
- (ii) ACTION ..... Anti-emetic; anti-motion sickness
- (iii) INDICATIONS ..... Nausea/vomiting
- (iv) CONTRAINDICATIONS ..... Known hypersensitivity
- (v) PRECAUTIONS ..... May see sedation; aK CB [a]?
- (vi) OPERATIONAL STATUS? ..... NON-OPERATIONAL
- (vii) SIDE EFFECTS ..... Sedation
- (viii) INTERACTIONS .....
- (ix) DOSAGE ..... 25–50 mg PO every 4 hours, as needed; per MD/DO

(h) Scopolamine transdermal
- (i) AVAILABILITY ..... 1 mg patch
- (ii) ACTION ..... Anti-emetic; anti-motion sickness
- (iii) INDICATIONS ..... Nausea/vomiting/motion sickness prevention
- (iv) CONTRAINDICATIONS ..... Known hypersensitivity, hx angle closure glaucoma; hypersensitivity to belladonna alkaloids, seizures, urinary retention
- (v) PRECAUTIONS ..... May cause sedation, disorientation underwater

(vi) OPERATIONAL STATUS?.....Operational (if previously tolerated scopolamine)
(vii) SIDE EFFECTS.....Sedation
(viii) INTERACTIONS.....Use with caution when taking other potentially sedative drugs or anticholinergics
(ix) DOSAGE.....1 mg patch every 3 days, as needed; per MD/DO

(3) Opthalmologicals

(a) Proparacaine or Tetracaine (Alcaine) ophthetic

(i) AVAILABILITY .....Ocular anesthetic solution
(ii) ACTION.....Topical anesthetic
(iii) INDICATIONS.....To facilitate eye exam; relieve eye pain; per MD/DO
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Ensure eye protection from foreign objects after exam
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....Eye pain
(ix) DOSAGE.....1–2 drops per eye; per MD/DO

(b) Fluorescein stain (and blue light)

(i) AVAILABILITY.....Single application strips
(ii) ACTION.....Dye to facilitate eye exam
(iii) INDICATIONS.....Suspected eye injury (foreign body/ corneal abrasion)
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....N/A
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....N/A
(viii) INTERACTIONS.....N/A
(ix) DOSAGE.....One drop per eye

(c) Eye irrigation solution

(i) AVAILABILITY.....100 mL, 200 mL bottles (other sizes may also be available)
(ii) ACTION.....To facilitate irrigation of contaminants from the eye
(iii) INDICATIONS.....Following exposure of foreign body or chemical to eye
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Not be used in penetrating eye trauma
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....
(ix) DOSAGE.....Irrigate until an eye pH of 7.4 is achieved

(d) Erythromycin ophthalmic ointment

(i) AVAILABILITY.....0.5% ointment
(ii) ACTION.....Macrolide antibiotic
(iii) INDICATIONS.....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity to penicillins
(v) PRECAUTIONS.....Topical use only
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....GI upset; nausea/vomiting; diarrhea
(viii) INTERACTIONS.....
(ix) DOSAGE.....Per MD/DO

(e) pH paper

(i) AVAILABILITY.....Rolls or precut pieces of paper (other sizes may also be available)
(ii) ACTION.....To measure baseline and repeat pH during decontamination/ irrigation
(iii) INDICATIONS.....Following exposure of foreign body or chemical to eye or skin
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Not be used in penetrating eye trauma
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....
(ix) DOSAGE.....One strip approximately 1–2 inches; per MD/DO

(4) Antimicrobials/antiviral (agent-specific training)

(a) Ciprofloxacin (following exposure or prophylaxis)

(i) AVAILABILITY.....250/500/750 mg tablets; 400 mg IVPB; 250 or 500/5 suspension
(ii) ACTION.....2nd generation quinolone antimicrobial agent
(iii) INDICATIONS.....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....aLK CC (teratogenicity unlikely) [a]?+
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....GI upset, nausea/vomiting, diarrhea, yeast infection
(viii) INTERACTIONS.....
(ix) DOSAGE.....Per MD/DO

(b) Triple antibiotic ointment or equivalent (Bacitracin/Polymyxin/Neomycin)

(i) AVAILABILITY.....Topical ointment
(ii) ACTION .....Polypeptide antibiotic
(iii) INDICATIONS .....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Topical use only
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS .....Local irritation, GI upset
(viii) INTERACTIONS.....
(ix) DOSAGE .....Apply to superficial scrapes, burns, wounds, prior to dry sterile dressing.

(c) Amoxicillin/Clavulanate (Augmentin)

(i) AVAILABILITY.....875 or 125 mg tablets
(ii) ACTION .....Beta-lactamase inhibitors
(iii) INDICATIONS .....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity to penicillins
(v) PRECAUTIONS.....Liver/Kidney dx
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS .....GI upset; nausea/vomiting; diarrhea
(viii) INTERACTIONS .....
(ix) DOSAGE.....Per MD/DO

(d) Cefazolin (Ancef) (PO or IV) (for trauma applications when transport delayed)

(i) AVAILABILITY .....0.5–2 grams IM/IV
(ii) ACTION .....1st generation Cephalosporin antimicrobial agent
(iii) INDICATIONS .....Per MD/DO—infectious exposures/ trauma
(iv) CONTRAINDICATIONS.....Known hypersensitivity to PCN or Cephalosporins
(v) PRECAUTIONS.....aK CB [a]+
(vi) OPERATIONAL STATUS?.....NON-OPERATIONAL
(vii) SIDE EFFECTS .....GI upset, nausea/vomiting, diarrhea, yeast infection
(viii) INTERACTIONS .....
(ix) DOSAGE .....Per MD/DO

(e) Clindamycin (Cleocin)

(i) AVAILABILITY.....150 or 300 mg tablets; reconstituted liquid 75mg/5mL
(ii) ACTION.....Antibiotic
(iii) INDICATIONS.....Suspected pharyngitis or respiratory Infection, cellulitis
(iv) CONTRAINDICATIONS.....Hypersensitivity to clindamycin
(v) PRECAUTIONS.....
(vi) OPERATIONAL STATUS? .....Operational

(vii) SIDE EFFECTS .....Diarrhea
(viii) INTERACTIONS.....
(ix) DOSAGE.....Pediatrics – 10 mg/kg every 8 hours
Adult – 300 mg every 8 hours

(f) Trimethoprim/Sulfadiazine (Bactrim)
(i) AVAILABILITY.....DS tablet
(ii) ACTION .....Sulfonamide antibiotic
(iii) INDICATIONS .....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS .....Liver/kidney dx, anemia, thrombocytopenia
(vi) OPERATIONAL STATUS? .....Operational
(vii) SIDE EFFECTS .....GI upset, nausea/vomiting, diarrhea
(viii) INTERACTIONS .....
(ix) DOSAGE .....Per MD/DO

(g) Azithromycin (Zithromax)
(i) AVAILABILITY.....250 mg tablet
(ii) ACTION .....Macrolide antibiotic
(iii) INDICATIONS .....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity to penicillins
(v) PRECAUTIONS.....Liver/kidney dx
(vi) OPERATIONAL STATUS.....Operational
(vii) SIDE EFFECTS .....GI upset, nausea/vomiting, diarrhea
(viii) INTERACTIONS .....
(ix) DOSAGE.....Per MD/DO

(h) Doxycycline
(i) AVAILABILITY .....100 mg tablet
(ii) ACTION.....Tetracycline antibiotic
(iii) INDICATIONS .....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity to tetracyclines, pregnancy
(v) PRECAUTIONS.....Liver/kidney dx, photoreactivity rash
(vi) OPERATIONAL STATUS? .....Operational
(vii) SIDE EFFECTS .....GI upset, nausea/vomiting, diarrhea
(viii) INTERACTIONS .....
(ix) DOSAGE.....Per MD/DO

(i) Mupirocin topical ointment (Bactroban)
(i) AVAILABILITY.....2% topical ointment
(ii) ACTION.....Other antibiotic
(iii) INDICATIONS .....Per MD/DO—infectious exposures
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Avoid eyes, limit prolonged use
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS .....Local irritation, GI discomfort
(viii) INTERACTIONS .....
(ix) DOSAGE.....Per MD/DO

(j) Emtricitabine and tenofovir (Truvada) (high-risk post-exposure management)
- (i) AVAILABILITY.....Tablet containing tenofovir DF 300 mg; emtricitabine 200 mg
- (ii) ACTION.....Antiretroviral
- (iii) INDICATIONS.....Per MD/DO—infectious exposures
- (iv) CONTRAINDICATIONS.....Known hypersensitivity
- (v) PRECAUTIONS.....Liver/kidney dx
- (vi) OPERATIONAL STATUS?.....Operational
- (vii) SIDE EFFECTS.....GI upset, nausea/vomiting, diarrhea
- (viii) INTERACTIONS.....
- (ix) DOSAGE.....Per MD/DO

(5) Steroids

(a) Prednisone (PO)
- (i) AVAILABILITY.....PO; 1/5/10/20/50 mg tablets
- (ii) ACTION.....Corticosteroid, anti-inflammatory
- (iii) INDICATIONS.....Allergic reaction, auto-immunecondition; per MD/DO
- (iv) CONTRAINDICATIONS.....Known hypersensitivity
- (v) PRECAUTIONS.....PUD/GERD/GI bleed history; aL CC [a]+
- (vi) OPERATIONAL STATUS?.....Operational
- (vii) SIDE EFFECTS.....GI upset/nausea
- (viii) INTERACTIONS.....
- (ix) DOSAGE.....40 mg to 60 mg once daily; per MD/DO

(b) Dexamethasone (Decadron) (IV/IM and/or PO)
- (i) AVAILABILITY.....PO or IV/IM; tablets
- (ii) ACTION.....Corticosteroid, anti-inflammatory
- (iii) INDICATIONS.....Allergic reaction, auto-immune condition; per MD/DO
- (iv) CONTRAINDICATIONS.....Known hypersensitivity
- (v) PRECAUTIONS.....PUD/GERD/GI bleed history, aL CC [a]-
- (vi) OPERATIONAL STATUS?.....Operational
- (vii) SIDE EFFECTS.....GI upset/nausea
- (viii) INTERACTIONS.....
- (ix) DOSAGE.....10 mg once daily; per MD/DO

(6) Analgesics/Anesthetics

(a) Acetaminophen (PO)
- (i) AVAILABILITY.....Tablet: 325 and 500mg
- (ii) ACTION.....Pain medication
- (iii) INDICATIONS.....Mild to moderate pain
- (iv) CONTRAINDICATIONS.....Known hypersensitivity, liver disease, PUD/GERD/GI bleed history
- (v) PRECAUTIONS.....aL CB [a]+
- (vi) OPERATIONAL STATUS?.....Operational
- (vii) SIDE EFFECTS.....GI upset
- (viii) INTERACTIONS.....
- (ix) DOSAGE.....650–1,000 mg / 6 hours

(b) Ibuprofen (Motrin/Advil)

(i) AVAILABILITY.....200 mg tablet (OTC) and 100mg/5mL suspension; 600 mg and 800 mg tablets
(ii) ACTION.....Non-steroidal anti-inflammatory pain medication
(iii) INDICATIONS.....Mild to moderate pain
(iv) CONTRAINDICATIONS.....Known hypersensitivity, renal insufficiency (not failure), PUD/GERD/GI bleed history
(v) PRECAUTIONS.....Do not use with other NSAIDs; caution with concomitant steroid use; aL CB (D in 3rd trimester) [a]+
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....GI upset/nausea, GI bleeding risk
(viii) INTERACTIONS.....
(ix) DOSAGE.....400–600 mg / 4–6 hours or 600–800 mg / 6–8 hours

(c) Naproxen (Aleve/Naprosyn) (PO)

(i) AVAILABILITY.....Tablet: 220/375/500 mg PO tablets
(ii) ACTION.....Non-steroidal anti-inflammatory pain medication
(iii) INDICATIONS.....Mild to moderate pain
(iv) CONTRAINDICATIONS.....Known hypersensitivity, renal insufficiency (not failure), PUD/GERD/GI bleed history
(v) PRECAUTIONS.....Do not use with other NSAIDs; caution with concomitant steroid use; aL CB (D in 3rd trimester)
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....GI upset/nausea, GI bleeding risk
(viii) INTERACTIONS.....
(ix) DOSAGE.....220–500 mg every 12 hours

(d) Tramadol (Ultram) (PO)

(i) AVAILABILITY.....50 and 100 mg PO tablets
(ii) ACTION.....Pain medication
(iii) INDICATIONS.....Moderate to moderately severe pain
(iv) CONTRAINDICATIONS.....Known hypersensitivity, seizure Disorder, SSRI/TCA/MAOI use, renal or hepatic insufficiency (adjust dose)
(v) PRECAUTIONS.....Caution with concomitant opioid use; aLiver CC [a]?
(vi) OPERATIONAL STATUS?.....Operational (if no side effects reported)
(vii) SIDE EFFECTS.....Potential dizziness/nausea
(viii) INTERACTIONS.....Antidepressants, antipsychotics, Warfarin, Digoxin, Tegretol, Quinidine
(ix) DOSAGE.....50–100 mg every 4–6 hours; 400 mg per day maximum

(e) Ketamine

Formulary per General Patient Care Protocols

(f) Naloxone (Narcan) (IN and/or IV)

Formulary per General Patient Care Protocols

(g) Lidocaine (transdermal for muscular relief, or IM/SQ for stapling as temporizing measure only, alternate dosing regimen)

(i) AVAILABILITY.....1% (10mg/mL) ampules/vials
(ii) ACTION.....Injectable anesthetic
(iii) INDICATIONS.....Local pain/injury
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Should not exceed 4 mg/kg or 300 mg
(vi) OPERATIONAL STATUS.....Operational
(vii) SIDE EFFECTS.....With high doses: seizures, lightheadedness, ringing in ears
(viii) INTERACTIONS.....
(ix) DOSAGE.....Topical application to site of dental pain

(h) Fentanyl Transmucosal (PO)

(i) AVAILABILITY.....Lozenge / lollipop 800 mcg
(ii) ACTION.....Opioid analgesic
(iii) INDICATIONS.....Severe pain/injury
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Controlled substance. Patient should not bite or chew the lozenge, but rather allow it to dissolve slowly in the mouth.
(vi) OPERATIONAL STATUS?.....NON-OPERATIONAL
(vii) SIDE EFFECTS.....Patient must be monitored for CNS/ respiratory depression
(viii) INTERACTIONS.....
(ix) DOSAGE.....Oral application for patient directed analgesia; patient should remove the lollipop once pain is controlled

(i) Clove oil (for topical dental analgesia)

(i) AVAILABILITY.....Topical liquid (OTC)
(ii) ACTION.....Topical (dental) anesthetic
(iii) INDICATIONS.....Dental pain/injury
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Penetrating/open intra-oral wounds
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....
(viii) INTERACTIONS.....
(ix) DOSAGE.....Topical application to site of dental pain

(j) Ketorolac (Toradol) (injectable)
- (i) AVAILABILITY.....30 mg/mL IV/IM
- (ii) ACTION.....Non-steroidal anti-inflammatory pain medication
- (iii) INDICATIONS.....Mild to moderate pain
- (iv) CONTRAINDICATIONS .....Known hypersensitivity, renal insufficiency (not failure), PUD/GERD/ GI bleed history
- (v) PRECAUTIONS.....Do not use with other NSAIDs; caution with concomitant steroid use; aPlasma CC (D 3rd trimester) [a]?
- (vi) OPERATIONAL STATUS?.....Operational
- (vii) SIDE EFFECTS.....GI upset/nausea; GI bleeding risk
- (viii) INTERACTIONS.....
- (ix) DOSAGE.....15–30 mg IM/IV every 6–8 hours

(7) Sleep/Wake

(a) Caffeine (No-Doz)
- (i) AVAILABILITY.....200 mg tablet
- (ii) ACTION.....Enhances alertness
- (iii) INDICATIONS.....Suspected caffeine withdrawal headache; to facilitate functioning with limited rest periods
- (iv) CONTRAINDICATIONS .....Known hypersensitivity
- (v) PRECAUTIONS .....aL CB [a]?
- (vi) OPERATIONAL STATUS?.....Operational
- (vii) SIDE EFFECTS.....Insomnia
- (viii) INTERACTIONS.....
- (ix) DOSAGE.....200 mg / 3–4 hours as needed

(b) Zaleplon (Sonata) (sleeper)
- (i) AVAILABILITY.....10 mg capsule
- (ii) ACTION.....Anxiolytic/hypnotic; shortest t-1/2 of agents available
- (iii) INDICATIONS.....Facilitate rest during non-operational periods in prolonged deployment/ transportation; minimum 4-hour block required for usage (6 hours preferred)
- (iv) CONTRAINDICATIONS .....Known hypersensitivity, unsecure location, lack of assured 4-hour non-operational period
- (v) PRECAUTIONS.....May not drive/operate machinery/use weapons for minimum 4 hours post-administration; aL CC [a]-
- (vi) OPERATIONAL STATUS?.....NON-OPERATIONAL (x 4 hours after administration)
- (vii) SIDE EFFECTS.....Sedation

(viii) INTERACTIONS.....Alcohol/other sedatives potentiate effect
(ix) DOSAGE.....10–20 mg with assured 4-hour non-operational block, as approved by MD/DO and Team Commander

(c) Modafinil (Provigil)
(i) AVAILABILITY.....200 mg tablet
(ii) ACTION.....Enhances alertness/concentration
(iii) INDICATIONS.....To facilitate functioning with limited rest periods
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....aL CC [a]?
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....Insomnia, mild blood pressure elevation
(viii) INTERACTIONS.....
(ix) DOSAGE .....200 mg once daily

(8) Wound Management

(a) Cyanoacrylate tissue adhesive (Dermabond)
(i) AVAILABILITY.....Single use ampoules
(ii) ACTION.....Tissue adhesive
(iii) INDICATIONS.....Minor trauma
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Avoid near eyes
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....Transient local discomfort
(viii) INTERACTIONS .....N/A
(ix) DOSAGE .....As required for wound closure, 2–4 layered applications

(b) Topical hemostatic dressing
(i) AVAILABILITY.....Individual use packages
(ii) ACTION.....Promotes blood clotting
(iii) INDICATIONS.....Hemorrhage
(iv) CONTRAINDICATIONS.....Known hypersensitivity
(v) PRECAUTIONS.....Standard/universal precautions for wound care
(vi) OPERATIONAL STATUS?.....NON-OPERATIONAL
(vii) SIDE EFFECTS.....N/A
(viii) INTERACTIONS .....N/A
(ix) DOSAGE.....Single or multiple dressings applied to bleeding wound

(c) Steri-strips
(i) AVAILABILITY.....Individual use packages
(ii) ACTION.....Facilitates closure of wounds
(iii) INDICATIONS.....Superficial wounds
(iv) CONTRAINDICATIONS.....Known hypersensitivity to adhesive

(v) PRECAUTIONS.....Standard/universal precautions for wound care
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....N/A
(viii) INTERACTIONS.....N/A
(ix) DOSAGE.....Single or multiple dressings applied for wound closure; per MD/DO

(d) Staples
(i) AVAILABILITY.....Individual use staple dispensers
(ii) ACTION.....Facilitates closure of wounds
(iii) INDICATIONS .....Wounds
(iv) CONTRAINDICATIONS .....Contaminated wounds, wounds with foreign body material
(v) PRECAUTIONS.....Standard/universal precautions for wound care
(vi) OPERATIONAL STATUS?.....Operational
(vii) SIDE EFFECTS.....N/A
(viii) INTERACTIONS.....N/A
(ix) DOSAGE .....Single or multiple dressings applied for wound closure; per MD/DO

(9) ACLS/Resuscitation

(a) Albuterol MDI
(i) AVAILABILITY.....0.83 mcg metered dose inhaler
(ii) ACTION .....Bronchodilator
(iii) INDICATIONS .....Respiratory distress/bronchospasm
(iv) CONTRAINDICATIONS .....Known hypersensitivity
(v) PRECAUTIONS.....Standard/universal precautions for respiratory patient
(vi) OPERATIONAL STATUS?.....NON-OPERATIONAL (without MD/DO consult)
(vii) SIDE EFFECTS.....N/A
(viii) INTERACTIONS.....N/A
(ix) DOSAGE.....2 puffs, may be repeated two additional times. Additional doses per MD/DO

(10) Anti-hypoglycemics

(a) Oral glucose

Formulary per General Patient Care Protocols

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L. TRANSPORT TO FREESTANDING EMERGENCY MEDICAL FACILITY AT BULLE ROCK (BASE STATION) (NEW '18)

1. PURPOSE

To define the type of patient an EMS service may transport to a MIEMSS-designated freestanding medical facility.

2. INDICATIONS

A jurisdiction may allow transport of a patient, who meets one or more of the following indications, to a freestanding emergency medical facility.

a) A stable Priority 2, 3, or 4 patient as outlined in The Maryland Medical Protocols for EMS Providers who does not need a time-critical intervention
b) Priority 1 patient with an unsecured airway or in extremis, who requires stabilization beyond the capability of the EMS crew (e.g., cardiac or respiratory arrest)
c) If the freestanding emergency medical facility is a MIEMSS-designated Acute Stroke Ready Facility, patients of all priority that meet stroke criteria may be transported to the Acute Stroke Ready Facility, as long as the transport time to a Primary Stroke or Comprehensive Stroke Center is greater than 15 additional minutes.

3. CONTRAINDICATIONS

Except as provided in Indications, above, the following patients shall not be transported to a freestanding emergency medical facility.

a) Any patient meeting the criteria for transport to a Trauma Center or Specialty Referral Center as defined in The Maryland Medical Protocols for EMS Providers
b) A pregnant patient complaining of abdominal pain or a patient who is in active labor
c) Any patient in need of time-critical intervention that can be provided only at a hospital-based emergency department

4. PROCEDURE

The EMS provider shall consult with a designated Base Station at the freestanding emergency medical facility, or the nearest Base Station if the freestanding emergency medical facility is not a designated Base Station, prior to arrival on all Priority 1 and 2 transports as provided in Indications and when otherwise unclear of the appropriate destination. The designated Base Station shall direct the provider to the appropriate destination.

5. SPECIAL CONSIDERATIONS

None

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M. 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 prehospital 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; 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.

N. AIRWAY MANAGEMENT: VIDEO LARYNGOSCOPY 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.

The video laryngoscope device must have the following features:

a) Color monitor
b) Anti-fog mechanism
c) Video recording device
d) Appropriately-sized blade for the patient being intubated **(NEW '18)**

2. INDICATION

Video laryngoscopy and orotracheal intubation is indicated for patients who meet one or more of the following criteria and for whom appropriately-sized equipment is available: **(NEW '18)**

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

Lack of an appropriately-sized laryngoscope blade for the patient being intubated. **(NEW '18)**

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.

6. PROCEDURE

a) Insert the Video Laryngoscope Device midline into the pharynx.

b) Advance the Video Laryngoscope Device midline to center the vocal cords on the video screen.

c) Pass the endotracheal tube between the vocal cords, remove the stylet, and advance the tube to the desired depth.

d) Secure the endotracheal tube and verify correct placement.

7. TRAINING AND DOCUMENTATION

a) Providers must complete didactic and practical training.
   (1) Description of technique
   (2) Demonstration of device (features, operation, troubleshooting)
   (3) Documentation requirements
   (4) Mannequin scenarios
   (5) *In vivo* practice

b) Providers must complete the Video Laryngoscopy Procedure Form after each patient encounter in which the Video Laryngoscopy Device is used.

c) Program Medical Directors must review each patient encounter in which the Video Laryngoscope Device is used and provide a quarterly report to the Office of the Medical Director on the approved video laryngoscopy QA form.

e) Continue patient care as appropriate for either medical and or traumatic emergency.
f) Assure exam is transmitted to the receiving facility through closed, secure network with patient care report.

5. PREHOSPITAL ULTRASOUND QUALITY ASSURANCE PROCESS

a) Requirements for paramedics participating in prehospital ultrasound pilot participation:
   (1) Successful completion of small group six-hour didactic training.
   (2) Successful completion of small group six-hour clinical rotation and direct observation by physician in one of the receiving facility emergency rooms. A minimum of ten ultrasounds must be successfully completed.
   (3) Yearly continuing education will be completed to include at least four hours of either didactic, clinical, and/or use of ultrasound education and/or technology.
b) Ongoing Demonstration of Proficiency
   A verification of prehospital ultrasound education and competence shall be reviewed by the Jurisdictional Medical Director or by his or her designee at any time requested. Although ultrasound is a non-invasive procedure, awareness and clinical interpretation must be maintained.
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 of *The Maryland Medical Protocols for EMS Providers*.
   (2) Immediate notification to the jurisdictional Quality Assurance Officer
   (3) Jurisdictional Medical Director evaluation of all prehospital ultrasounds within twelve hours of incident

T. STABILIZATION CENTER (NEW '18)

1. Initiate General Patient Care

2. Presentation

Patients eligible for entry into the Stabilization Center must be without an acute medical or traumatic complaint. If the patient is not requesting evaluation for an emergency medical condition and substance use is suspected, including suspected opioid patients who have improved with naloxone, patient must consent to be evaluated and transported to the Stabilization Center. Then the Paramedic must complete the Stabilization Inclusion Checklist.

3. Treatment

Initiate patient screening. All answers must be "NO" for the referral protocol to continue. For any "YES" answers, consultation with an adult Base Station is required.

Patient with acute medical or traumatic complaint	YES	NO
Pediatric patient (Age less than 18)	YES	NO
Systolic BP greater than 220 or less than 80 mm Hg	YES	NO
Diastolic BP greater than 120 or less than 50 mm Hg	YES	NO
Pulse greater than 110	YES	NO
Pulse less than 50	YES	NO
Respiratory rate greater than 22	YES	NO
Respiratory rate less than 10	YES	NO
Blood glucose greater than 300 mg/dl	YES	NO
Blood glucose less than 70 mg/dl	YES	NO
Pulse oximetry less than 92% and/or supplemental oxygen required	YES	NO
GCS less than 13	YES	NO
Patient refuses transport to stabilization center?	YES	NO
Evidence of significant head or truncal trauma ?	YES	NO
Evidence of new head trauma (ecchymoses, hematomas)	YES	NO
Evidence of uncontrolled bleeding?	YES	NO
Patient requires more than minimal assistance with ambulation →Assistive devices (cane, walker permitted) →Assistance/stabilization of more than one limb required	YES	NO

4. **Medical consultation is required for any "YES" response.**
5. **If all answers are "NO" or medical consultation approves if a "YES" occurs, the patient shall be transported to the Stabilization Center.**

U. STROKE PATIENT PROCESS, SINAI HOSPITAL, BALTIMORE CITY FIRE DEPARTMENT

1. PURPOSE

Reduce the amount time from medical recognition of stroke symptoms to advanced treatment at a Stroke Center, thus reducing the "first medical/EMS contact to needle time," which has shown been shown to improve the outcome for stroke patients. In an effort to improve on the current Maryland EMS/Stroke system of care, the on-call 24/7 Stroke Neurologist for the receiving hospital (Sinai Hospital) will be patched into the EMS to Sinai Hospital consult thus allowing the Stroke Neurologist to hear the EMS report and receive a family member's cell phone from the EMS provider. Upon the conclusion of the EMS consult and while the EMS unit is transporting, the Stroke Neurologist will call the family member to gather important information that would normally take valuable minutes at the hospital.

2. INDICATIONS

a) Adult patient who presents with stroke symptoms and meets the requirements for a STROKE Alert.
   (1) Positive Cincinnati Stroke Scale
   (2) Last know well time of less than 3.5 hours and
b) Based on geography, the EMS intended destination is Sinai Hospital Primary Stroke Center

3. CONTRAINDICATIONS

a) Patients who have not yet reached their 18th birthday
b) Patients outside of Sinai Hospital's Primary Stroke Center catchment area

4. PROCEDURE

a) No change in current EMS dispatch process with ALS
b) No change to current EMS initial assessment (vital signs, physical assessment, and application of Stroke: Neurological Emergency Protocol to include "last known well time") and treated following the Maryland Medical Protocols for EMS Providers.
c) The EMS provider will ask the family present for a cell phone number, which will be relayed to the Stroke Neurologist during the EMS consult.
d) For patients meeting "STROKE Alert" criteria and the EMS intended destination of Sinai hospital, EMS will call EMRC and state "Unit number with STROKE ALERT FOR SINAI HOSPITAL." EMRC will patch that call to Sinai's Base Station and simultaneously link the 24/7 cell phone maintained by the on-call Stroke Neurologist. The Stroke Neurologist will then listen to the EMS to Sinai consult.
e) The patient will be transported to Sinai and the usual Sinai Stroke/Brain Attack Process will be followed.
f) During the transport, the Stroke Neurologist will call a member of the patient's family on the cell phone to gather important information, in an effort to reduce "first medical/EMS contact to needle time."

V. ALTERNATIVE DESTINATION PROGRAM (NEW '18)

1. PURPOSE

To provide quality care in a more timely fashion, with potential for cost savings for patients, and a rapid return to service for EMS units. This program may also allow patients to receive care within their HMO services, where their medical records and physicians are readily available.

Any Maryland EMS Operational Program (EMSOP) may establish an alternative destination program tailored to the needs of its community, if the program meets all the requirements set forth in this protocol. Montgomery County Fire and Rescue Services (MCFRS) conducted a pilot alternative destination program in FY 2017, which is detailed below beginning with "b) Start Point."

a) Background
   (1) Emergency departments across the country spend a disproportionate share of staff and financial resources providing non-urgent care to patients who often would have been better served in a primary care setting. According to a 2010 study by the RAND Corporation, between 14% and 27% of all ED visits are for non-urgent care and could take place in a different setting, such as a doctor's office, after-hours clinic, or retail clinic with a potential cost savings of $4.4 billion annually. A 2010 study published in the Annals of Emergency Medicine found that frequent users comprise 4.5% to 8.0% of all ED patients, yet account for 21% to 28% of all visits.
   (2) Montgomery County Alternative Destination Pilot Program
      (a) In 2014 MCFRS received 80,000 EMS calls and performed 65,000 transports. Of the 65,000 transports, 60% were BLS (low-acuity) and 40% were ALS. The EMS growth rate is unsustainable. At current rates, MCFRS would need to add an ambulance each year to service the needs of residents in the county. In an effort to encourage appropriate use of 9-1-1 services and disposition to an emergency department, and to better serve the state under the new Medicare All Payer System (waiver), Holy Cross Health, Kaiser Permanente, and MCFRS piloted the alternative destination program (ADP) protocol to optimize EMS resource use and assure appropriate patient care.
      (b) Through a joint release, all entities involved provided a general notice to the population being serviced under the pilot for Phase 2.
      (c) Montgomery County identified a highly-qualified "pilot triage expert" to consistently apply the Provider Quick Form, consent the patient, and make the destination determination. The designated expert was a state-certified EMT for Montgomery County who also is a registered nurse, and who was previously an ALS provider. Using a highly-qualified pilot triage expert not only reduces risks to the patient, but also requires special skills that are not necessarily applicable to all EMTs across Maryland.
      (d) The objective of this quality improvement pilot was to assess the accuracy and safety of triaging dispatch-identified "IAED Alpha determinate code" BLS patients to either Holy Cross Hospital Express Care (co-located with Holy Cross's emergency department) or Kaiser Permanente's Clinical Diagnostic Unit (CDU) by applying the Provider Quick Form.

b) Start Point
Due to changing federal and state health care delivery systems, Montgomery County is seeking to develop a process for improving the management of the EMS and health care delivery system for stable, low-priority patients.

c) Quality Improvement Design
A literature review reveals there are multiple strategies to match the right patient with the right clinical resources. This is a modification of current practices, amended by the addition of the Kaiser CDU, ensuring access to the patient's own insurance and personal medical records, as well as improved continuity of care, in Phase 2.

d) Benefits
As emergency department off load times have increased, the alternative destination process may improve the EMS resource utilization. It is designed to improve patient satisfaction by providing patient cost savings and time savings while matching patients to the appropriate resource and continuity of care.

e) Risks
(1) As the EMS Operational Program will be dispatching the normal resources to the patient with the addition of the "pilot triage expert," and the patient will be voluntarily participating in the ADP pilot and destination determination, there is no increased risk.
(2) There are multiple safety checks incorporated in this ADP pilot, so no patient is placed at increased risk. These include:
(a) The use of an EMS unit response for all patients, as would routinely occur
(b) The use of the Internal Association of Emergency Dispatchers (IAED) Medical Priority Dispatch (MPD) standard public service access point screening and dispatch algorithm, which is highly accurate at determining low-acuity patients.
(c) The use of the pilot triage expert, who has both EMS and nursing training and experience
(d) Medical director oversight group access and review of all ADP medical records through Holy Cross and Kaiser Permanente, with an objective State EMS Medical Director review
(e) If at any time a patient at an alternative destination is identified to need a higher level of care, Holy Cross Express Care will immediately transfer the patient to the Holy Cross Hospital Emergency Department (same building) and Kaiser Permanente CDU will call MCFRS, who will dispatch the appropriate EMS resource to transport the patient to the appropriate emergency department.

f) End Points
(1) The ADP pilot metrics are designed to assess the benefit to the system of using the Provider Quick Form and the ADP pilot protocol.
(2) If, at any time, a patient has been identified as being placed at risk.
(a) A review demonstrates that the patient required admission to the hospital or observation unit, following under-triage to an alternative destination with proper use of the Provider Quick form, or a truly untoward outcome were to occur.
(3) If there has been no demonstrated benefit to the delivery of EMS services, such as extended EMS unit cycle time or availability.
(4) If the costs of delivering this program exceed benefit gained in EMS service to the community, as determined by MCFRS.

g) Analysis
The ADP metrics will be compared before and after the implementation of this pilot protocol to determine if system improvement occurred. The Provider Quick Form will be reviewed and compared for accuracy and safety.

h) Adoption of Results
As the proposed is using a pilot triage expert with both EMS provider and nursing experience and training, the results of the ADP pilot cannot be generalized to all EMTs or other EMS providers. If demonstrated to be accurate, safe, and reliable, the Provider Quick Form screening tool and the ADP pilot protocol could be considered for EMS provider trials with the goal of improving the delivery of EMS care.

i) The patient satisfaction survey may demonstrate positive customer service.

j) Phases
(1) The ADP pilot protocol will be implemented in two phases. All of the indications, contraindications, procedures, quality assurance, the Provider Quick Form, eMEDS®, and consent form will be consistent in both Phase 1 and Phase 2. The Phase 2 documents will include the Kaiser CDU as an additional destination option.
(a) Phase 1 will use one alternative destination: Holy Cross Hospital Express Care in Silver Spring, Maryland. This will assure that all patients will have access to the full array of diagnostic services and a full-service emergency department in case of under-triage. This will also allow for comprehensive follow up on all patients seen and straightforward evaluation of the Provider Quick Form. In an effort to implement an additional safety net for these patients in the pilot, Montgomery County will be using a very small group of EMS providers that are specially-authorized by the MCFRS medical director as the pilot triage experts for MCFRS services. These providers have decades of EMS experience and also many years of experience as registered nurses.
(b) Phase 1 will be conducted for 60 days from the start date. Upon the conclusion of this phase, or earlier if untoward events have arisen or MCFRS terminates the pilot protocol, there will be a summary report generated to MIEMSS using the metrics outlined in the quality assurance section of this protocol. MIEMSS will review the summary report and metrics and, with Montgomery County, will evaluate the feasibility of moving the pilot into Phase 2. During this evaluative period, Phase 1 will continue unless the pilot is ceased due for any reason.
(c) After reviewing the results of Phase 1, the participants in this pilot, including MIEMSS, will determine the feasibility of implementing Phase 2 of the project. Phase 2 will allow for the addition of one alternative destination (Kaiser Permanente Gaithersburg Medical Center Clinical Decision Unit), assuming the conditions listed below are met.
(d) The addition of this second alternative destination will demonstrate how to program functions under a different cost structure. The destination added in Phase 2 of the pilot will have the following minimum patient care capabilities:
(i) 12-lead EKG
(ii) UA
(iii) Urine Pregnancy
(iv) Minor Suturing

(e) Phase 2 will be conducted for 60 days. Upon the conclusion of Phase 2, or earlier if untoward events have arisen or MCFRS terminates the pilot protocol, there will be a summary report generated to MIEMSS using the metrics outlined in the quality assurance section of this protocol.

(2) This ADP pilot protocol cannot be extended or modified, including its timeline, without the approval of MIEMSS and the EMS Board.

2. INDICATIONS

Certain low-acuity Priority 3 patients who match the ADP pilot protocol criteria, within the geographic boundaries and available hours of the pilot, will be offered transportation to an appropriate receiving facility. The receiving facility will be offered based on the medical needs of the patient, the corresponding capabilities of the receiving facility, and Kaiser Permanente patients based on receiving facility coverage. The ADP pilot protocol (Phases 1 and 2) will be run during the pilot hours on weekdays.

a) Receiving facilities Phase 1:
   (1) Holy Cross Hospital Express Care, located at 1500 Forest Glenn Rd, Silver Spring, Maryland, will be the receiving facility for all included patients.

b) Receiving facilities Phase 2:
   (1) Kaiser Permanente Gaithersburg Medical Center CDU, located at 655 Watkins Mill Road in Gaithersburg, Maryland, will be a receiving facility for Kaiser Permanente patients.
   (2) Holy Cross Hospital Express (see location above) will be a receiving facility for other insured or uninsured patients who select this alternative destination and who need to be seen after clinic hours or require diagnostic imaging services.

3. CONTRAINDICATIONS

a) Patients who have not yet reached their 18th birthday
b) Patients who are 60 years of age or greater
c) Patients who do not meet the criteria for the MIEMSS-approved inclusion/ exclusion checklist
d) Patients who are not able to communicate with pilot triage expert provider, including non-English speaking patients
e) Patient who are not able to understand the consent process
f) Patients who refuse to participate in pilot

4. PROCEDURE

a) This pilot protocol may only be used by MCFRS EMS providers who are identified as pilot triage experts and specifically authorized to do so by the MCFRS medical director.
b) General Patient Care Protocol
c) Under the ADP pilot protocol, all patients will be offered an appropriate definitive care destination.
d) For inclusion in the ADP pilot protocol, the patient must agree and must have:
   (1) No chief complaint consistent with a comprehensive evaluation that would traditionally need the capabilities of a full service emergency department
      (a) High-risk chief complaints are currently defined as dyspnea, AMS, syncope, chest pain, focal neurological deficits, unexplained back or abdominal pain, seizures, and sometimes fever.

(2) No physical findings consistent with time-dependent needs for assessment or stabilization
   (a) Signs on exam that indicate a threat to airway, breathing, circulation, circulation to an extremity, disability (deficit) or deformity, as well as severe tenderness (ABCDE, etc.)
(3) No reasonably foreseeable signs or suspicion of any deterioration of condition (eg, airway or hemodynamic compromise)
(4) No requirement for either ALS monitoring or ALS interventions
(5) All affirmative answers on the ADP consent form

e) In order to include the patient in the ADP pilot protocol, the authorized MCFRS EMS pilot triage expert must obtain a complete set of vital signs, a complete history, and a signed pilot consent, and they also must complete the Provider Quick Form.

f) If the patient does not agree to be included in the pilot, the consent form will have the "declination" box checked and the patient will be transported to the emergency department per normal MCFRS practice.

g) If patient is stable, has met the inclusion criteria of the ADP pilot protocol and Provider Quick form, and has a disease/injury process that can be safely treated by a primary care or urgent care practitioner:
   (1) Phase 1
      (a) The consented patient will be transported to Holy Cross Express Care.
      (b) If patient refuses to participate, patient condition deteriorates, or changes their mind during transport and declines to participate, the patient will be taken to nearest full service emergency department.
   (2) Phase 2
      (a) Determine if the patient has Kaiser Permanente health insurance.
         (i) If they are a Kaiser patient, they may be transported to the Kaiser CDU in Gaithersburg.
      (b) If patient has other health insurance or is uninsured, or select this alternative destination, they should be transferred to Holy Cross Hospital Express Care in Silver Spring.
      (c) Contact the proposed receiving facility and discuss patient with receiving licensed health care professional (MD/DO, NP, or RN) and ensure that the facility is willing to accept the patient. This contact must be made on a recorded line. Upon arrival, have the receiving health care professional sign off on the MCFRS pilot consent form.

h) The MCFRS ambulance crew will transport the patient to the alternative destination and provide both a written and verbal report to the receiving health care professional.

i) If patient refuses to participate, patient condition deteriorates, or changes their mind during transport and declines to participate, or the receiving facility refuses the patient, the patient will be transported to nearest appropriate full service emergency department without argument or delay.

j) The transporting unit and the MCFRS specially-authorized EMS provider will complete an eMEDS® report, which will include a sign-off from the receiving licensed health care professional.

5. QUALITY ASSURANCE

a) The overall pilot is under the shared medical direction of MCFRS EMS medical director, who will collaborate with the physician designee from Holy Cross Health Center, Silver Spring; medical director for Holy Cross Hospital Emergency Department; and physician assigned by Kaiser Permanente, to ensure that triage protocols are safe and effective for each receiving facility. Upon beginning the pilot, the local site medical directors will be accountable for ensuring adherence to pilot protocols, communication, and training. This group, along with MIEMSS' state EMS medical director, will meet or hold a teleconference weekly during the pilot to review all cases evaluated by the pilot triage expert and evaluate emergent trends, ensure the pilot protocols are not leading to suboptimal triage, and evaluate any sentinel events as necessary.

b) In addition, the medical directors and MCFRS operational leadership will meet weekly to review and a report to the state EMS medical director within three days of the conclusion of these meetings. The report will include:
   (1) Report on PILOT METRICS (below)
   (2) Patient satisfaction survey results
   (3) Unscheduled reentry of patient into health care system within 72 hours of transport
   (4) Any untoward events or formal patient complaints with detailed explanation
   (5) Any deviation or challenges regarding the pilot triage experts' implementation of the ADP pilot protocol or Provider Quick Form.

c) Pilot Metrics
   (1) Each patient transported to and treated at any of the alternative destinations must have a discharge diagnosis. Data for any patients who are secondarily transported to another facility must also be captured.
   (2) Number and type of upgrades from alternative destination (specific signs/ symptoms on presentation, where slipped though inclusion/exclusion criteria, and final diagnosis)
   (3) Number of patients who qualified, the number who accepted transport to an alternative destination, and the number who refused (ideally with reason for refusal)
   (4) The number of patients who were screened but failed one or more items on the Provider Quick Form checklist
   (5) Any patients who failed to be accepted at one of the alternative facilities and reason for refusal
   (6) Any identified problems by the pilot triage expert to comply with or apply the pilot protocol
   (7) EMS average "arrival destination to back in service" time (turnaround time) for Holy Cross and the alternative facilities
   (8) EMS "first unit notification time until transport unit is back in service" time (total call duration time)
   (9) Patient standardized satisfaction survey results
      (a) Did patient have additional unscheduled reentry into urgent care, PMD, or emergency department within 72 hours of alternative destination?
      (b) Was patient satisfied with choice?
      (c) Rate EMS care on scale of 1-5
      (d) Rate destination care on scale of 1-5
      (e) Any complications or complaints associated with care decision?
   (10) What are their pre-implementation performance measures (above) for the units in the pilot area?

Montgomery County Alternative Destination Program Protocol
Provider Quick Form

	Yes	No
1. Patient is an Alpha MPD dispatch and meets MIEMSS triage and treatment category Priority 3.	❑	❑
2. Patient is between the age of 18 and 59 years of age	❑	❑
3. **Criterion 1:** Vital Signs are within these limits a. Respirations 12–18 b. Blood Pressure: 100–140 systolic 60–100 diastolic c. Pulse: 60–100 d. Temperature: less than 101 F and greater than 96 F	❑	❑
4. **Criterion 2:** High-risk indications are <u>Absent</u> a. Severe Pain b. Chest or Abdominal Pain c. Shortness of breath or respiratory distress d. Altered Mental Status or new neurologic deficit e. Unable to walk (if able to walk before illness) f. Patient high-risk condition 1. Active malignancy 2. HIV 3. Immunosuppressive therapy 4. Transplant	❑	❑
5. **Criterion 3:** Physical exam performed to assure patient does not have exclusion criteria.	❑	❑
6. **Criterion 4:** Criterion 4: Patient has one or more of the non-emergency chief complaints (refer to back).	❑	❑
7. EMS provider is able clearly communicate with patient and the patient is able to communicate with EMS.	❑	❑
8. Patient is able to understand the consent process.	❑	❑
9. Patient has read and signed the **MCFRS Alternative Destination Pilot Consent Form.**	❑	❑
10. Paperwork is completed for Alternative Destination Case Review a. eMEDS® b. Original **MCFRS Alternative Destination Pilot Consent Form** c. Provider Quick Form	❑	❑

Criterion 4: Non-Emergency Chief Complaints

1. Allergy or hay fever
2. Back pain, mild; able to walk without assistance
3. Contusions or abrasions, minor
4. Cough, mild; without hemoptysis or respiratory impairment
5. Non-traumatic dental problems
6. Diarrhea, without dizziness or other signs of dehydration
7. Dizziness, chronic (recurrent or known history)
8. Dysuria, mild; female
9. Ear pain
10. Ingrown toenails
11. Itching without systemic rash
12. Eye irritation without signs of active infection, minor
13. Fracture, distal extremity (forearm, lower leg), isolated injury, not open, With neuro/vascular intact
14. Headache, minor without neurological impairment
15. Injury follow-up (minor injury, treated previously)
16. Joint pain
17. Mouth blisters
18. Muscle aches
19. Nausea, vomiting
20. Neck pain (no history of acute trauma)
21. Nosebleed (resolved)
22. Painless urethral discharge
23. Physical exam requests (except patients with diabetes, CHF, kidney failure, cancer)
24. Plantar warts
25. Rectal pain/itching, minor
26. Sexual disease exposure
27. Simple localized rash
28. Sinusitis, chronic
29. Skin infection or sores, minor
30. Sore throat without stridor
31. Sunburn (localized without blisters)
32. Vaginal discharge
33. Vaginal bleeding (Hx non-pregnant, not postpartum, and requires less than one pad in 5 hours)
34. Upper respiratory infection
35. Work release or disability
36. Wound checks

Draft MCFRS Alternative Destination Pilot Consent Form

(Method for copy to each: One patient, One MCFRS and ONE receiving)

I have called 9-1-1 to seek medical treatment. After assessment by and discussion with the Montgomery County Fire and Rescue Services (MCFRS) EMS provider, I have been offered transportation by the MCFRS to one of the following destinations:

PHASE 1:
- o Holy Cross Hospital Express Care in Silver Spring
- o I DECLINE TO PARTICIPATE in the pilot and want to go to Holy Cross Emergency Department or nearest appropriate emergency department

PHASE 2:
- o Kaiser Permanente Clinical Decision Unit in Gaithersburg
- o Holy Cross Hospital Express Care in Silver Spring
- o I DECLINE TO PARTICIPATE in the pilot and want to go to Holy Cross Emergency Department or nearest appropriate emergency department

I understand that the choice of where to receive medical care is my decision and that I can decide to be transported to a hospital emergency department or one of the destinations listed above.

I understand that if I have an emergency medical condition, a hospital emergency department is required under federal law to provide me a screening exam and stabilization regardless of my health insurance, and I further understand if I am a member of an HMO, under Maryland law an out-of-network hospital emergency department cannot balance bill me for treatment for an emergency medical condition.

I understand that I may revoke this decision and request transportation to a hospital emergency department at any time.

I understand that I may need to be transferred to the nearest appropriate emergency department if my illness or injury is found to be too serious to be managed at the alternative destination.

I understand that because of my participation in this pilot and transport to an alternative destination, MCFRS will not bill me for ambulance transport to the initial alternate destination.

At this time I wish to be transported to the destination checked above.

I also understand that this transportation and care choice arises out of a time-limited pilot project that has been authorized by MCFRS and by the State EMS Board. I understand that if I call 9-1-1 in the future, this pilot may be over and my transportation and care choice may be limited to only emergency departments. I also understand that other MCFRS patients may not be offered the same choices due to factors that may exclude them from the pilot program.

PILOT PROGRAM
ALTERNATIVE DESTINATION PROGRAM

Name:_____

Signature:_____ Date: _____

Patient Phone Number for Survey:_____

Witness Name and Relationship:_____

Signature:_____ Date: _____

MCFRS Pilot Triage Expert Provider: _____

Signature:_____

Upon delivery to alternative destination and after the patient has been screened and accepted:

Name of receiving staff (MD/DO/NP/RN):_____

Signature of receiving staff:_____

W. NALOXONE "LEAVE BEHIND" PROTOCOL (NEW '18)

1. PURPOSE

Naloxone is a prescription medication indicated for the reversal of respiratory depression or unresponsiveness due to opioid overdose. Increasing the accessibility and availability of naloxone to family members, close friends, or the public, specifically those at risk for an opioid overdose, may reduce the chance of a prolonged hypoxic event or eventual cardiac arrest

MARYLAND EMS PROVIDERS APPROVED TO PARTICIPATE IN THIS PILOT PROTOCOL DO SO IN ACCORDANCE WITH THE MARYLAND DEPARTMENT OF HEALTH ORDER OF JUNE 1, 2017, "MARYLAND OVERDOSE RESPONSE PROGRAM STATEWIDE NALOXONE STANDING ORDER," AND COMAR 13.3101.

2. INDICATIONS

a) Following an administration of naloxone prior to arrival of EMS or as described by the *Maryland Medical Protocols for Emergency Medical Providers* or
b) Following evaluation by a crisis intervention team at a fire/EMS station (e.g., Safe Station for opioid treatment referral) that has identified an opioid dependent individual when immediate placement cannot occur and the individual is released

3. CONTRAINDICATIONS

a) "Leave Behind" naloxone shall not be dispensed to anyone who has not yet reached their 18th birthday.

4. PROCEDURE

a) Following completion of all general patient care, which may include a patient-initiated refusal of care, naloxone hydrochloride(s) and necessary paraphernalia that has been approved by the EMS Operational Program in accordance with Maryland Department of Health Guidelines may be issued.
b) Document the distribution of naloxone in the patient care report as required by the EMS Operational Program.

5. REPORTING

a) Jurisdictions shall collect documentation on all distributions of naloxone hydrochloride(s) and necessary paraphernalia in this MIEMSS-approved method.
b) Jurisdictions shall submit quarterly reports to the State EMS Medical Director to include jurisdictional incident numbers and the number of doses of naloxone hydrochloride distributed for each occurrence.

July 2018: Naloxone is required for Public Safety EMT and EMR (October ’17) and remains Optional Supplemental Program for BLS Commercial Services (initially implemented September ’13). **(NEW ’18)**

C. INTRANASAL NALOXONE FOR BLS PROVIDERS (COMMERCIAL EMT) **(NEW ’18)**

1. PURPOSE

When encountered with a patient exhibiting respiratory depression with a confirmed or suspected opioid/narcotic overdose, an EMT and EMR may administer intranasal naloxone provided the following criteria have been met.

2. INDICATIONS

A patient suffering respiratory depression caused by a known or suspected opioid/narcotic overdose

3. CONTRAINDICATIONS

a) None clinically significant in the adult patient
b) Patients less than 28 days old

4. PROCEDURE

a) Ensure that naloxone is indicated and the medication is not expired.
b) Inject volume of air into vial that is equal to desired volume of medication to be removed using a needle (blunt tip preferred) and 2 mL or 3 mL syringe.
c) Pull back on syringe plunger to remove desired volume of medication.
d) Use gradations on syringe to measure volume of medication to nearest 0.10 mL.
e) Safely remove needle from syringe and dispose of in sharps container.
f) Attach mucosal atomization device to luer-lock of syringe.
g) Place tip of mucosal atomization device in the nare and briskly push the plunger forward, administering half of the total volume of medication (up to a MAXIMUM of 1 mL per nare).
h) Repeat previous step in the other nare, delivering the remaining half of the medication.
i) Monitor patient for response and continue supportive care.

ALERT

IF EMS OPERATIONAL PROGRAM USES A DIFFERENT FORMULARY/CONCENTRATION OR MEDICATION PACKAGING (E.G., PRE-FILLED SYRINGE OR AMPULE), PROVIDERS MUST RECEIVE PROPER TRAINING REGARDING SAFETY, PREPARATION, AND CONVERSION TO INTRANASAL ATOMIZATION OF THE MEDICATION.

ALTERED MENTAL STATUS: UNRESPONSIVE PERSON

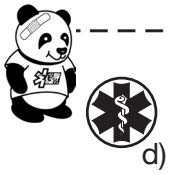
1. Initiate General Patient Care

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.
   c) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

   Consider additional doses of naloxone.



   d) Obtain pulse oximetry, if available.
   e) Administer glucose paste (10–15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.
   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

   Consider additional doses of naloxone.

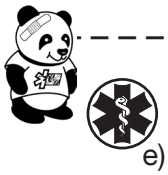
OVERDOSE/POISONING: ABSORPTION

1. Initiate General Patient Care.

2. Presentation
   Patient may exhibit any of the following: nausea, vomiting, diarrhea, altered mental status, abdominal pain, rapid heart rate, dyspnea, seizures, arrhythmias, sweating, tearing, defecation, constricted/dilated pupils, rash, or burns to skin.

3. Treatment
   a) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
   b) Identify agent and mechanism of exposure.
   c) Decontaminate as appropriate.
   d) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

   Consider additional doses of naloxone.



   e) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
   f) Identify agent and mechanism of exposure.
   g) Decontaminate as appropriate.
   h) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW ’18)**

   Consider additional doses of naloxone.

OVERDOSE/POISONING: INGESTION

1. Initiate General Patient Care.

2. Presentation
   Patient may exhibit any of the following: nausea, vomiting, diarrhea, altered mental status, abdominal pain, rapid heart rate, dyspnea, seizures, arrhythmias, chemical burns around or inside the mouth, or abnormal breath odors.

3. Treatment
   a) Identify substance and amount ingested.
   b) Consider activated charcoal **without** Sorbitol 1 gram/kg PO.
   c) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

   Consider additional doses of naloxone.

ALERT DO NOT GIVE ANYTHING BY MOUTH WITHOUT MEDICAL CONSULTATION! POISON INFORMATION CENTER RECOMMENDATIONS SHOULD BE SOLICITED IN CONJUNCTION WITH MEDICAL CONSULTATION, BUT MEDICATION ORDERS CAN ONLY BE ACCEPTED FROM AN APPROVED BASE STATION.

   d) Identify substance and amount ingested.

   e) Consider activated charcoal **without** Sorbitol 1 gram/kg PO.

   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

   Consider additional doses of naloxone.

OVERDOSE/POISONING: INJECTION

1. Initiate General Patient Care.

2. Presentation
   Patient may exhibit any of the following: local pain, puncture wounds, reddening skin, local edema, numbness, tingling, nausea, vomiting, diarrhea, altered mental status, seizures, muscle twitching, hypoperfusion, metallic or rubber taste

3. Treatment
   a) Identify markings (insects, bites, needlestick, etc.).
   b) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.
   c) Immobilize extremity.
   d) Apply cool packs for relief of pain only.

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

   e) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine auto-injector or patient's prescribed fast-acting bronchodilator.
   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

   Consider additional doses of naloxone.
   g) Identify markings (insects, bites, needlestick, etc.).
   h) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.

   i) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine auto-injector or patient's prescribed fast-acting bronchodilator.
   j) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose:**
   Aged 28 days to adult: Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare. **(NEW '18)**

   Consider additional doses of naloxone.

July 2018: Naloxone is required for Public Safety EMT and EMR (October ’17) and remains Optional Supplemental Program for BLS Commercial Services (initially implemented September ’13). **(NEW ’18)**

Naloxone (Narcan)

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

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

3. **Indications**
   To reverse respiratory depression induced by opioid/narcotic agent

4. **Contraindications**
   Patients under 28 days of age

5. **Adverse Effects**
   Opioid withdrawal

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

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

7. **Dosage (NEW ’18)**
   a) **Adult:** Administer naloxone 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare.
   b) Pediatric:
      (1) **Child aged 28 days to adult:**
      Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare.
      (2) **Child less than 28 days:**
      Not Indicated

   Repeat as necessary to maintain respiratory activity.

D. HEPARIN INFUSION FOR INTERFACILITY TRANSPORT (Paramedic only)

1. PURPOSE

During interfacility 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 interfacility transfer. IV heparin infusions may NOT be started by the prehospital provider in the prehospital setting.

3. 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

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 the training of ALS providers on the operation of the 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.

HEPARIN
(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 1–1.5 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 18 units/kg per hour or 2,000 units per hour, whichever is higher. **(NEW '18)**
b) Pediatric: Not indicated.

E. AIRWAY MANAGEMENT: LARYNGEAL MASK AIRWAY WITH DESIGN TO FACILITATE HOSPITAL ENDOTRACHEAL INTUBATION (NEW '18)

1. PURPOSE

To provide an alternative means of ventilating patients who cannot be intubated via direct laryngoscopy with a laryngeal mask airway device that also facilitates hospital placement of an endotracheal tube.

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

a) Responsive patients with an intact gag reflex
b) Lack of an appropriately-sized device

4. POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

a) The laryngeal mask airway provides limited protection against the effects of regurgitation and aspiration.
b) High airway pressures may divert gas to the atmosphere.

5. PROCEDURE

a) Inspect all components of the laryngeal mask airway for damage.
b) Select appropriately-sized laryngeal mask airway as per manufacturer specifications.
c) Lubricate with water soluble jelly.
d) Maintain cervical immobilization (if indicated) and lift tongue.
e) Insert laryngeal mask airway to indicated depth.
f) Inflate cuff as per manufacturer specifications.
g) Ventilate and evaluate lung ventilation (breath sounds, absence of gastric sounds, chest rise, $EtCO_2$, oxygen saturation).
h) Adjust cuff inflation and position as needed to obtain a seal of the airway.
i) Once effective ventilation is confirmed, continue to monitor oxygen saturation and ventilate to desired $EtCO_2$ level.
j) If unable to achieve adequate ventilation using the laryngeal mask airway, remove device, reinitiate BVM ventilation, and then attempt again. If unable to ventilate, consider obstructed airway maneuvers (if not yet performed) and refer to Cricothyroidotomy Protocol.

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

OPTIONAL SUPPLEMENTAL PROGRAM
SPECIALTY CARE PARAMEDIC
PARAMEDIC ONLY

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

K. MECHANICAL CPR (NEW ’18)

1. PURPOSE

Mechanical CPR (mCPR) devices perform chest compressions at a consistent and reliable rate and depth, never fatigue, and are not susceptible to other human factors that degrade resuscitation quality. Additionally, the use of an mCPR device while transporting an in-progress resuscitation allows for effective CPR and increases safety by allowing providers to be restrained during transport.

2. PRESENTATION

Patients in cardiac arrest who have an established resuscitation in progress

3. INDICATION

a) Active cardiac arrest resuscitation
b) Applied in a standby mode for transport to any patient
   (1) who achieves ROSC, OR
   (2) who providers believe will progress to cardiac arrest

4. CONTRAINDICATION

Patients who have not yet reached their 13th birthday

5. PROCEDURE:

a) Application of an mCPR device may not begin until after 2 two-minute cycles of manual chest compressions.
b) Any mCPR device must be applied in a manner that limits any break in compressions to less than ten seconds.
c) The ten-second breaks for device application must only occur around a normal two-minute compression interval and simultaneously while performing rhythm interpretation and defibrillation.
d) Apply the mCPR device according to manufacturer instructions, keeping in mind that minimizing breaks in compressions to less than 10 seconds may require that an mCPR device be applied over 2 or more two-minute cycles of chest compressions.
e) Once applied, devices must be used in accordance with manufacturer recommendations, but the goal should be to limit breaks in compressions as little as possible. This goal can be accomplished by:
   (1) Only pausing the mCPR device for rhythm interpretation
   (2) Pausing only long enough to identify the rhythm, and then starting again
   (3) Delivering defibrillations while chest compressions are in progress
f) An mCPR device (if available) should be applied in a standby mode for transport to any patient who achieves ROSC or patients who providers believe will progress to cardiac arrest.

6. PRECAUTIONS

Application of an mCPR device shall not cause delays in assessing for a shockable rhythm or the initiation of manual CPR.

7. INITIAL TRAINING

The jurisdictional medical director must certify that personnel have received a locally-approved training program prior to implementation.

8. ONGOING DEMONSTRATION OF PROFICIENCY

The jurisdictional medical director must reaffirm that EMSOP providers have received annual training with the mCPR device.

L. PELVIC STABILIZATION BINDER DEVICE (NEW '18)

All levels of EMS providers, if appropriately trained in the device

1. INDICATIONS

All of the following blunt trauma patients with physical findings indicative of pelvic fracture should have a Pelvic Stabilization Binder Device applied.

a) Evidence of pelvic instability on examination of the pelvis
b) Patients complaining of pelvic pain on examination of the pelvis
c) Pain on iliac compression
d) Pain on compression of the pubic symphysis
e) Blood at the urethral meatus
f) Vaginal bleeding
g) Perineal or scrotal hematoma
h) All blunt trauma patients with an unreliable physical exam and significant mechanism of injury may be considered for application of a Pelvic Stabilization Binder Device.

PREGNANCY IS NOT A CONTRAINDICATION TO THE APPLICATION OF THE PELVIC STABILIZATION BINDER DEVICE WHEN INDICATED.

2. CONTRAINDICATIONS

Patient for whom the smallest available pelvic stabilization binder is too wide and places pressure on abdomen or chest

3. PROCEDURE

a) Assess for pelvic instability.
   In order to not increase bleeding, only one exam should be performed to evaluate for pelvic fracture. Multiple exams will disrupt clot formation.
b) Identify the greater trochanter of each femur.
   The greater trochanter is the bony prominence of the lateral upper thigh.
c) Identify the anterior superior iliac spine.
d) Check size with estimating stabilization device and center at the greater trochanter. Ensure the top of the binder does not go above the anterior superior iliac spine.
e) The patient should be placed in a supine position prior to application of the pelvic stabilization binder device.
f) Place pelvic binder around the patient, centered at the level of the greater trochanter.
g) It may be advisable to place the binder on the backboard prior to placing the patient onto the backboard, so that it is already prepared for placement.
h) Ensure patient has been undressed and adequate exposure is provided.
i) Tighten the binder as directed by the manufacturer's instructions for the specific stabilization binder.
j) Once pelvic stabilization binder device is applied, do not remove until directed to do so by a physician.

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.
Assess 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.

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M. TRANSPORT OF ACUTE VENTILATED INTERFACILITY PATIENTS

1. **PURPOSE**
   To define the indications for use of a mechanical ventilator by a paramedic for the acute ventilated patient
   a) The level of care required for the interfacility transport of the **"acute ventilated interfacility patient"** is beyond the routine training curriculum for a paramedic; this type of patient must be transported by a higher level health care provider who is credentialed, educated, and competent in dealing with the ventilator and the ventilated patient. **OR**
   b) When a critical interfacility transfer is needed and a credentialed, educated, and competent higher level health care provider is **genuinely unavailable**, a credentialed, educated, and competent paramedic (through a MIEMSS-approved training program) may attend the ventilator and the ventilated patient with the addition of a second ALS provider or advanced airway trained health care provider when determined appropriate by the sending/referring physician.
2. **INDICATIONS**
   ACUTE VENTILATED PATIENTS for the interfacility transport are defined as:
   a) Intubated **OR**
   b) Tracheostomy patient when the reason for transport is:
      (1) For increased level of care from a hospital, **OR**
      (2) To continue the same level of care in an acute care setting, **OR**
      (3) The new tracheostomy patient, within the last 7 days
3. **VENTILATOR STANDARDS**
   a) **ACUTE VENTILATOR DEVICE STANDARDS**
      (1) The ventilator that the service is to use for the acute ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
         (a) Set rate of ventilations
         (b) Adjust delivered Tidal Volume
         (c) Adjustable Pressure Support Settings
         (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
         (e) Positive End-Expiratory Pressure (PEEP)
         (f) Peak airway pressure gauge
         (g) Continuous Expiratory Volume measurement (Required)
         (h) Modes
            (i) Assist Control (AC)
            (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
            (iii) Controlled Mechanical Ventilation (CMV)

(i) Alarms
(i) Peak airway pressure
(ii) Disconnect

(2) Strongly recommended options are:
Blend percentage oxygen

(3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) **ACUTE VENTILATOR USAGE**

(1) A ventilator maintained by the ambulance service or health care facility must be specifically designed for transport use and capable of providing the required settings.

(2) Continuous pulse oximeter and continuous capnography monitoring equipment must be used on all acute ventilated interfacility patients.

(3) Tracheal suctioning kits/catheters must be available.

(4) A tracheostomy replacement tube the same size and one size smaller shall be transported with the patient ventilated through a tracheostomy. (The endotracheal tube equivalent may be substituted.)

4. POTENTIAL ADVERSE EFFECTS

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

5. PRECAUTIONS

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

6. OPTIONAL PROGRAM REQUIREMENTS

a) A special "Ventilated Patient" report form will be completed for each mechanically ventilated patient and will include vital signs, pulse oximeter readings, and lung sounds (recorded a minimum of every 5 minutes), and documentation of any of the following:

(1) cardiac arrest during transport,
(2) dislodgment of tracheostomy tube or endotracheal tube,
(3) equipment failure (with FDA report),
(4) discontinuance of ventilator and conversion to BVM,
(5) deterioration of patient, or
(6) the upgrading of patient care to critical care.

b) The Optional Program will require a training program that meets or exceeds the "Acute Ventilated Interfacility Patient" curriculum and is approved by the operational program medical director with skills validation. A copy of the training program shall be reviewed and be approved or disapproved by MIEMSS.

N. OPTIONAL PROGRAM TRANSPORT OF CHRONIC AND SCENE VENTILATED PATIENTS

1. PURPOSE

To define the indications for use of a mechanical ventilator:

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

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

2. INDICATIONS

a) **CHRONIC VENTILATED PATIENTS** are defined as:
(1) Have an established tracheostomy and ventilator settings that have no changes within 24 hours or changes reflecting improvement in the patient **and**
(2) Point of origin or destination is:
(a) Long-term care facility,
(b) Home,
(c) Outpatient setting,
(d) Hospital; **and**
(3) Reason for transport is:
(a) Return from or transport to a scheduled appointment, **or**
(b) For extended care, **or**
(c) For emergency treatment (but not complication of airway or respiratory distress); **and**
(4) Ventilator settings are:
(a) Positive End-Expiratory Pressure (PEEP) less than or equal to 10
(b) Peak pressures less than or equal to 30, and
(c) No changes in the ventilator settings are required during the transport.

b) SCENE OF AN EMERGENCY – Out-of-Hospital
(1) Point of origin is at the scene of an out-of-hospital emergency
(2) A paramedic may utilize mechanical ventilation once the patient is intubated.
(3) Reason for mechanical ventilation is respiratory arrest or when the patient is intubated and not bucking the ventilator.
(4) Once the patient is on a ventilator, a second provider (EMT or higher) is required to assist with patient care.
(5) Destination – closest appropriate hospital
(6) Contraindicated in children 8 years of age or less.

3. VENTILATOR STANDARDS

a) CHRONIC VENTILATOR DEVICE STANDARDS

(1) The ventilator that the service is to use for the acute or chronically ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
  (a) Set rate of ventilations
  (b) Adjust delivered Tidal Volume
  (c) Adjustable Pressure Support Settings
  (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
  (e) Positive End-Expiratory Pressure (PEEP)
  (f) Peak airway pressure gauge
  (g) Modes
    (i) Assist Control (AC)
    (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
    (iii) Controlled Mechanical Ventilation (CMV)
  (h) Alarms
    (i) Peak airway pressure
    (ii) Disconnect

(2) Strongly recommended options are:
  (a) Continuous Expiratory volume measurement
  (b) Blend percentage oxygen

(3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) CHRONIC VENTILATOR USAGE

(1) Ventilator used is:
  (a) The patient's own ventilator intended for home/transport use and have the patient, home-care provider, or staff member from the health care facility manage the ventilator, **or**
  (b) A ventilator maintained by the ambulance service or health care facility specifically designed for transport use and capable of providing the required settings. If the patient's ventilator is the same as the company ventilator, the paramedic may manage the ventilator without the home-care provider accompanying patient. Exception: A CRT-I or EMT may transport a chronically ventilated patient who is going for routine medical care and has in attendance a patient provided attendant who can manage the patient's own ventilator.

(2) Monitoring equipment must include pulse oximeter (provided by family or service).

(3) Tracheal suctioning kits/catheters must be available.

(4) A replacement tracheostomy tube the same size and one size smaller shall be transported with the patient ventilated through a tracheostomy. (The endotracheal tube equivalent may be substituted.)

c) **SCENE OF AN EMERGENCY VENTILATOR DEVICE STANDARDS**
Mechanical ventilator used must:
(1) Be intended for transport use,
(2) Deliver 100% oxygen, and
(3) Have minimal parameters to set rate and volume (both adjustable to meet the needs of pediatric and adult patients)

4. POTENTIAL ADVERSE EFFECTS

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

5. PRECAUTIONS

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

O. EMT ACQUISITION OF 12-LEAD ELECTROCARDIOGRAPHY

1. PURPOSE

Coronary heart disease is the single largest cause of death in U.S. men and women. Early identification and treatment of patients with acute myocardial infarction (AMI) has proven to reduce myocardial damage and decrease morbidity and mortality. The goal of this program is to allow an EMT to acquire and transmit a 12-lead (15-lead if trained to perform) electrocardiogram (EKG) to the receiving facility and possibly reduce the door to reperfusion time for the AMI patient.

2. PRESENTATION

Chest discomfort that may radiate to the arm, shoulders, jaw, or back. Generally described as a crushing pain or toothache. May be accompanied by shortness of breath, sweating, nausea, or vomiting.

OR

a) Chest discomfort. Some heart attacks involve discomfort in the center of the chest that lasts for more than a few minutes or that goes away and comes back. This discomfort can feel like uncomfortable pressure, squeezing, or fullness.

b) Discomfort in other areas of the upper body. Symptoms can include discomfort in one or both arms or in the back, neck, jaw, or stomach.

c) Shortness of breath. This symptom often accompanies chest discomfort. However, it can also occur prior to the chest discomfort.

d) Other signs. These may include breaking out in a cold sweat, nausea, light-headedness, or a sense of impending doom.

e) Post-cardiac arrest with ROSC.

f) Medical history and contributing factors.

(1) A previous heart attack or procedure to open up coronary arteries
(2) Family history of heart disease
(3) Diabetes mellitus
(4) High blood pressure
(5) High blood cholesterol
(6) Overweight
(7) Physical inactivity
(8) Cigarette smoking

3. INDICATIONS

Any patient complaining of chest discomfort or exhibiting signs, symptoms, or medical history as outlined in Section 2 (Presentation).

4. CONTRAINDICATIONS

Acquisition of a 12-lead EKG should not take precedence over required life-saving measures (e.g., CPR, assisting respirations, clearing or maintaining a patient's airway, checking blood glucose, extrication, or removing a patient from a dangerous scene).

5. PROCEDURE

a) Initiate General Patient Care.

b) Initiate Cardiac Emergencies: Chest Pain Protocol.

c) Position patient (1) (2).

d) Place chest and limb leads (3) (4).

e) Turn on monitor.

f) Set patient age and a patient identifier.

g) Acquire 12-lead (5).

h) Consult with receiving facility.

i) Transmit 12-lead (6).

j) Continue patient care.

(1) Unrestricted access to the skin in the chest area, arms, and lower legs is required to allow for correct placement of electrodes. Do your best to protect the patient's privacy. Once the electrodes are positioned and connecting leads are appropriately attached, the patient should be covered with a sheet to preserve their dignity during the procedure.

(2) If unable to place patient in the recumbent position, include this information in your hospital consult and note it in the written narrative of your patient care report.

(3) Remove electrodes from a sealed package immediately before use. Using previously unpacked electrodes or electrodes with expired date codes may impair EKG signal quality.

(4) When placing electrodes on female patients, always place the leads V3-V6 under the breast rather than on the breast.

(5) Acquisition of a 12-lead EKG should take no more than 5 minutes.

(6) Transmission of the 12-lead EKG to the receiving facility should be done en route to the receiving facility. There is no need to delay transport to transmit a 12-lead EKG.

6. INDIVIDUAL EMT APPROVAL FOR PARTICIPATION

a) The EMT 12-Lead EKG Program is open to all Maryland EMTs that have been providing direct patient care for a minimum of one year.

b) Providers must be members of an ALS company that currently owns a local system compatible 12-lead device.

7. ONGOING DEMONSTRATION OF PROFICIENCY

After the initial training program is completed, the EMT will participate in an annual refresher training program.

8. REVIEW OF EACH CALL

a) The provider will submit copies of each 12-lead EKG and patient care report to their jurisdictional Quality Review Committee.

P. WILDERNESS EMS (NEW '18)

A. INTRODUCTION

These protocols are complementary to the MIEMSS protocols. They are to be utilized only under the following conditions:

1. The protocols are being utilized in a defined wilderness environment.
2. The EMS jurisdiction has been authorized to utilize wilderness EMS protocols.
3. The EMS provider has been credentialed as a wilderness EMS provider (see B.1.b).
4. The EMS provider is functioning under appropriate wilderness EMS medical direction.

B. DEFINITIONS

1. Wilderness Environment
   a) A wilderness environment is defined as "any geographic area where the typical urban resources are not adequate for the management of an injured or sick patient." Some examples include woodland areas, mountainous terrain, uneven terrain where traditional urban EMS equipment and stretchers are not able to safely function, rivers, and ski hills.
   b) In order to be considered a Wilderness EMS (WEMS) provider, the provider needs to have completed additional training beyond that required to function in the urban environment. This training can be completed by any of the following methods:
      (1) Completion of the State of Maryland Wilderness EMS Course
      (2) Alternatively, the provider may demonstrate proficiency in the skills of wilderness EMS after providing proof of completion of a nationally recognized wilderness EMS program. Five programs that are nationally recognized are:
         (a) National Outdoor Leadership School's Wilderness Medical Institute
         (b) National Ski Patrol's Outdoor Emergency Care program
         (c) Stonehearth Open Learning Opportunities
         (d) Wilderness Medical Associates
         (e) (e) American Health Safety Institute
      (3) Basic Life Support (BLS) providers include both the EMTs and WEMRs who meet these credentialing processes
2. Wilderness EMS Physician
   a) In order to be considered a wilderness EMS physician, the physician needs to have fulfilled the requirements in order to function as a medical director under COMAR 30.03.03 and be recognized by the State EMS Medical Director as being qualified to provide medical direction in the wilderness environment. Expertise in wilderness EMS may be demonstrated by:
      (1) Completion of a recognized program in wilderness medicine
      (2) At least 2 years of experience functioning in the wilderness environment under the defined capacity of a wilderness medical practitioner
3. Wilderness EMS Jurisdiction
   a) In order to be recognized as a wilderness EMS jurisdiction the following parameters must be met:
      (1) A written request with a demonstrated need
      (2) EMS providers credentialed as Wilderness Providers
      (3) The providers are functioning under a state recognized wilderness EMS medical director

b) As there is limited utility for a ground ambulance in the wilderness environment, the wilderness EMS jurisdiction need not be required to have a primary transport vehicle in order to be recognized as a wilderness EMS jurisdiction. However, since the patient will likely eventually need transport to definitive care by ground and/or air ambulance, the wilderness EMS jurisdiction needs to have a plan for transportation once the patient(s) is out of the wilderness environment. Thus, there must be readily available and functioning communication methods between the wilderness EMS jurisdiction and the local EMS jurisdiction. Further, in order to facilitate timely and appropriate post-wilderness care, if the WEMS program is not a section of a previously established public safety EMS transporting jurisdiction, the wilderness EMS jurisdiction must notify the jurisdiction that will be responsible for ground or air transport as soon as the need for transport has been confirmed. Ideally this communication should occur through direct communication with the transporting jurisdiction's emergency communication center rather than simply dialing 9-1-1.

C. SCOPE OF PRACTICE

1. Provision of medical care in the wilderness environment is unique in that delays of care due to the remoteness of the environment may be detrimental to the patient. In order to address the unique needs and specialized skills required to manage a patient in the wilderness, these protocols and the training required to utilize these protocols will serve to define the scope of practice of the WEMS provider. Therefore, THE TERM PROVIDER IS GENERIC AND DOES NOT IMPLY A SPECIFIC LEVEL OF MEDICAL TRAINING. THE WILDERNESS PROVIDER MAY BE TRAINED TO ANY LEVEL AND COULD BE A PHYSICIAN, PARAMEDIC, CARDIAC RESCUE TECHNICIAN, EMT, OR WILDERNESS EMERGENCY MEDICAL RESPONDER.
2. In order for the EMS provider to use these wilderness EMS protocols there must be a need demonstrated in which it is documented that without these protocols:
   a) It would not be possible to safely extricate the patient from the environment or
   b) There is a high risk of the patient or other public safety personnel incurring permanent disability or death
   without the use of the WEMS Protocols

D. TRANSFER OF CARE

1. Care is transferred from the WEMS provider to the transporting EMS provider at the point at which the patient is either:
   a) No longer in the wilderness environment, or
   b) The wilderness EMS provider has formally transferred care to the transporting provider.
2. There may be times in which the WEMS provider's expertise is needed after transfer of care to the transporting jurisdiction. If this is the case:
   a) The highest trained WEMS provider shall ride to the hospital with the patient.
   b) Conflicts shall be resolved by contacting the medical director for the WEMS jurisdiction and then the local EMS Base Station medical control.

E. DOCUMENTATION/QUALITY IMPROVEMENT

1. At the completion of the rescue, the WEMS providers must fill out a patient chart in compliance with the MIEMSS charting system.
2. A brief written report shall be provided to the transporting agency with the following information:
   a) Patient name, age, gender
   b) Pertinent history of the case
   c) Vital signs and other pertinent physical findings
   d) Care rendered
3. WEMS providers must demonstrate proficiency to the WEMS Medical Director on an annual basis via skills testing and/or documentation of the utilization of skills in the field. This may be demonstrated through regular field training exercises.
4. Review of each call:
   a) Upon completion of the WEMS event, notification of the utilization of the WEMS Protocols will be made to the appropriate EMS supervisor.
   b) The WEMS Medical Director will review 100% of WEMS calls as soon as is reasonably possible. Ideally this should be done within 48 hours of the event.
   c) The WEMS program will maintain a detailed WEMS database and will provide an annual report to the State EMS Medical Director.

TREATMENT PROTOCOLS

The wilderness EMS provider shall have responsibilities for part or all of these protocols, summarized as follows, based on BLS or ALS level of certification/licensure:

Intervention	BLS	ALS
Provision of access to medications: Ibuprofen, Acetaminophen, Oral electrolytes, Calcium Carbonate tablets (e.g. Tums), ranitidine, diphenhydramine, epinephrine, aspirin, albuterol, omeprazole ODT	•	•
Administration of medications in Protocol, not listed above		•
Hemorrhage control with hemostatic agent and tourniquet	•	•
King Airway	•	•
Surgical Cricothyroidotomy		• (Paramedic only)
Wound closure with steri-strips or other tissue tape	•	•
Wound closure with tissue adhesive		•
Pelvic Binder	•	•

A. Airway
1. Initiate general patient care as per the MIEMSS protocols.
2. Assess the patient's airway and determine if the patient's airway is patent, intact, or compromised.
3. If the airway is compromised, establish a patent airway using one of the following techniques:
   a) Insert an oral-pharyngeal airway or naso-pharyngeal airway.
   b) Tack the patient's tongue to the patient's lip using a safety pin.
   c) Insert a KING airway per protocol.

ALS SKILL (PARAMEDIC ONLY)Í
   d) If unable to insert a KING airway and unable to keep the airway open with a non-invasive technique, then proceed to a surgical cricothyroidotomy.

B. Cardiac Arrest
1. Initiate general patient care as per the MIEMSS protocols.
2. Perform CPR.
3. If equipped with AED, utilize as appropriate.
4. Continue CPR and utilization of AED per protocol until there is Return of Spontaneous Circulation (ROSC).
5. If an AED is present, the resuscitation may be terminated per the TOR Protocol. TOR conditions requiring physician consult are waived, such that providers may terminate without consult.
6. If an AED is not present, the resuscitation may be terminated if there is no ROSC after 30 minutes of resuscitative efforts.
7. Resuscitation may also be terminated if rescuers are exhausted or in danger.

C. Asthma
1. Initiate general patient care as per the MIEMSS protocols.
2. Administer albuterol MDI – 2 puffs every hour as needed; may administer up to 4 puffs per hour.
3. Consider administration of epinephrine (manual or auto-injector) for severe asthma.
4. Pediatrics less than 30 kg estimated weight administer 0.15 mg IM
5. Pediatrics greater than 30 kg estimated weight and adults administer 0.5 mg IM

ALS SKILL
6. Consider administration of dexamethasone
   (a) Pediatrics – 0.5 mg/kg to max of 10 mg every 24 hours
   (b) Adults – 10 mg every 24 hours

All Providers
7. Continue treatment and monitoring of patient.
8. Transport to definitive care.

D. Acute coronary syndrome
1. Initiate general patient care as per the MIEMSS protocols.
2. Acute coronary syndrome may be difficult to diagnose in the wilderness environment without the use of a 12-lead EKG. WEMS providers should have a high index of suspicion in a patient complaining of chest pain, shortness of breath, or extreme fatigue without an alternate explanation for these symptoms.

3. Closely monitor vital signs during patient contact.
4. Provide oxygen if available at 2 liters per nasal cannula or as needed to treat symptoms or keep oxygen saturation above 90% if a pulse oximetry is available.
5. Administer aspirin 324 mg (81 mg low-dose aspirin X 4) or 325 mg aspirin chewed
6. Expedite transport out of the wilderness.

E. Shock
1. Patients presenting with shock will exhibit signs of poor perfusion to critical organs.
2. The patient may or may not be hypotensive.
3. The most common reason for shock in trauma is hemorrhage.
4. Treat the underlying cause. Control external bleeding.
5. Control for environmental conditions.

ALS SKILL

6. If carrying IV/IO fluids, establish IV access and administer parenteral fluids with Lactated Ringer's (LR).
7. Pediatrics 20 mL/kg bolus to maintain a radial pulse and to maintain normal mentation
8. Adults 500–1,000 mL bolus to maintain a radial pulse and to maintain normal mentation
9. Continue fluids to maintain peripheral perfusion.

ALL PROVIDERS

10. Expedite transport.

F. External Bleeding
1. Initiate general patient care as per the MIEMSS protocols.
2. Control external bleeding with direct pressure.
3. If unable to control extremity bleeding with direct pressure, apply tourniquet proximally to the site of bleeding. Note the time and date of the tourniquet application. If time of delivery of patient to definitive care is expected to exceed 12 hours, then it is appropriate to release the tourniquet every 2 hours. However if tourniquet is released, closely observe area for bleeding and immediately reapply if bleeding resumes.
4. If unable to control bleeding in site other than extremity, or if unable to get control of bleeding with a tourniquet, then apply hemostatic impregnated gauze or hemostatic agent (HemCon or similar product) per manufacturer instructions.

G. Wound Care
1. Initiate general patient care as per the MIEMSS protocols.
2. Once bleeding has been controlled, assess the size and depth of the wound. Assess for extent of contamination. In addition, assess for any suspicion of underlying broken bones or dislocated joints in association with the wound.
3. Irrigate the wound. Ideally the wound should be irrigated with high pressure. High pressure irrigation devices can be created with a syringe or a plastic bag with a small hole. Irrigate with water that is clean enough to drink. Irrigate until all visible foreign bodies have been removed.

4. Assess need for primary closure of wound.
    a) In the wilderness setting, large wounds may warrant primary closure if time to definitive treatment is greater than four hours.
    b) Primary closure can be achieved with:
        (1) Steri-strips or other tape (duct tape works well)

ALS SKILL

        (2) Tissue adhesive (Dermabond or similar product)
        (3) Staples (Physician only skill)
        (4) Sutures (Physician only skill)
    c) Wounds that persist with foreign bodies despite adequate irrigation should not be primarily closed.
    d) Unless there will be a significant delay of transport of patient to definitive care (i.e., greater than 12 hours) do not primarily close facial wounds in the wilderness environment.
5. Assess need for administration of antibiotics
    a) Wounds that warrant antibiotic prophylaxis include:
        (1) Grossly contaminated wounds
        (2) Wounds with obvious involvement of broken bones or joint spaces
        (3) Wounds with involvement of tendons or ligaments
        (4) Mammalian bites
    b) Antibiotic that may be used include:
        (1) Amoxicillin-clavulanate (Augmentin) – 10 mg/kg or 500 mg of the amoxicillin component every 8 hours
        (2) Cephalexin (Keflex) – 10 mg/kg or 500 mg every 6 hours
        (3) Bactrim 5 mg/kg every 12 hours or 1 DS every 12 hours
        (4) Clindamycin 10 mg/kg every 8 hours or 300 mg every 8 hours

ALL PROVIDERS

6. Cover wound with bacitracin antibiotic ointment.
7. Cover wound with sterile gauze and gauze wrap.

H. Altered mental status
    1. The differential of altered mental status is quite broad, including:
        a) Traumatic brain injury
        b) Stroke
        c) Infection
        d) Acute coronary syndrome
        e) Intoxication
        f) Hypoglycemia
    2. If there is any possibility of trauma, protect the patient's cervical spine.
    3. If unable to check glucose with a glucometer, assume that the patient is hypoglycemic and treat accordingly.
        a) Gently rub glucose paste on the inside of the patient's cheek, 10–15 grams.

ALS SKILL

        b) If carrying glucagon, administer 1 mg IM (0.5 mg if less than 25 kg).
        c) If carrying IV medications, administer dextrose.

d) 1 amp D50 IV for adults
e) 1–2 mL/kg D50 for children greater than 2 years old
f) 2–4 mL/kg D25 for children less than 2 years old

ALL PROVIDERS

4. Transport out of the wilderness.

I. Traumatic Brain Injury
   1. Initiate general patient care as per the MIEMSS protocols.
   2. Any patient with a blow to the head and the following findings should prompt the WEMS provider to initiate rapid transportation to a trauma center:
      a) GCS less than 13 or a motor score less than 6
      b) Rapidly declining GCS
      c) Debilitating headache
      d) Profuse vomiting
      e) Raccoon's eyes
      f) Battle's signs
      g) Seizures
   3. Control the cervical spine and airway as needed.
   4. In a patient with a blow to the head, no loss of consciousness, but at least a brief period of confusion or loss of memory, closely observe and extricate from the wilderness environment. Watch for deterioration of mental status. The patient should be cleared by a physician prior to resuming activities at risk for head injury.

J. Back Injury/Spinal Cord Injury
   1. Extrication of a fully immobilized patient from the wilderness environment can be quite difficult and pose increased risks to both the patient and rescuers. Therefore, despite a significant mechanism of injury, patients who have concern for spinal column injury and/or meet criteria for the Spinal Protection Protocol should be allowed to ambulate on their own volition as long as the patient is alert, reliable, and has no major neurological deficits.
   2. Patients who have evidence of neurological deficit and/or those who are not able to safely ambulate on their own volition shall be secured in an extrication device in a manner that conforms, as much as possible, to the normal contours of the spine and minimizes, as much as possible, movement of the spinal column.
   3. Any patient who has been secured in an extrication device should have placement of a diaper for control of urine, especially if the transport time to definitive care is expected to be greater than one hour.

K . Diagnosis of fractures in the wilderness will be based on clinical findings rather than radiologic studies.
   1. Things to assess when considering if a patient has a possible fracture requiring immobilization are:
      a) Ability of the patient to bear weight or use the affected limb
      b) Evidence of angulations, deformities, crepitus, bruising
      c) Did the patient hear a breaking sound or feel the bone breaking?

2. Assess distal neurological as well as vascular function.
3. If the patient does NOT have intact distal pulses, then manually reduce by bringing the affected area back to a near anatomic alignment.
4. The general principle of splinting is to immobilize the joint above and below the site of suspected fracture. Provide adequate padding. Splints may be commercially designed or improvised. Assess pulses before and after splinting. Perform frequent vascular checks during transportation.
5. Consider placing a diaper on the patient to catch urine—especially for fractures of the lower extremities that will prevent the patient from being able to urinate unaided.
6. Specific splinting guidelines are as follows:
    a) Shoulder and upper arm
        (1) Immobilize as needed for comfort.
        (2) Place in a sling and swath.
    b) Lower arm
        (1) Immobilize, including the wrist and elbow.
        (2) Place in sling and swath.
    c) Hand
        (1) Realign misangulated digits as needed.
        (2) Place a soft roll of gauze in the hand.
        (3) Wrap with a bandage.
    d) Hip
        (1) Immobilize both upper legs together, placing padding between the legs.
        (2) Place on a stretcher.
        (3) Carry out.
        (4) Do not place patient in traction.
    e) Pelvis
        (1) Assess for injury to vagina or penis.
        (2) Pelvic fracture is noted by instability of the pelvis.
        (3) Immobilize with commercially available pelvic binder or improvised pelvic binder.
        (4) Expedite transport to a trauma center.
    f) Femur
        (1) Immobilization of femur fractures with traction splints is no more effective than immobilization to the unaffected leg and transport on a stretcher. In the WEMS setting, the provider should use judgment and either use a traction split or immobilize the injured leg to the unaffected leg.
        (2) Immobilize the fractured leg to the uninjured leg with adequate padding or use a traction splint.
        (3) Place padding behind the knees.
        (4) Carry the patient out on a stretcher.
    g) Knee
        (1) Patellar fractures typically occur due to a direct blow to the patella.
        (2) The patient is likely to have significant pain and not want to fully extend the knee.
        (3) Immobilize with a circumferential splint ensuring that the popliteal artery behind the knee is not compromised.
        (4) The patient may be able to ambulate out on own with a crutch and assistance.

L. Dislocations
   1. Considerations for reducing a dislocated joint in the wilderness:
      a) Reductions are typically easier immediately after an injury, before the joint has become swollen and muscles are in spasm.
      b) Extrication of a patient from the wilderness with a dislocated joint can be quite difficult, presenting increased risks to the patient and the rescuers.
      c) Dislocated joints can result in compromise to vascular and/or neurological structures.
   2. Always check neurological and vascular integrity before and after an attempted reduction.
   3. Consider placing a diaper on the patient for control of urine—especially for dislocations of the lower extremities that may prevent the patient from being able to urinate unaided.
   4. Specific reductions are as follows:
      a) Shoulder
         (1) The greater majority of shoulder dislocations are anterior. Mechanism is typically external rotation and abduction. The patient will complain of pain in the shoulder and will be resistant to bringing the arm into a position of rest across the body.
         (2) Check for motor and vascular integrity in the hand.
         (3) Also check for sensation in the outer aspect of the shoulder.
         (4) Reduction technique
             External Rotation
             (a) Lie the patient supine on a flat surface.
             (b) Secure the patient's affected arm adducted to the patient's side.
             (c) The elbow should be flexed to 90 degrees.
             (d) Hold the patient's wrist and gently guide the arm into a slow external rotation while holding the upper arm fixed to the patient's side.
             (e) Whenever the patient experiences pain, halt the procedure momentarily then continue.
             (f) Continue guiding the forearm until it is lying perpendicular to the patient's side on the flat surface.
         (5) Place the patient in a sling and swath.
      b) Fingers
         (1) Clinically diagnosed by obvious deformity and loss of function
         (2) Reduction technique
             (a) Maintain digit in partial flexion.
             (b) Apply traction to the flexed digit while pushing the base of the phalanx back into place.
         (3) Splint the fingers in an anatomic position with a roller gauze splint.
      c) Hip
         (1) Hip dislocations tend to be posterior. The patient's hip will be internally rotated and adducted. You may also notice the affected limb to appear shorter than the other limb.
         (2) If equipped with ALS medications, pretreat with midazolam 5 mg IM. Alternatively pre-medicate with an oral analgesic.

(3) Reduction technique
(a) The patient should be lying supine flat on the ground.
(b) Flex the hip and knee to 90 degrees.
(c) Straddle the patient and apply traction in an upward direction while another provider is providing counter traction by holding the pelvis fixed to the ground.
(4) Once reduced, the hip should be immobilized to the uninjured leg and the patient carried out on a stretcher.

d) Knee
(1) Knee dislocations carry great risk of injury to the popliteal artery behind the knee.
(2) Assess for pulses in the foot.
(3) Reduction technique
Gently exaggerate the injury and then apply gentle traction to bring the joint to anatomic position.
(4) Splint the knee slightly flexed and carry the patient out.
(5) Expedite transport to a trauma center.

e) Patella
(1) The patella will typically displace laterally with the knee held flexed by the patient for comfort.
(2) Reduction technique
(a) Gently extend the knee so that the lower leg is straight to the upper leg. This movement may result in the reduction of the dislocated patella.
(b) If the patella remains dislocated after extension of the knee, then apply gentle pressure on the lateral edge of the patella pushing the patella back into its anatomic location. Do not force the patella if it is not easily reducible.
(3) Splint the leg in extension.
(4) The patient may be able to ambulate with a crutch and assistance.

f) Ankle
(1) Ankle dislocations are typically associated with fractures.
(2) There will be obvious deformity.
(3) There may be compromise of vascular structures.
(4) Reduction technique
Apply gentle traction to place the ankle back into its anatomic location.
(5) The ankle will likely remain unstable after reduction and may easily dislocate without splinting. Therefore, be prepared to splint the ankle immediately after reduction. Have one provider maintain the reduction, while another provider applies a splint.
(6) Carry the patient out of the wilderness.

M. Ankle sprain
1. An ankle sprain typically is described by the patient as twisting of the ankle after walking or tripping over a ledge. The patient will often be able to ambulate on the ankle with assistance. There should be no instability to the ankle.

2. Management
   a) Support the ankle with an ACE wrap or other supportive device.
   b) Provide a walking aid for the patient such as a crutch or walking stick.
   c) Assist the patient in ambulating out of the wilderness.

N. Foot Care – Blister management
   1. Blisters typically develop from a hiker wearing a shoe that has not been broken in and/or is not fitted properly. Wearing two pairs of socks often helps to prevent blisters.
   2. Management
      a) Cover the blister with mole-skin or mole foam.
      b) In most cases you should NOT open the blister, as this increases the risk of infection.
         c) You may open the blister with a scalpel or clean knife if the location of the blister is impeding the ability for the patient to self-extricate from the wilderness. Cut in the lines of the skin, drain the fluid, and then cover with antibiotic ointment and a sterile dressing.
      d) Assist the patient in ambulating out of the wilderness.

O. Eye
   1. Non-painful acute loss of vision
      a) Patients with acute non-painful loss of vision may have occlusion of the artery to the eye or vasculitis of the artery.
      b) If available, administer oxygen at high flow.

ALS SKILL

      c) Administer aspirin 325 mg po (adults only).

ALL PROVIDERS

      d) Expedite transport to the ophthalmology referral center.
   2. Globe rupture
      a) Rupture of the eye globe may be obvious or occult.
      b) Obvious globe rupture will be diagnosed by bleeding from the orbit and irregularly shaped orbit and/or pupil that is not reactive to light.
      c) Cover the affected eye with eye dressing, being careful not to put pressure on the globe, and expedite transport to the ophthalmology referral center.
   3. Red Eye
      a) Differential diagnosis of red eye includes:
         (1) Foreign body
         (2) Infection—either bacterial or viral
         (3) Allergic reaction
         (4) Globe rupture
         (5) Acute angle closure glaucoma
      b) Cover eye and expedite transport to ophthalmology referral center.
   4. Foreign body in eye
      a) If the provider is sure that the patient's discomfort is due to a foreign body, the provider may attempt to remove the foreign body.

ALS SKILL

b) Numb the eye with 2 drops tetracaine 0.5% ophthalmic solution (peds and adults).

ALL PROVIDERS

c) Evert the eyelid.
d) Remove any foreign particles with a moist cotton applicator or equivalent.
e) DO NOT FORCEFULLY REMOVE PARTICLES STUCK TO THE EYE.
f) Irrigate the eye with water clean enough to drink.

P. Nose - Epistaxis

1. Control bleeding by pinching nose until bleeding stops.
2. If unable to control bleeding, pack.

ALS SKILL

3. If you anticipate the packing to be in for greater than 24 hours, initiate antibiotic prophylaxis with either Augmentin or Bactrim.

ALL PROVIDERS

4. Transport out of wilderness.

Q. Teeth

1. Fractured tooth
   a) A fractured tooth that is bleeding is a dental emergency.
   b) The exposed nerve roots will typically be quite painful.
   c) Place a small piece of aspirin on the top of the exposed nerve roots. This will initially be painful to the patient, but the pain should quickly decrease and then be followed by significant relief of pain. You can also cover the exposed nerve roots with sugarless gum or wax.
   d) Have patient cover tooth with gauze.
   e) Transport out of wilderness.
2. Tooth avulsion
   a) Pick the tooth up by the top rather than the root.
   b) Irrigate tooth and socket gently with water clean enough to drink.
   c) DO NOT SCRUB THE TOOTH.
   d) Replace tooth in socket and have patient maintain tooth by keeping mouth closed as much as possible. You may fix the tooth in place with a piece of sugarless gum.
   e) Alternatively place tooth inside of cheek ensuring that the patient does not aspirate or swallow the tooth.
   f) If traveling in difficult terrain, it is acceptable to place tooth in container with clear liquid.

R. Burns

1. Clean burns with water clean enough to drink and gentle scrubbing as needed to remove debris.
2. If you expect to get the patient to a burn center within 24 hours, do not cover with antibiotic ointment. If transport to a burn center is expected to exceed 24 hours, then cover with antibiotic ointment.
3. Cover burn with sterile dressing.

ALS SKILL

4. Treat pain
   a) Ibuprofen 600 mg po every 6 hours; 10 mg/kg
   b) Acetaminophen 3–5 yrs old 160 mg/5mL; 6–9 yrs old 320 mg/10mL; greater than 9 yrs old 640 mg/20mL or 650 mg po tab. May repeat dose every 6 hours as needed.
   c) Oxycodone 5–10 mg every 6 hours as needed
   d) For pediatrics administer 0.1 mg/kg of oxycodone every 6 hours as needed.
   e) Morphine 0.1 mg/kg IV/IM to max dose 20 mg with repeat dose of 0.05 mg/kg to max dose of 10 mg every 1 hour as needed
   f) Administer fentanyl 1 **mcg**/kg IN/IV/IM to a max dose of 200 **mcg** with a repeat dose of 1 **mcg**/kg to a max dose of 200 **mcg** every 1 hour as needed.

ALL PROVIDERS

5. Transport to burn center if meeting burn center criteria (see Burn Protocol in MIEMSS treatment protocols).

S. Anaphylaxis

1. Severe allergic reactions present with diffuse hives, airway swelling, and signs of hypoperfusion.
2. Goals of treatment are to counteract the effects on the airway, respiratory system, and cardiovascular system.
3. Specific treatment
   a) Epinephrine (manual or auto-injector)
      (1) Less than 30 kg estimated weight, administer 0.15 mg IM
      (2) Greater than 30 kg estimated weight and adults, administer 0.5 mg IM
   b) Albuterol MDI 2 puffs may repeat every 5 minutes as needed

ALS SKILL

   c) Benadryl: Pediatric 1 mg/kg every 6 hours; Adults 25–50 mg every 8 hours
   d) Dexamethasone: Pediatric 0.5 mg/kg; Adults 10 mg po

ALL PROVIDERS

4. Expedite transport out of the wilderness.

T. Hypothermia

1. Hypothermia occurs when the body's ability to conserve and generate heat is not able to compensate for loss of heat.
2. The conditions that are most favorable for development of hypothermia mirror the most efficient methods for losing heat—wet and windy conditions. Therefore, temperatures just above freezing are often more favorable for the development of hypothermia than temperatures below freezing.
3. The beginning stages of hypothermia are clinically evident when a patient is cold and shivering. During this stage the patient will be able to re-warm themselves with passive warming techniques.
   a) Remove the patient from the wet and windy conditions.
   b) Remove any wet clothes.
   c) Place the patient in sleeping bags or cover the patient with blankets (foil safety blankets work well). Another option is to place the patient's body into garbage bags, ensuring that the head is not covered with the bag.

4. The point at which the patient is no longer shivering marks the beginning of severe hypothermia. If the patient is not shivering, the patient will not be able to self-generate heat. Also during this stage the patient may develop confusion and other neurological findings. Treatment will need to be active replacement of heat. Follow the steps in #3 above. In addition, add heat to the patient. Possible methods for adding heat include:
    a) Have another person join the patient in a sleeping bag or under blankets.
    b) Pack the patient's axilla and groin with warm packs or water bottles filled with warm liquids.
5. Profound hypothermia is marked by cardiac instability progressing to arrhythmias—ventricular fibrillation, severe bradycardias, and asystole. Handle the patient carefully so as to not induce ventricular fibrillation, but nevertheless remove the patient from the environment. If suspicious of cardiac arrest, check for a pulse for at least 30 seconds. If the patient is in cardiac arrest, attempt to warm the patient while performing CPR. Continue CPR until the patient is warm, he or she is transferred to the transporting EMS agency, or the rescuers are fatigued.
6. If the patient is alert and there is no concern for airway compromise, feed the patient per the nutrition guidelines. The treatment of hypothermia is aided by the patient having fuel to self-generate heat.

U. Frostbite
1. Frostbite is a localized tissue injury from freezing of tissue. Whereas hypothermia can occur in temperatures above freezing, tissue will not freeze unless temperatures are below freezing.
2. The beginning stages of frostbite are marked by periods of intermittent pain and swelling of the affected tissue. This period is actually called "frostnip" and does not require intervention other than removing the affected tissue from the cold environment.
3. Once the tissue is frostbitten the skin will be pale, cold, and numb. Underlying tissue may be soft and pliable or firm depending on the depth of the freezing.
4. Treatment should only be initiated if the provider is confident that there is no chance of the affected tissue refreezing. If the tissue is likely to continue to be exposed to a cold environment prior to the patient reaching definitive care, then the affected tissue should, as much as possible, be protected from the environment and covered with warm clothes and/or sterile dressing.
5. If the provider is reasonably sure the tissue will not be further exposed to the cold, then active treatment may be initiated.
    a) Actively warm the affected tissue in warm water that has been measured with a thermometer to a temperature of 100.4–104 degrees Fahrenheit.

ALS SKILL

    b) Give ibuprofen 600 mg po every 6 hours for management of the frostbite (Peds dosing 10 mg/kg up to max of 600 mg).
    c) Manage pain as needed—see pain management section HH.

ALL PROVIDERS

6. Transport the patient to definitive care.

V. Heat Exhaustion
   1. Heat exhaustion is marked by intravascular volume depletion due to dehydration and excessive sweating in a hot environment.
   2. Symptom include dizziness, excessive sweating, headache, confusion, nausea, and weakness.
   3. Treatment
      a) Remove the patient from the hot environment and keep in the shade.
      b) Cool the patient by getting the patient wet and fanning.
      c) Replace fluids.
   4. Transport out of the wilderness.

W. Heat Stroke
   1. Heat stroke is a true environmental emergency marked by injury to the neurological system as a result of excessive heat.
   2. The patient may or may not be sweaty.
   3. Symptoms include confusion, ataxia, and tachycardia.
   4. Skin will be red and hot.
   5. Treatment mirrors that for heat exhaustion.
      a) Remove patient from the hot environment and keep in the shade.
      b) Cool patient with water and fanning.
      c) Place ice packs in axilla and groin; if shivering, remove the ice packs.
      d) If the patient is alert, orally replace fluids.

X. Snake Bites
   1. There are two wild snakes indigenous to the State of Maryland that are poisonous:
      a) Northern Copperhead – The Northern Copperhead is identified by the coppery color to its head and the alternating tan and dark brown on its body. It likes to hide within woodpiles or under logs.
      b) Timber Rattlesnake – The Timber Rattlesnake is a large, stout bodied snake that can grow up to 5 feet or more. It is typically identified by bands of dark chevrons on its back. Generally the snake likes to live in wooded areas but gravid females may be found sunning on open rocks.
   2. Snake bites may or may not present with paired fang puncture wounds. A snake bite may also present with a single puncture wound or just a scratch.
   3. The greater majority of bites will present with immediate onset of pain at the site of the bite. The bite will become swollen and erythematous.
   4. Mark the site of erythema and monitor its progression.
   5. Treatment
      a) Gently clean the area and cover with a sterile dressing.
      b) Do NOT attempt to suck out the venom with a commercial or improvised device.
      c) Do not apply a distal and proximal constricting band for poisonous snakebite to an extremity. Splint the extremity. Remove any jewelry on affected extremity.
      d) As much as possible keep the affected area below the level of the heart.
      e) Unless absolutely necessary, the patient should be carried out rather than walked out on their own accord.
      f) Calmly expedite transport out of the wilderness.
   6. Do NOT try to catch the snake for identification purposes.

Y. Tick Bites
1. Tick bites in the State of Maryland are at high risk for transmission of Lyme disease and/or Rocky Mountain spotted fever.
2. In order for a tick to transmit Lyme, the tick has to be attached to the patient for at least 36 hours. Ticks found on a patient that are engorged with blood pose a much higher risk than ticks that are not engorged with blood.
3. Lyme disease presents with a circular red rash with the center clear of redness. Patients will have fevers and non-specific flu-like symptoms. The patient may also have neurological finding such as a facial droop.
4. To remove a tick, directly pull the tick up from the skin using a pair of tweezers or a tick key in a single firm steady pull.

ALS SKILL

5. If there is high suspicion for Lyme, start the patient on antibiotic treatment with doxycycline 100 mg twice a day; 2.2 mg/kg 8 years or greater. If less than 8 years old use Augmentin 10 mg/kg every 12 hours.
6. If there is suspicion for Rocky Mountain Spotted Fever (the patient has fever and petechiae), then doxycycline is the antibiotic of choice for all age groups. If less than 45 kg estimated weight, administer 2.2 mg/kg every 12 hours to max dose of 100 mg. If greater than 45 kg then administer 100 mg every 12 hours.

Z. Large Animal Attacks (e.g., bear, wild cat, fox)
1. Ensure that the area is safe and that the animal is not still a threat to the patient or rescuers.
2. Patients typically die from large animal attacks secondary to injury to airway structures or hemorrhagic shock from large, gaping wounds.
3. Ensure the patient has an intact airway.
4. Control for any external bleeding.
5. Clean and dress wounds.
6. Transport out of the wilderness.
7. Do NOT attempt to capture the animal for identification purposes.

AA. Plants
1. Patients may develop localized skin reactions after contact with a plant.
   a) Remove the patient from the plant.
   b) Wash the area clean.

ALS SKILL

   c) For mild reactions, use a topical steroid. Cover the area with Betamethasone valerate 0.1% ointment twice a day.
   d) For severe reactions administer dexamethasone 10 mg po; 0.5 mg/kg for pediatrics.
   e) Transport
2. Ingestion of plants and mushrooms can be life-threatening.
   a) Patients will present with nausea and vomiting.
   b) Provide supportive care.
   c) Transport

BB. Oral Rehydration

1. Oral rehydration with a glucose-sodium solution may be indicated in one of three conditions.
   a) Excessive sweat loss from intense exercise
   b) Mild to moderate heat illness, or severe heat illness as long as the airway is intact and the patient is able to tolerate oral fluids
   c) Dehydration from diarrhea
2. The patient will likely feel dehydrated. Mucus membranes will be dry. Skin may tent.
3. Replacement of fluids with only water and no electrolytes may lead to a dilution of intravascular sodium levels. This risks the development of cerebral edema. Therefore, fluids should be replaced with a solution of glucose and salts.
4. The ideal solution will contain 2–6% glucose and 30 mEq/Liter of sodium. Commercial sports drinks generally contain about 6% glucose and 25 mEq/Liter of sodium. While commercial sports drinks contain more than the ideal amount of glucose and less than the ideal amount of sodium, these solutions are better than just water.
5. If a glucose/sodium solution is not available, hydrate with water judiciously.
6. Replace fluids at a rate of 50–100 mL/kg over the first 4–6 hours.

CC. Nutrition

1. In rescues that are expected to be prolonged (i.e., greater than 4 hours) it may be necessary to provide nutritional support to the patient.
   a) Ensure that the patient has an intact airway and that the patient is not experiencing nausea or vomiting.
   b) Only feed the patient if you are reasonably sure that the patient will not be going to surgery in the next 12 hours.
   c) Provide nutrition with a combination of protein and carbohydrate.
      (1) Energy bars are a good choice.
      (2) A mixture of dried fruits and nuts is also a good choice.

DD. Nausea

1. Patients with traumatic injuries and/or medical illness may experience nausea. All providers should refer to the treatment protocols for ODT ondansetron.

ALS SKILL

2. If carrying ALS medications and IVs, follow Nausea and Vomiting Protocol in MIEMSS treatment protocols.
3. Alternatively, may administer
   a) Pomethazine pediatric greater than 2 years old 0.5 mg/kg every 12 hours; adults 25 mg po every eight hours
   b) Zofran pediatric 0.1 mg/kg; adults 4 mg IM

EE. Diarrhea

1. Diarrhea in the wilderness can result in significant dehydration to the patient.
2. Orally rehydrate the patient.

ALS SKILL

3. Administer loperamide
4. Pediatric – (loperamide is generally not indicated for pediatric populations. However, in the wilderness it may be needed to prevent profound dehydration or to facilitate extrication. Use judiciously.)
5. 2–6 years of age or 13–20 kg 1 mg po three times a day
6. 6–8 years of age or 20–30 kg 2 mg bid
7. Adults–4 mg po for the first dose then 2 mg po after each subsequent loose stool up to a total of 16 mg in a 24 hour period
8. Contraindications for loperamide are diarrhea with fevers and bloody diarrhea.

FF. Abdominal Pain

1. Non-traumatic abdominal pain may indicate a surgical emergency.
2. In women, a ruptured ectopic pregnancy is a true emergency that may present with abdominal pain.
   a) Check a female patient's urine for beta hCG using a commercial urine pregnancy test.
   b) If the patient with abdominal pain is pregnant, expedite transport.
3. In non-pregnant females and all males with abdominal pain, monitor vital signs and patient symptoms. Concerning findings suggestive of a surgical abdomen include:
   a) Instability of vital signs
   b) Progressing pain
   c) Rebound pain–pain with movement
   d) Nausea and vomiting
4. If there is high concern for surgical abdomen, do not feed the patient and expedite transport.
5. All other patients with abdominal pain should be transported so as to not miss occult surgical disease.

GG. Gastroesophageal reflux

1. Gastroesophageal reflux (GERD) (or heartburn) is typically identified by the patient complaining of a burning, substernal chest pain. The patient also may complain of having a sour taste.
2. It is important to note that the patient with symptoms of GERD may actually have an acute coronary syndrome. Therefore, as you are treating the patient's symptoms, also assess for possible acute coronary syndrome and manage appropriately. Relief of symptoms with the recommended treatment for GERD does NOT rule out the possibility of acute coronary syndrome.
3. Management of GERD
   Tums 1–2 chewed every hour as needed to a max dose of 4 tablets

HH. Pain Management

1. Treatment of pain in the wilderness may at times be necessary in order to facilitate extrication and transport out of the wilderness. Therefore, treatment of pain not only benefits the patient by simply decreasing pain, treatment of pain also improves the safety of the patient and rescuers by decreasing the time spent in the wilderness.

2. Mild to moderate pain can be treated with ibuprofen and/or acetaminophen.
   a) Ibuprofen 600 mg every 6 hours orally; 10 mg/kg to max dose 600 mg for pediatric dosing
   b) acetaminophen up to 650 mg every 6 hours orally; 160 mg/5mL for 3–5 years old; 320 mg/10 mL 6–9 years old

ALS SKILL

3. Management of severe pain will often require treatment with an opiate analgesic. While intravenous opiates may have a quicker onset and more easily titratable, oral opiate analgesics tend to have less acute respiratory depression.
   a) If carrying parenteral morphine, administer 0.1 mg/kg IV/IM up to 20 mg IM. May repeat dose of 0.05 mg/kg every hour as needed.
   b) Administer fentanyl 1 **mcg**/kg IN/IV/IM to a max dose of 200 **mcg** with a repeat dose of 1 **mcg**/kg to a max dose of 200 **mcg** every 1 hour as needed.
   c) Alternatively, administer Oxycodone 5–10 mg every 6 hours as needed. Pediatric dosing for oxycodone – 0.1 mg/kg every 6 hours

FORMULARY

acetaminophen (Tylenol)

•Availability	325 mg tablet; 160 mg/5 mL
•Action	analgesic; anti-pyretic
•Indication	mild to moderate pain; fever
•Contraindication	known end stage liver disease
•Precautions	
•Side effects	
•Dose	3–5 years old 160 mg/5 mL every 6 hours as needed 6–9 years old 320 mg/10 mL every 6 hours as needed 10 years and above 640 mg/20 mL or 650 mg tab every 6 hours as needed

albuterol

•Availability	90 mcg/metered spray
•Action	bronchodilator
•Indication	shortness of breath; exacerbation of asthma/ COPD; wheezing
•Contraindication	
•Precautions	
•Side effects	
•Dose (Peds & Adult)	start with 2 puffs every four hours as needed; may use up to 4 puffs every hour

amoxicillin-clavulanate (Augmentin)

•Availability	500 mg–125 mg tablet; 125 mg–31.5 mg/5 mL
•Action	antibiotic
•Indication	suspected respiratory infection
•Contraindication	hypersensitivity to penicillin
•Precautions	
•Side effects	diarrhea
•Dose	Pediatrics – 10 mg/kg every 12 hours Adult - 1 tablet every 8 hours

Aspirin

•Availability	325 mg; 81 mg
•Action	anti-platelet
•Indication	suspected acute coronary syndrome or stroke
•Contraindication	hypersensitivity to salicylates
•Precautions	
•Side effects	
•Dose	No pediatric dosing Adults - one 325 mg tab po qd or four 81 mg tabs po qd

bacitracin

•Availability	1 ounce (28 gram) ointment tube
•Action	topical antibiotic
•Indication	soft tissue wounds
•Contraindication	
•Precaution	
•Side effects	
•Dose (Peds & Adult)	cover the affected area 2–3 times a day

betamethasone valerate

•Availability	0.1% topical ointment
•Action	topical steroid anti-inflammatory
•Indication	contact dermatitis
•Contraindication	
•Precautions	
•Side effects	
•Dose (Peds & Adult)	apply to affected area twice a day

calcium carbonate (Tums)

•Availability	500 mg; 750 mg chewable
•Action	neutralizes stomach acid
•Indication	upset stomach; gastroesophageal reflux
•Contraindication	
•Precautions	
•Side effects	
•Dose	Pediatric – 1 every four hours as needed Adult – 1–2 every hour as needed up to max dose of 8 tabs

cephalexin (Keflex)

•Availability	500 mg tablets; 125 mg/5mL
•Action	antibiotic
•Indication	suspected skin infection or prophylaxis for skin wound
•Contraindication	hypersensitivity to penicillin
•Precautions	
•Side effects	diarrhea
•Dose	Pediatric – 10 mg/kg every 6 hours Adult – 500 mg every 6 hours

chitosan (Hemcon)

•Availability	2”X2”; 2”X4”; 4”X4” bandages
•Action	hemostatic
•Indication	severe bleeding
•Contraindication	
•Precautions	
•Side effects	
•Dose (Peds & Adult)	apply to severe bleeding as needed

ciprofloxacin (Cipro)

•Availability	500 mg tablets
•Action	antibacterial
•Indication	suspected urinary tract infection; skin infection if patient is hypersensitive to penicillin
•Contraindication	hypersensitivity to floroqinolone
•Precautions	
•Side effects	
•Dose	no pediatric dosing Adult – 500 mg every 12 hours

clindamycin (Cleocin)

•Availability	150 or 300 mg/tablet, reconstituted liquid 75 mg/ 5 mL
•Action	antibiotic
•Indication	suspected pharyngitis or respiratory infection; Cellulitis
•Contraindication	hypersensitivity to clindamycin
•Precautions	
•Side effects	diarrhea
•Dose	Pediatrics– 10mg/kg every 8 hours Adult -300mg every 8 hours

cryanoacrylate tissue adhesive (Dermabond)

•Availability	single use ampoules
•Action	tissue adhesive
•Indication	minor wound repair
•Contraindication	known hypersensitivity
•Precaution	avoid near eyes
•Side effects	transient local discomfort
•Dose	as required for wound closure; may need 2–4 layers

dexamethasone (Decadron)

•Availability	1 mg/1 mL solution
•Action	Steroidal anti-inflammatory
•Indication	asthma, allergic reactions
•Contraindication	
•Precautions	
•Side effects	
•Dose	Adults 10 mg po every 24 hours as needed Pediatrics 0.5 mg/kg po every 24 hours as needed

diphenhydramamine (Benadryl)

•Availability	25 mg tablets; 12.5 mg/5 mL
•Action	antihistamine
•Indication	allergic reactions
•Contraindication	
•Precautions	
•Side effects	sedating
•Dose	Pediatric – 1 mg/kg to max dose 50 mg every 8 hours Adult – 25–50 mg every 8 hours as needed

doxycycline (Doxy)

•Availability	100 mg tablets; 25 mg/5 mL
•Action	antibacterial
•Indication	suspected respiratory infection with contraindication to Augmentin
•Contraindication	
•Precautions	
•Side effects	
•Dose	8–14 years old - 2.2 mg/kg every 12 hours Adults – 100 mg every 12 hours

epinephrine auto-injector*

•Availability	0.3 mg; 0.15 mg auto-injector
•Action	antihistamine; anti-inflammatory; vasoconstrictor
•Indication	moderate to severe allergic reaction
•Contraindication	
•Precautions	
•Side effects	tachycardia; hypertension
•Dose	Pediatric less than 30 kg estimated weight – 0.15 mg IM greater than 30 kg estimated weight and adults – 0.3 mg IM

* All levels of providers shall be authorized to manually draw up epinephrine with a needle and syringe from an ampule or vial after education and credentialing by the Wilderness jurisdictional medical director.

fentanyl

•Availability	prefilled syringe, multidose vial
•Action	opioid analgesic
•Indication	severe pain
•Contraindication	
•Precautions	
•Side effects	depressed level of consciousness; hypoxia; hypotension
•Dose	1 **mcg**/kg IN/IV/IM to a max dose of 200 **mcg** with a repeat dose of 1 **mcg**/kg to a max dose of 200 **mcg** every 1 hour as needed

glucagon

•Availability	1 mg injector
•Action	facilitates release of glucose from glycogen stores in the liver
•Indication	suspected hypoglycemia in patient that is not able to take oral glucose
•Contraindication	
•Precautions	
•Side effects	
•Dose	Pediatric less than 25 kg – 0.5 mg IM greater than 25 mg and adults – 1 mg IM

glucose gel (Glutose 15)

•Availability	15 grams oral gel
•Action	raises blood glucose levels
•Indication	suspected hypoglycemia
•Contraindication	
•Precautions	use caution in patient with depressed level of consciousness
•Side effects	
•Dose (Peds & Adult)	give to patient by mouth in patient with depressed level of consciousness, rub the gel on the patient's gums, but use caution

hemostatic agent

All levels of providers are authorized to use gauze impregnated with hemostatic agent.

ibuprofen (Advil; Motrin)

•Availability	200 mg; 400 mg; 600 mg; 40 mg/mL
•Action	anti-inflammatory; analgesic
•Indication	mild to moderate pain
•Contraindication	hypersensitivity; known renal disease; history of GI bleeding
•Precautions	
•Side effects	
•Dose	Pediatric – 10 mg/kg to max dose 600 mg every 6 hours as needed Adult – 200 mg–600 mg every 6 hours as needed

loperamide (Imodium)

•Availability	2 mg tablets
•Action	anti-diarrheal
•Indication	diarrhea
•Contraindication	
•Precautions	
•Side effects	constipation
•Dose	Pediatric – 2 mg after first watery stool, then 1 mg after each subsequent watery stool; max dose 8 mg per day Adult – 4 mg after first watery stool; then administer 2 mg after each subsequent watery stool; max dose 16 mg per day

metaclopramide (Reglan)

•Availability	10 mg tablets; 5 mg/mL
•Action	anti-emetic
•Indication	nausea and vomiting
•Contraindication	
•Precautions	
•Side effects	
•Dose	Pediatric – 0.1 mg/kg every 8 hours as needed Adult – 10 mg every 8 hours as needed

morphine

•Availability	4 mg carpujet
•Action	opiate analgesic
•Indication	severe pain
•Contraindication	
•Precautions	
•Side effects	depressed level of consciousness; hypoxia; hypotension
•Dose	Pediatric – 0.1 mg/kg IM every hour as needed Adult – 4 mg IM every hour as needed

ondansetron (Zofran)

•Availability	4 mg injectable solution
•Action	anti-emetic
•Indication	severe nausea and vomiting
•Contraindication	
•Precautions	
•Side effects	
•Dose	Pediatric – 0.1 mg/kg IM every 1 hour as needed up to max dose 16 mg per day Adult – 4 mg IM every 1 hour as needed up to max dose of 32 mg per day

oxycodone

•Availability	5 mg tablet
•Action	opiate analgesic
•Indication	moderate to severe pain
•Contraindication	
•Precautions	
•Side effects	depressed level of consciousness
•Dose	Pediatric – 0.05–0.15 mg/kg every 6 hours Adult – 1–2 tablets by mouth every 4 hours as needed

promethazine (Phenergan)

•Availability	25 mg tablets; 6.25/5 mL
•Action	anti-emetic
•Indication	mild to moderate nausea
•Contraindication	
•Precautions	
•Side effects	
•Dose	Pediatric – 0.5 mg/kg every 8 hours as needed Adult – 25 mg every 8 hours by mouth as needed

tetracaine

•Availability	0.5% ophthalmic solution
•Action	topical anesthetic
•Indication	severe eye pain; foreign body removal from the eye
•Contraindication	hypersensitivity
•Precautions	
•Side effects	
•Dose (Peds & Adult)	2 drops to the affected eye

trimethoprim/sulfamethoxazole (Bactrim)

•Availability	160 mg TMP/800 mg SMX (DS tab); 40 mg/200 mg/5 mL
•Action	antibiotic
•Indication	sinus infection, upper respiratory infection, urinary tract infection
•Contraindication	hypersensitivity to sulfa
•Precautions	
•Side effects	
•Dose	Pediatric – 5 mg/kg TMP every 12 hours Adult – 1 DS tab po bid

Q. MARYLAND VACCINATION & TESTING PROGRAM

Scope of practice for paramedic personnel has been expanded to allow select immunization and Purified Protein Derivative (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 below. 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 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.

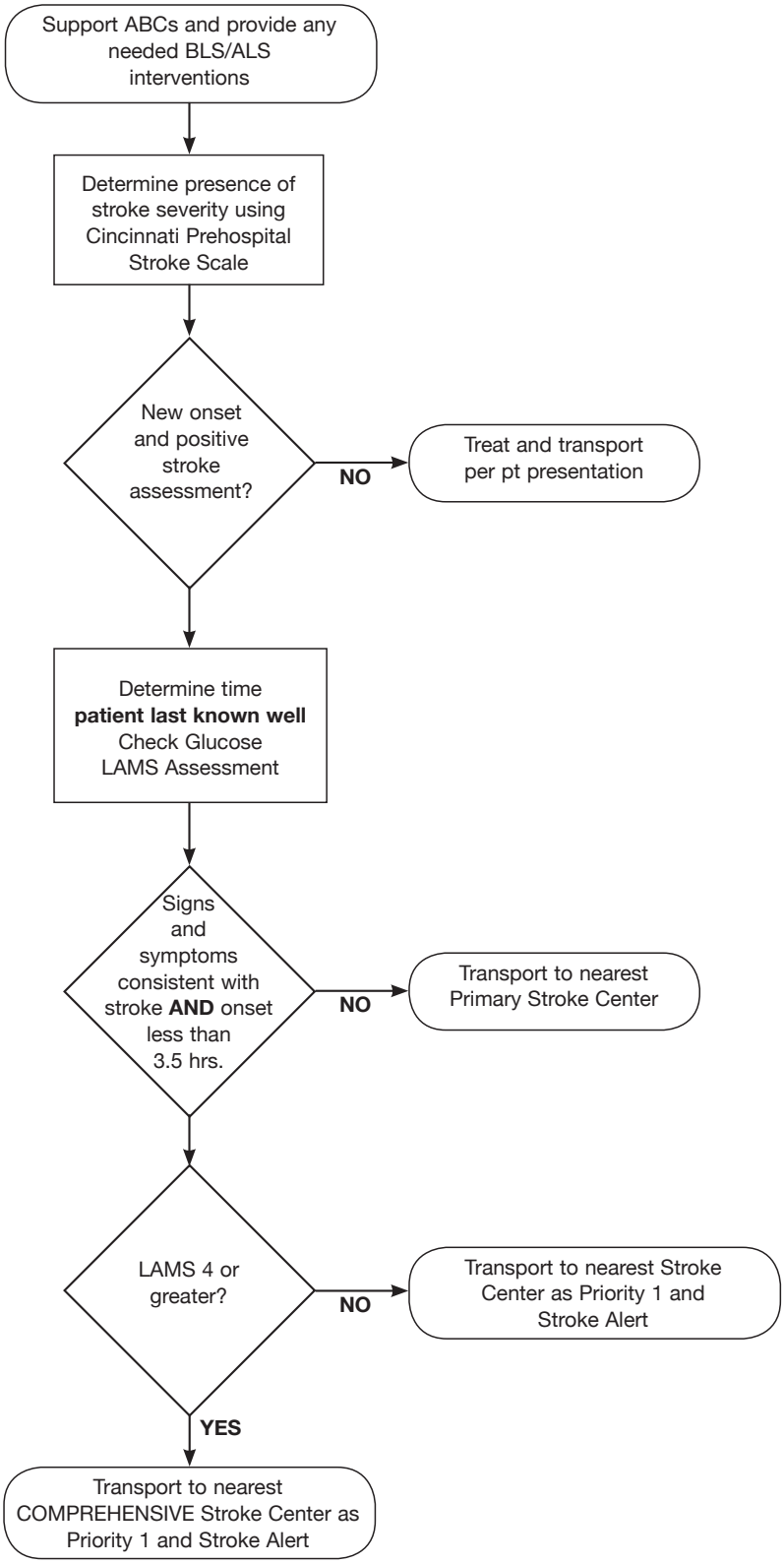
REQUIREMENTS:

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 *The 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.
8. Physician does not have to be physically present for the administration of vaccinations or tests by the trained paramedic (Vaccination and Testing Officer (VTO)).
9. Program instruction must be directed by and have participation by the jurisdictional Medical Director to select paramedics 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 testing with the use of the 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.

B. LAMS Stroke Research Protocol for Baltimore City Fire Department (NEW '18)

EMS STROKE ALGORITHM



1. Initiate General Patient Care.

2. Presentation
   Patient may present with numbness or weakness (often on one side only), difficulty speaking, blurred vision, dizziness, or a severe, unexplained headache. May be accompanied by seizures or altered mental status.

3. Treatment
   a) Position patient with head elevated at 30 degrees.
   b) If the patient has a positive Cincinnati Stroke Scale AND can be delivered to the hospital within 3.5 hours* of when patient was last known well, transport the patient to the closest Designated Stroke Center. If this adult patient also has a LAMS score of 4 or greater, they are to be transported to a Comprehensive Stroke Center. If there is not one within 30 minutes, then go to the nearest hospital.

The Cincinnati Prehospital Stroke Scale

(Kothari R, et al. Acad Emerg Med 1997; 4:9866-990.)

Facial Droop (have patient show teeth or smile):
- Normal – both sides of face move equally
- Abnormal – one side of face does not move as well as the other side

Arm Drift (patient closes eyes and holds both arms straight out for 10 seconds):
- Normal – both arms move the same or both arms do not move at all (other findings, such as strength of grip, may be helpful)
- Abnormal – one arm does not move or one arm drifts down compared with the other

Abnormal Speech (have the patient say "you can't teach an old dog new tricks"):
- Normal – patient uses correct words with no slurring
- Abnormal – patient slurs words, uses the wrong words, or is unable to speak

If Cincinnati Prehospital Stroke Scale is positive, perform the Los Angeles Motor Scale (LAMS). Relay LAMS score to the receiving hospital during Stroke Alert notification.

The Los Angeles Motor Scale (LAMS)

Facial droop	
Absent	0
Present	1
Arm drift	
Absent	0
Drifts down	1
Falls rapidly	2
Grip strength	
Normal	0
Weak grip	1
No grip	2

IF PATIENT MEETS ABOVE STROKE CRITERIA, THIS PATIENT IS A PRIORITY 1 PATIENT AND REQUIRES NOTIFICATION OF THE NEAREST DESIGNATED STROKE CENTER OR COMPREHENSIVE STROKE CENTER AS SOON AS POSSIBLE TO ALLOW HOSPITAL PREPARATION. DURING THE CONSULTATION WITH THE RECEIVING FACILITY, THE PROVIDER SHALL USE THE VERBIAGE, “STROKE ALERT” AS THE UNIVERSAL METHOD OF NOTIFYING THE FACILITY THAT THE PATIENT MEETS THE STROKE INCLUSION CRITERIA.

*STROKE TREATMENTS ARE TIME SENSITIVE. REDUCTION IN TIME OF SYMPTOM ONSET TO TREATMENT IMPROVES OUTCOMES.

WHILE STROKES DURING PREGNANCY OR SHORTLY AFTER GIVING BIRTH ARE RARE, THERE HAS BEEN A SIGNIFICANT RISE REPORTED IN THE LITERATURE. MOTHERS-TO-BE AND POSTPARTUM MOTHERS HAVE AN INCREASED RISK.

c) Use glucometer and treat if glucose less than 70 mg/dl.
d) Establish IV access with LR.
e) If the patient is hypotensive, obtain medical consultation.
f) Consider obtaining blood sample using closed system.
g) Do not treat hypertension in the field.

4. Continue General Patient Care.

C. PEDIATRIC DESTINATION DECISION TREE (PDTree) (NEW '18)

1. PURPOSE

This evidence-based decision support tool is designed to assist providers in choosing the facility type most likely to deliver definitive care for pediatric patients requiring transport. This represents an ideal destination choice. Destination selection for any individual patient will include other factors, including transport time, unit availability, and patient/family requests.

2. INDICATIONS

Current Maryland Medical Protocols for EMS Providers (MMP) should take precedence. The PDTree should be applied to patients considered "pediatric" ages by the MMP. For medical pediatric patients, this is birth up to the 18th birthday. For trauma patients, the PDTree may be used for patients from birth up to the 15th birthday. For this research protocol, both trauma and medical pediatric patients will be called "child."

3. CONTRAINDICATIONS

a) Pregnant patients
b) Newly born infants should be transported (with their mother) to the closest appropriate facility able to receive the post-partum mother.

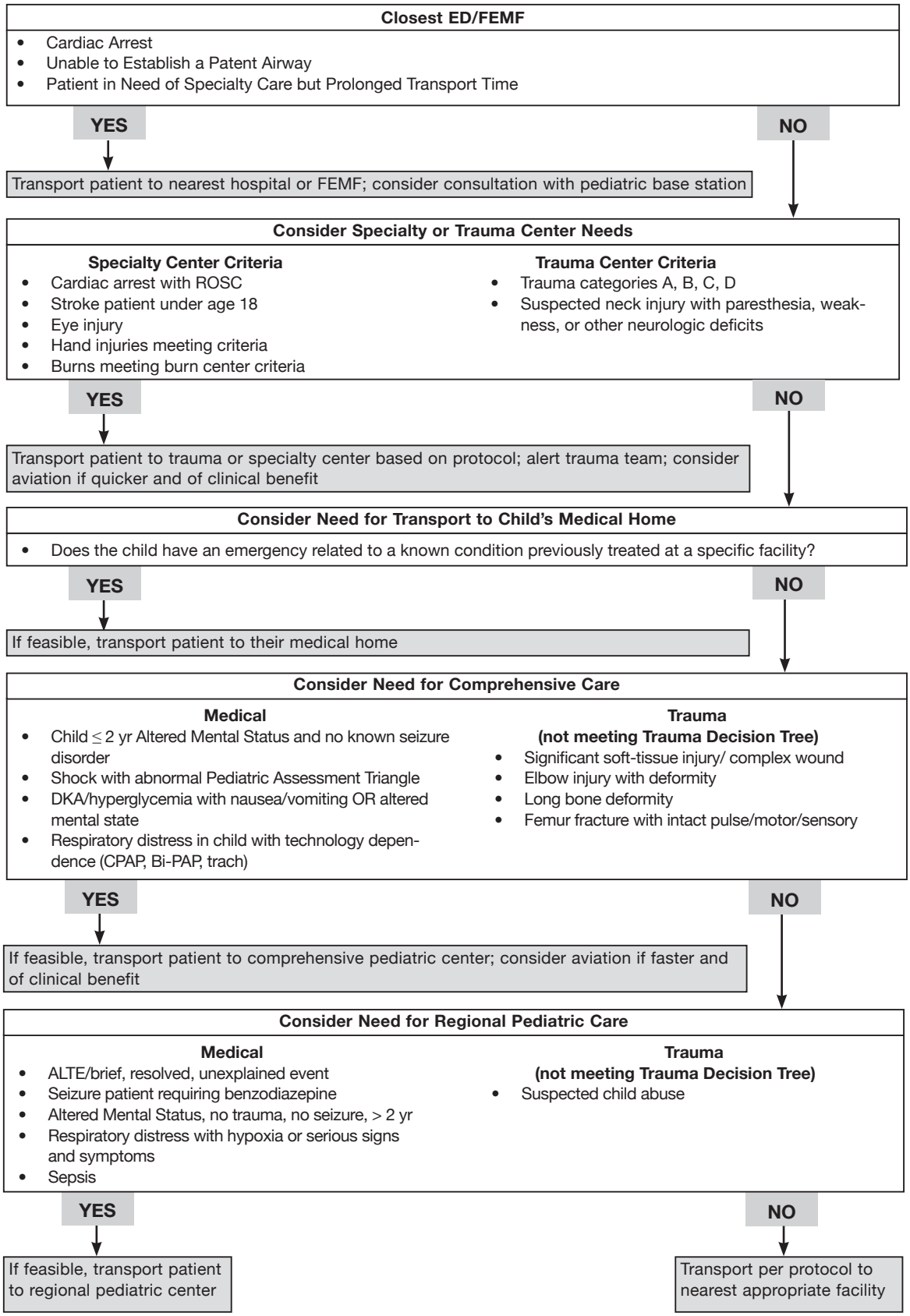
4. DEFINITIONS

a) Pediatric Base Stations currently designated by MIEMSS include Johns Hopkins Hospital Children's Center and Children's National Medical Center. These Pediatric Base Stations may be consulted at any time by any Maryland EMS provider for on-line medical direction and assistance with destination decision-making.
b) Specialty or Trauma Center is defined by current MIEMSS facility designations for Trauma, Eye, Burn, and Pediatric Specialty Centers.
c) Medical Home is defined as the ED/hospital where the patient has their medical records and has established care by specific physicians to address the patient's unique needs. Existing MMP suggests that EMS providers should transport (repatriate) the patient to that hospital as long as that hospital is not more than 15 additional minutes further than nearest hospital (or greater if allowed for by the EMS Operational Program).
d) Comprehensive Pediatric Center is defined as a hospital ED with pediatric ICU on-site.
e) Regional Pediatric Care Center is defined as a hospital ED with inpatient pediatric services and/or a designated pediatric ED staffed by pediatric specialty trained physicians 24/7 or a Freestanding Emergency Medical Facility (FEMF) with designated pediatric ED staffed by pediatric specialty trained physicians 24/7.
f) Nearest Appropriate Facility is defined as the closest hospital ED or FEMF that is available as an EMS transport destination.
g) Feasibility of transport to the suggested destination type is left to the discretion of the EMS Operational Program.

5. PEDIATRIC DESTINATION DECISION TREE (See page 450-5)

CHILDREN WHO ARE IN CARDIAC ARREST, OR IF A PATENT AIRWAY CANNOT BE ESTABLISHED, MUST BE TRANSPORTED TO THE NEAREST APPROPRIATE HOSPITAL-BASED EMERGENCY DEPARTMENT OR DESIGNATED FREESTANDING EMERGENCY MEDICAL FACILITY.

PD Tree


Closest ED/FEMF
• Cardiac Arrest
• Unable to Establish a Patent Airway
• Patient in Need of Specialty Care but Prolonged Transport Time
YES
NO
Transport patient to nearest hospital or FEMF; consider consultation with pediatric base station
Consider Specialty or Trauma Center Needs
Specialty Center Criteria
• Cardiac arrest with ROSC
• Stroke patient under age 18
• Eye injury
• Hand injuries meeting criteria
• Burns meeting burn center criteria
Trauma Center Criteria
• Trauma categories A, B, C, D
• Suspected neck injury with paresthesia, weakness, or other neurologic deficits
YES
NO
Transport patient to trauma or specialty center based on protocol; alert trauma team; consider aviation if quicker and of clinical benefit
Consider Need for Transport to Child's Medical Home
• Does the child have an emergency related to a known condition previously treated at a specific facility?
YES
NO
If feasible, transport patient to their medical home
Consider Need for Comprehensive Care
Medical
• Child ≤ 2 yr Altered Mental Status and no known seizure disorder
• Shock with abnormal Pediatric Assessment Triangle
• DKA/hyperglycemia with nausea/vomiting OR altered mental state
• Respiratory distress in child with technology dependence (CPAP, Bi-PAP, trach)
Trauma
(not meeting Trauma Decision Tree)
• Significant soft-tissue injury/ complex wound
• Elbow injury with deformity
• Long bone deformity
• Femur fracture with intact pulse/motor/sensory
YES
NO
If feasible, transport patient to comprehensive pediatric center; consider aviation if faster and of clinical benefit
Consider Need for Regional Pediatric Care
Medical
• ALTE/brief, resolved, unexplained event
• Seizure patient requiring benzodiazepine
• Altered Mental Status, no trauma, no seizure, > 2 yr
• Respiratory distress with hypoxia or serious signs and symptoms
• Sepsis
Trauma
(not meeting Trauma Decision Tree)
• Suspected child abuse
YES
NO
If feasible, transport patient to regional pediatric center
Transport per protocol to nearest appropriate facility

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