

The Maryland
Medical Protocols
for Emergency Medical Services Providers

Effective July 1, 2013

**Maryland Institute for
Emergency Medical Services Systems**



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

To All Health Care Providers in the State of Maryland:

Re: 2013 revisions, updates, and additions to *The Maryland Medical Protocols for EMS Providers*

EMS providers will be able to download the replacement pages from the MIEMSS website at www.miemss.org and will be receiving a single copy of the 2013 pocket protocols.

The EMS Board has approved these protocols for implementation on July 1, 2013. Prior to July 1, all EMS providers must complete the protocol update “Meet the Protocols” (visit the Online Training Center) that will highlight the new material.

Some major protocol additions, deletions, and changes are listed below, but this list is not comprehensive.

Protocol Changes

- Patient care documentation requirements added to GPC. The Patient Care Report (PCR) will be completed and delivered to the receiving facility as soon as possible, ideally upon transfer of care. If unable to do so, the MIEMSS-approved Short Form must be provided before leaving the receiving facility. The PCR must be completed within 24 hours.
- Patients with penetrating trauma (no blunt trauma) will not receive spinal immobilization
- EMTs will assist patients with the patient’s own fast-acting bronchodilator MDI (expanded to five medications—not just albuterol)
- Delivery time of STEMI patients to STEMI center increased to 45 minutes greater than transport time to nearest ED
- Therapeutic hypothermia—Therapeutic Hypothermia (TH) shall be initiated for post-arrested patients with ROSC and transported by air or ground to a CIC capable of maintaining TH
- Do not apply constricting bands for poisonous snakebites
- Insertion of “stimulant toxicity” protocol — treat with midazolam
- Pain management protocol
 - o ALS intervention indicated as a standing order in adult and pediatric patients with moderate to severe pain that may benefit from opioid administration (rather than an itemized list of indications)
 - o Fentanyl will be an Optional Supplemental Protocol. Either morphine or fentanyl will be required. Jurisdictional EMS Medical Directors may elect to carry morphine alone, Fentanyl alone or both agents for the entire county inventory.
 - o Fentanyl—1 mcg/kg up to 200 mcg (at a rate of 0.5 mcg/kg/minute for peds). Re-assess and document pain, then may re-dose with initial dose stroke, ICD, chest pain, STEMI, and contraindication for neuroprotective hypothermia
- Change in CHF protocol
 - o Removal of furosemide and captopril from formulary
 - o Updated nitroglycerin dosing
 - o Emphasis on early application of CPAP
- Pronouncement of Death in the Field
 - o EMS providers will be enabled to pronounce death in the field
 - o In presuming death, this has been happening de facto. This change will allow EMS providers to legally declare an individual as dead
- Termination of Resuscitation
 - o Exclusions: Arrest secondary to hypothermia/submersion, pregnant patient, patient not reached 18th birthday
 - o Medical arrest:
 - EMS providers can terminate without medical consult when all of the following criteria are met
 - Arrest not witnessed by EMS provider
 - Non-shockable rhythm (AED), or manual monitor with asystole or PEA
 - No ROSC despite 15 minutes of EMS CPR and other appropriate treatment
 - EMS providers can terminate with medical consult if no ROSC despite 15 minutes of EMS CPR and other appropriate treatment in the presence of a shockable rhythm or an arrest witnessed by an EMS provider

- o Trauma arrest:
 - EMS providers can terminate without medical consult when there are no signs of life and the patient is in asystole
 - EMS providers can terminate with medical consult
 - Blunt trauma-- when there are no signs of life and the patient is in a rhythm other than asystole with no ROSC despite 15 minutes of EMS CPR and other appropriate treatment
 - Penetrating trauma-- when there are no signs of life and the patient is in a rhythm other than asystole and there is no ROSC
 - o If less than 15 minutes from a trauma center, patient should be transported
 - o If greater than 15 minutes from a trauma center, provider should consult for orders to terminate
- Add to ALS scope the maintenance of interfacility sodium bicarbonate drip
- Expansion of the indications for performing of 12 lead EKG procedure
- Video Laryngoscopy
 - o Expanded video laryngoscope device options (deleted “Glidescope Ranger”)
 - o Device must have a color monitor, anti-fog mechanism, and recording capability
 - o Remains a pilot program requiring EMS Medical Director and State EMS Medical Director approval
 - o Training and documentation requirements spelled out
- RAMPART research protocol was completed and published in JAMA (RAMPART protocol deleted)

Remember: it is the responsibility of each provider to review the 2013 material to ensure he/she is familiar with the revisions. If you have any questions regarding the update, please contact the Office of the State EMS Medical Director at 410-706-0880. Thank you for your hard work and dedication.

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

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

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IMPORTANT NUMBERS (Continued)



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

8. Poison Control Centers
 - a) Maryland Poison Center/University of Maryland School of Pharmacy, Baltimore **(800) 222-1222**
 - b) National Capital Poison Center, Washington, DC **(800) 222-1222**
9. In-Patient Hospice Facilities
 - a) Hospice of Baltimore–Gilchrist Center **(443) 849-8200**
 - b) Joseph Richey Hospice–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, MD
346	26th Street Medical Center, Ocean City, MD
379	63rd Street Medical Center, Ocean City, MD
380	75th Street Medical Center, Ocean City, MD
347	93rd Street Medical Center, Ocean City, MD
409	126th Street Medical Center, Ocean City, MD
527	Adventist Behavioral Health - Rockville
529	Adventist Rehabilitation Hospital - Rockville
751	Alfred I. DuPont Hospital for Children (formerly Alfred I. DuPont Institute)
492	Alleghany General Hospital, Alleghany, PA (former facility code 422)
397	Altoona Rehabilitation Hospital
231	Andrew Rader Clinic, VA
221	Anne Arundel Medical Center (Base Station, Cardiac Intervention, Primary Stroke)
382	Anne Arundel Medical Park
550	Annie M. Warner Hospital
381	Atlantic General Hospital (Base Station, Primary Stroke)
590	Baltimore City Public Service Infirmary (former facility code 520)
222	Baltimore Washington Medical Center (Base Station, Cardiac Intervention, Primary Stroke)
350	Bayhealth Medical Center, Kent Hospital (formerly Kent General, Cardiac Intervention)
359	Bayhealth Medical Center, Milford Hospital (formerly Milford Memorial Hospital)
234	Beebe Medical Center Millville Center, DE
358	Beebe Medical Center Sussex County, DE
208	Bon Secours Hospital
353	Bowie Health Center
235	Brooke Lane Psychiatric Center
236	Brunswick Medical Center
553	Bryn Mawr Hospital
752	Bryn Mawr Rehabilitation Hospital
754	Bryn Mawr Rehabilitation Hospital at Maryland General
771	Calvert County Nursing Home Center
266	Calvert Memorial Hospital (Base Station, Primary Stroke)
554	Carlisle Regional Medical Center, PA
555	Carpenter's Clinic
219	Carroll Hospital Center (Base Station, Cardiac Intervention)
755	Central Industrial Medical Center
276	Chambersburg Hospital, PA
284	Charlestown Area Medical Center
241	Chemtrec Chemical Manufacturers Association Chemical Transportation Emergency Center, Washington, DC
296	Chester River Hospital Center (formerly Kent & Queen Anne's Hospital) (Base Station)
243	Chestnut Lodge Hospital
225	Children's Hospital & Center for Reconstructive Surgery - Baltimore, MD
756	Children's Hospital of Philadelphia, PA
317	Children's National Medical Center, DC (Neonatal, Pediatric Base Station, Pediatric Burn, Pediatric Trauma)
304	Christiana Care Health Systems, Christiana Hospital (Cardiac Intervention)

Code	Health Care Facility Name
299	Christiana Care Health Systems, Wilmington Hospital
341	City Hospital, Martinsburg, WV
291	Civista Medical Center (Base Station, Primary Stroke)
245	Columbia Hospital for Women Medical Center, Washington, DC
383	Columbia Medical Plan
757	Cooper Trauma Center, NJ
248	Crownsville State Hospital
252	Cullen Center
342	DC General Hospital (Neonatal)
293	Deer's Head State Hospital
556	Delaware Memorial Hospital, DE
256	DeWitt Army Hospital, VA
329	Doctor's Community Hospital (formerly Doctor's Hospital of P.G. Co.) (Base Station)
257	Dominion Hospital, VA
294	Dorchester General Hospital
310	Dover U.S. Air Force Clinic (formerly Dover U.S. Air Force Hospital)
302	DuPont Memorial Hospital
491	Eastern Neurological Rehabilitation Hospital (formerly facility code 421)
331	Eastern Shore State Hospital
557	Elizabethtown Children's Hospital
306	Ellsmere Veteran's Administration Hospital, DE
558	Emmitsburg Hospital
258	Finan Center
279	Fort Dietrick Medical Center
247	Fort Howard Veteran's Administration Hospital
522	Fort Washington Hospital
203	Franklin Square Hospital Center (Base Station, Cardiac Intervention, Primary Stroke)
239	Frederick Memorial Hospital (Base Station, Cardiac Intervention, Perinatal)
253	Freeman Hospital
286	Fulton County Medical Center, PA
322	Garrett County Memorial Hospital (Base Station)
580	Geisinger Medical Center, PA
335	George Washington University Hospital, DC
337	Georgetown University Hospital, DC
240	Gettysburg Hospital, PA
759	Gladys Spellman Nursing Center
226	Good Samaritan Hospital of Maryland (Base Station, Primary Stroke)
559	Grant Memorial Hospital
217	Greater Baltimore Medical Center (Base Station, Primary Stroke, Neonatal)
261	Greater Northeast Medical Center, DC (see also Northeast Georgetown #313)
316	Greater Southeast Community Hospital, DC
760	The Greenery
348	Groupe Memorial Hospital
263	Gundry Hospital
363	Hadley Memorial Hospital, DC
560	Hagerstown State Hospital
561	Hampshire Memorial Hospital, WV

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

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

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

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

D. MARYLAND TRAUMA AND SPECIALTY REFERRAL CENTERS

Trauma Centers

Primary Adult Resource Center

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

Level I Trauma Center

- Johns Hopkins Hospital Adult Trauma Center, Baltimore

Level II Trauma Centers

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

Level III Trauma Centers

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

Out-of-State Centers

- Christiana Care Health Systems, Wilmington, DE
- Washington Hospital Center, Washington, DC

Specialty Referral Centers

Eye Trauma

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

Hand/Upper Extremity Trauma

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

Hyperbaric Medicine

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

Neurotrauma (Head and Spinal Cord Injuries)

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

Pediatric Trauma

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

Burns

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

MARYLAND TRAUMA AND SPECIALTY REFERRAL CENTERS (Continued)

Specialty Referral Centers

Perinatal Referral Centers

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

Primary Stroke

- Anne Arundel Medical Center, Annapolis
- Atlantic General Hospital, Berlin
- Baltimore-Washington Medical Center, Glen Burnie
- Calvert Memorial Hospital, Prince Frederick
- Civista Medical Center, La Plata
- Franklin Square Hospital Center, Baltimore
- Frederick Memorial Hospital, Frederick
- Good Samaritan Hospital, Baltimore
- Greater Baltimore Medical Center, Baltimore
- Harbor Hospital Center, Baltimore
- Harford Memorial Hospital, Havre De Grace
- Holy Cross Hospital, Silver Spring
- Howard County General Hospital, Columbia
- The Johns Hopkins Bayview Medical Center, Baltimore
- The Johns Hopkins Hospital, Baltimore
- Maryland General Hospital, Baltimore
- Memorial Hospital at Easton
- Mercy Hospital Center, Baltimore
- Meritus Medical Center, Hagerstown
- Montgomery General Hospital, Olney
- Northwest Hospital, Baltimore
- Peninsula Regional Medical Center, Salisbury
- Shady Grove Adventist Hospital, Gaithersburg

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



NEVER WITHHOLD OXYGEN FROM A PATIENT IN RESPIRATORY DISTRESS!

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

4. Circulation



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

PERFORM CPR WHILE PREPARING FOR RHYTHM ANALYSIS AND DEFIBRILLATION (**NEW '13**)



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

5. Disability
 - a) Perform Mini-Neurologic Assessment (Pulse/Motor/Sensory).
 - b) Cervical Spine Immobilization
 - (1) The provider shall determine the appropriate device for use in spinal immobilization of the patient. Infant or child car seats may NOT be used as a spinal immobilization device for the pediatric patient.
 - (2) If patient presents with any blunt traumatic mechanism which could cause cervical spine injury and meets ANY of the following criteria, complete Spinal Immobilization (C-spine and back maintaining neutral alignment and padding when appropriate) should occur. **(NEW '13)**
 - (a) History of Loss of Consciousness (LOC) or Unconscious?
 - (b) Disoriented or altered level of consciousness?
 - (c) Suspected use of Drugs or Alcohol?
 - (d) Midline Cervical Tenderness or Pain?
 - (e) Focal Neurologic Deficit?
 - (f) Has a painful distracting injury that could mask cervical pain or injury?
 - (g) Child less than 8 years of age
 - (3) If NO to all of the above, transport as appropriate.

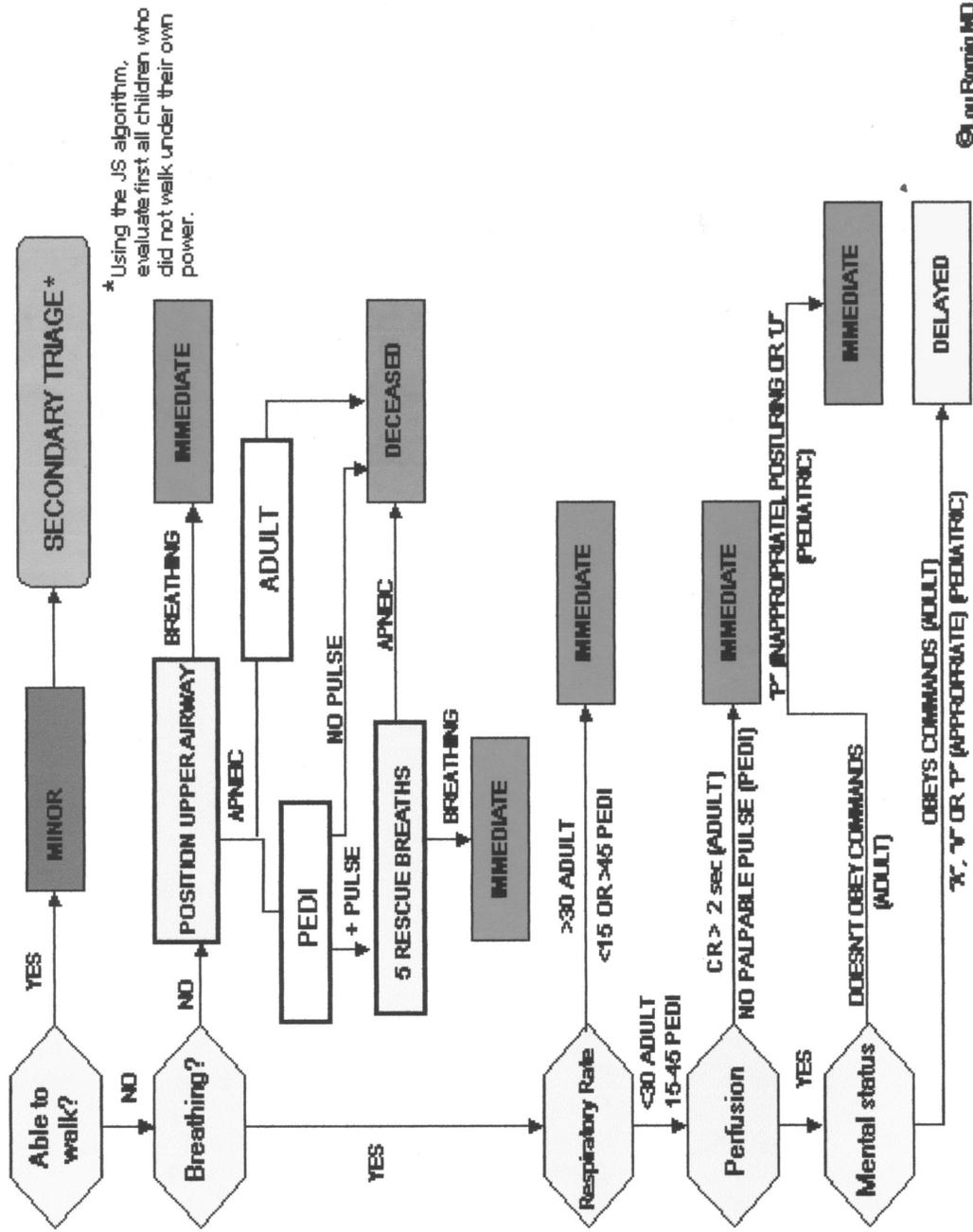


IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, PERFORM A COMPLETE SPINAL IMMOBILIZATION.

6. Exposure

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

Combined START/JumpSTART Triage Algorithm



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E. HISTORY AND PHYSICAL EXAMINATION/ASSESSMENT

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

F. TREATMENT PROTOCOLS

1. Refer to **ALL** appropriate protocols
2. Patients who have had an impaled electric conductive device used on them will be transported to the nearest appropriate facility without dart removal (Exception Tactical EMS).
3. Providers may assist the patient or primary caregiver in administering the patient's prescribed rescue medication.
 - a) BLS providers may assist with the administration of the patient's fast-acting bronchodilator (**NEW '13**) MDI and sublingual nitroglycerin.
 - b) ALS providers may administer the patient's prescribed benzodiazepine for seizures, Factor VIII or IX for Hemophilia A or B, or re-establish IV access for continuation of an existing vasoactive medication.
 - c) Providers should obtain on-line medical direction to administer other prescribed rescue medications not specifically mentioned in the *Maryland Medical Protocols for EMS Providers* (e.g. Solucortef for Adrenal Insufficiency). The rescue medication must be provided by the patient or caregiver and the label must have the patient's name and the amount of medication to be given.



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 and 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.
 - d) Destination consideration:

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

G. COMMUNICATIONS

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



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

4. If medical consultation is genuinely unavailable, or if the time necessary to initiate consultation significantly compromises patient care, the provider shall proceed with additional protocol directed care, so long as transport will not be significantly delayed. “Exceptional Call” must be indicated on the Patient Care Report (PCR).
5. Trauma Communications
The following information must be communicated to the appropriate Trauma Center and/or Local Hospital
 - a) Patient’s age, injuries, ETA
 - b) Number of victims
 - c) Detailed description of the incident.
 - d) Provide patient Trauma Decision Tree Category (Alpha, Bravo, Charlie, Delta)
 - e) Provide assigned patient priority (1 to 4)
 - f) Pertinent patient signs and symptoms (e.g. HR, RR, BP, Pulse Ox and GCS)



CONSIDER ACTIVATION OF THE GO-TEAM FOR SERIOUSLY INJURED PATIENTS WHO REQUIRE A PROLONGED EXTRICATION AND WHO MEET THE INDICATIONS FOR GO-TEAM ACTIVATION.

6. Mass Casualty Incident (MCI) Communications
 - a) When a local jurisdiction declares an MCI, it is extremely important to maximize patient care resources and reserve EMS communications for emergent situations. Except for extraordinary care interventions, EMS providers may perform all skills and administer medications within protocol, during a declared MCI. When the MCI condition is instituted, the Exceptional Call box must be checked on the PCR.
 - b) During an MCI, the EMS Officer-in-Charge (OIC) shall designate an EMS Communicator who shall establish appropriate communications.
7. Communications with and through EMRC/SYSCOM are recorded. In addition, as part of the quality assurance and quality improvement process, communications with hospitals are frequently recorded. Therefore, you should assume that all your communications among EMS providers, hospitals, public safety communications centers, and EMRC/SYSCOM are being recorded.

H. REASSESSMENT

1. Reassess unstable patients frequently (recommended every 5 minutes).
2. Reassess stable patients at a minimum of every 15 minutes.
3. Reassess patients being discharged to home or long-term care at the beginning and end of the transport or more frequently, at the provider's discretion. **(NEW '13)**

I. DISPOSITION

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



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

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

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

3. Status

Evaluate the need for emergent versus non-emergent transportation.



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

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

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

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

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

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

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

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

K. DOCUMENTATION

A Patient Care Report (PCR) will be completed and delivered to the receiving facility as soon as possible, ideally upon transfer of care. If this is not immediately possible, providers must provide documentation of the patient's prehospital care on a template and in a format provided or approved by MIEMSS for inclusion in the patient care record before leaving the receiving facility, then deliver the completed PCR within 24 hours after transfer of care, in compliance with COMAR 30.03.04.04. **(NEW '13)**

L. CONFIDENTIALITY

Patient confidentiality must be maintained at all times.

M. PROFESSIONAL CONDUCT

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

B. ALTERED MENTAL STATUS: SEIZURES (NEW MAY 2012)

1. Initiate General Patient Care.

2. Presentation

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



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

3. Treatment



a) If the patient is still seizing:

(1) DO NOT RESTRAIN.

(2) Protect patient from further injury.

(3) Consider cause of seizure activity.

b) When seizure activity has stopped

(1) Identify and treat injuries.

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



c) Initiate IV LR KVO.

d) Use glucometer and treat accordingly.

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

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

(Reduce by 50% for patients 69 years or older)

If IV unavailable, 5 mg IM may be administered

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

If patient is in status, consider IO administration of midazolam

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

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

ALTERED MENTAL STATUS: SEIZURES (Continued)

Maximum dose 10 mg

If patient is status, consider IO administration of diazepam.

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



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



f) If the patient is still seizing:

(1) DO NOT RESTRAIN

(2) Protect from further injury.

(3) Consider underlying cause of seizure.

g) When seizure activity has stopped:

(1) Identify and treat any injuries.

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



h) Initiate IV/IO.

i) Use glucometer and treat accordingly.

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



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

k) The paramedic may assist patients with the administration of their prescribed benzodiazepine.



l) Consider midazolam for seizures lasting greater than 10 minutes (Paramedic may perform without consult for patients with active seizures).

0.1 mg/kg in 2 mg increments slow IV push over one to two minutes
Maximum total dose 5 mg

ALTERED MENTAL STATUS: SEIZURES (Continued)

If IV unavailable, administer 0.2 mg/kg IM

Maximum single dose 5 mg

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



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

If midazolam is not available, consider Diazepam for seizures lasting greater than 10 minutes (Paramedic may perform without consult for patients with active seizures.)

Up to 0.2 mg/kg rectal

Maximum total dose 10 mg

OR

0.1 mg/kg in 2.5 mg increments SLOW IVP/IO/IM (IM requires all providers to obtain medical consultation.)

Maximum total dose 5 mg

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

4. Continue General Patient Care.

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

d) Consider obtaining blood sample using closed system.

e) **If patient has constricted pupils, respiratory depression, is unresponsive, and the provider strongly suspects a narcotic overdose,**
Administer naloxone
0.4 - 2 mg SLOW IVP/IO/IM/Intranasal (If delivery device is available - divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril) **(NEW '13)**
Titrate to adequate respiratory effort.

f) Use glucometer and treat accordingly.

g)  Consider an additional dose of naloxone.

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

ALTERED MENTAL STATUS: UNRESPONSIVE PERSON (Continued)



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



-
- k) Initiate IV/IO KVO.
 - (1) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
OR
For volume-sensitive children administer initial fluid bolus of 10 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 10 mL/kg LR IV/IO.

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

- (2) Consider obtaining blood sample using closed system.
- l) Use glucometer and treat accordingly.
- m) **If patient has constricted pupils, respiratory depression, is unresponsive, and the provider strongly suspects a narcotic overdose,** Administer naloxone 0.1 mg/kg SLOW IVP/IO/IM/Intranasal (If delivery device is available- divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril) (**NEW '13**)
Maximum dose 0.4-2 mg

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

4. Continue General Patient Care.

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) Constantly monitor airway and reassess vital signs every 5 minutes.



d) Initiate IV LR KVO.

e) If patient is hemodynamically unstable: Initiate Transcutaneous Pacing.

f) If transcutaneous pacing 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/minute.

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

(1) Consider/Prepare for Transcutaneous Pacing.

(2) If patient develops discomfort with TCP

Administer opioid per Pain Management protocol. **(NEW '13)**

OR

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

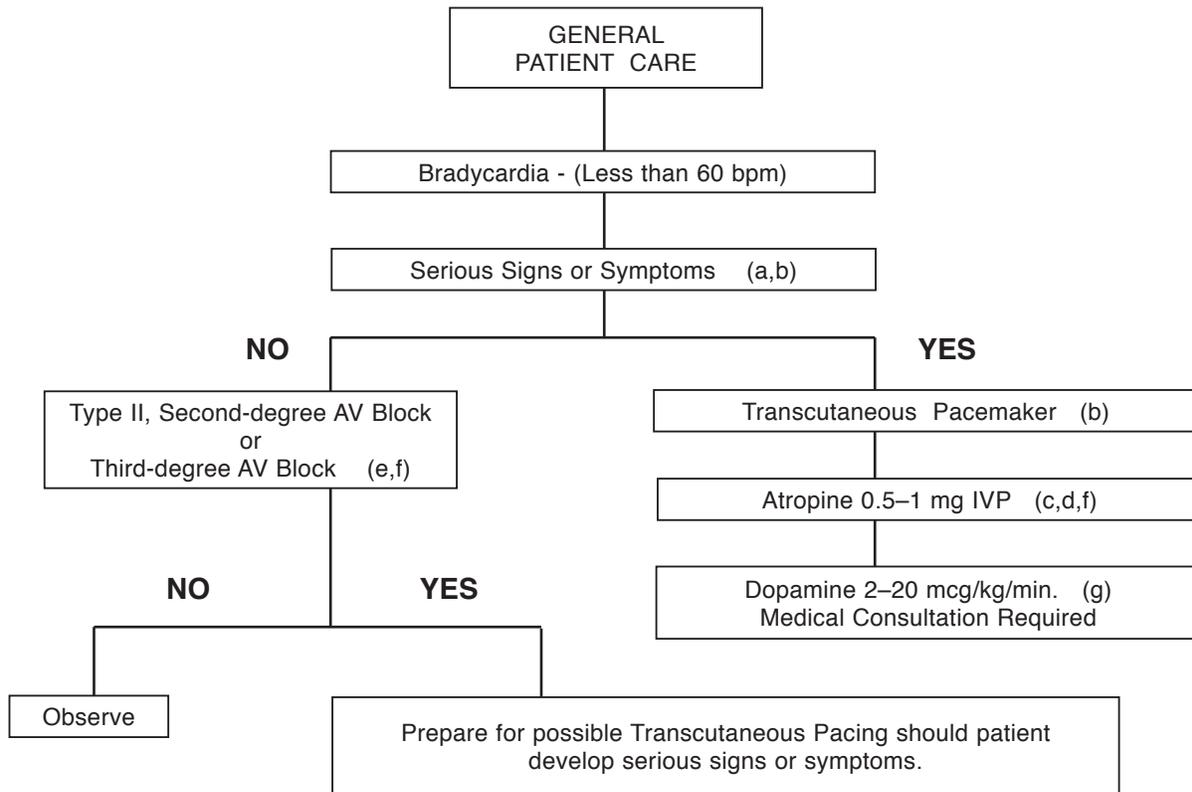
(Reduce by 50% for patients 69 years or older.)

i) Refer to appropriate algorithm.



4.

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.

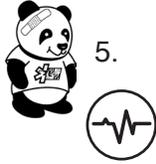
(c) - Denervated transplanted hearts will not respond to atropine. Go at once to TCP.

(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). **(NEW '13)**

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

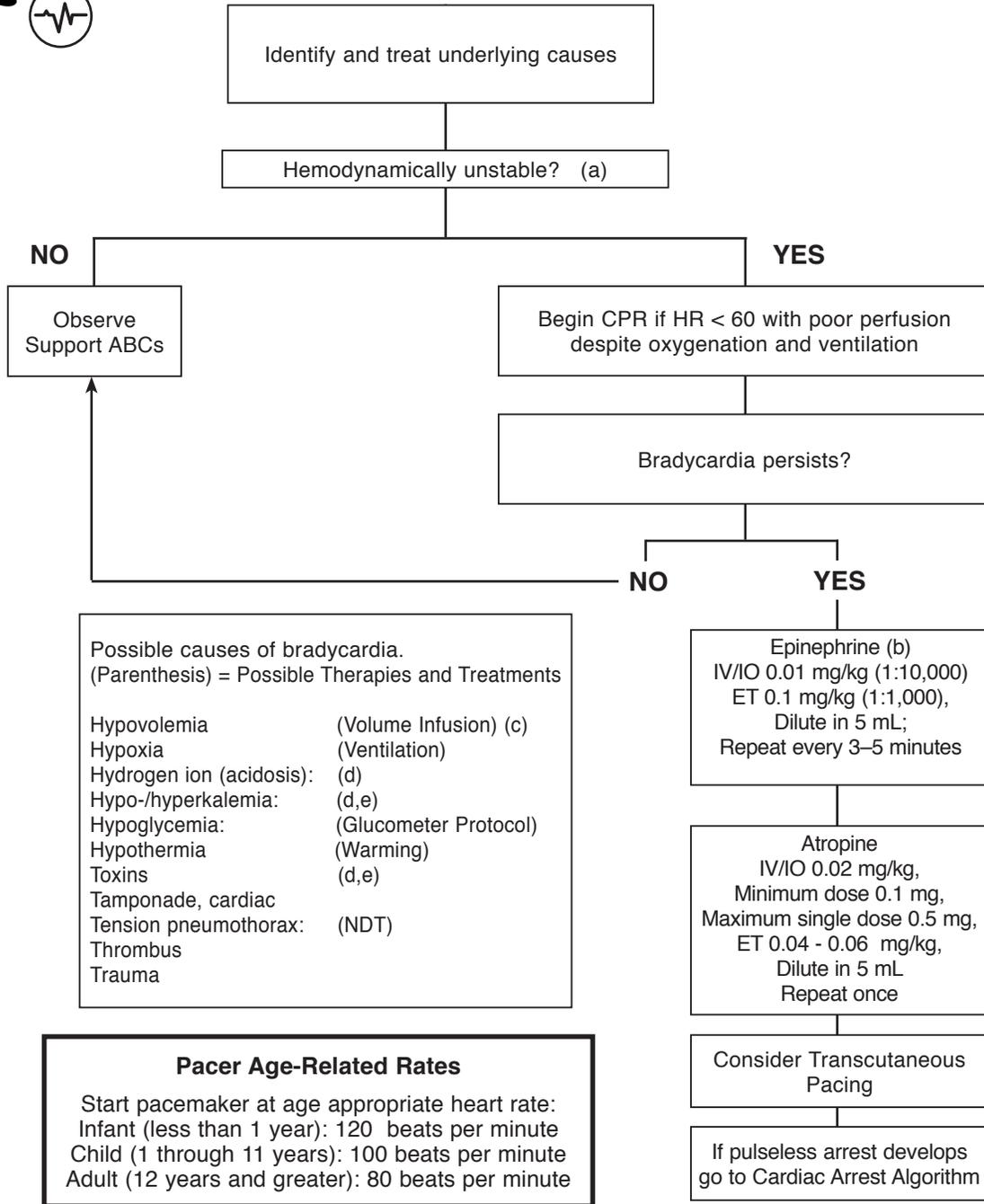
(f) - In the presence of Mobitz II and third-degree AV block, medical consultation is required for atropine administration.

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



5.

PEDIATRIC BRADYCARDIA ALGORITHM



(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 $[70 + (2 \times \text{years}) = \text{systolic BP}]$ for patients greater than 1 year of age.

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

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

(d) - Sodium Bicarbonate, 1mEq/kg with medical consultation. See Sodium Bicarbonate.

(e) - Calcium Chloride, 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min). Max dose 1 gram.

H. CARDIAC EMERGENCIES: CARDIAC ARREST

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



3. Treatment
 - a) Perform CPR.



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

PERFORM CPR WHILE PREPARING FOR RHYTHM ANALYSIS AND DEFIBRILLATION.
(NEW '13)

- b) Utilize AED as appropriate.
- c) Transport
 - (1) If no shock indicated, consider Termination of Resuscitation Protocol or transport immediately. **(NEW '13)**
 - (2) If shock indicated, defibrillate and resume CPR. Consider Termination of Resuscitation Protocol or transport ASAP. **(NEW '13)**
 - (3) If ROSC, transport to a cardiac intervention center via air or ground.
 - (4) If no ROSC, consider Termination of Resuscitation Protocol or transport to the closest appropriate facility. **(NEW '13)**



- d) Identify rhythm and treat according to appropriate algorithm.
- e) If no ROSC, consider Termination of Resuscitation Protocol or transport to the closest appropriate facility. **(NEW '13)**
- f) If ROSC, initiate neuroprotective hypothermia. Transport the patient to the nearest Cardiac Intervention Center by ground as long as the transport time is not more than 30 minutes greater than transport to the nearest ED that can perform neuroprotective hypothermia. Consider helicopter transport for prolonged transports.
- g) When indicated and based on the EMS provider's report, the Base Station physician at the receiving Cardiac Intervention Center will activate its Cardiac Intervention Team.



For patients who have not reached their 18th birthday:

- h) Identify rhythm and treat according to appropriate algorithm.
- i) If no ROSC, transport to the closest appropriate facility.
- j) If ROSC, 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 ED.

I. CARDIAC EMERGENCIES: CHEST PAIN/ACUTE CORONARY SYNDROME

1. Initiate General Patient Care.

2. Presentation

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

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



ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH OR DIFFICULTY BREATHING.

3. Treatment



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



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

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

- f)  Additional doses of nitroglycerin require medical consultation.



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

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

- j) If patient does **not** have a prescription or previous history of nitroglycerin use, an IV must be established prior to administration; then administer nitroglycerin as above.
- k) If IV cannot be established, nitroglycerin may be administered with medical consultation.
- l) Identify rhythm and treat according to appropriate algorithm.
- m)  Administer additional doses of nitroglycerin.
- n) Administer opioid per Pain Management protocol. **(NEW '13)**



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

- 4. Continue General Patient Care.

J-1. CARDIAC EMERGENCIES: IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD) MALFUNCTION

1. Initiate General Patient Care.

2. Presentation

An implantable cardioverter defibrillator (ICD) is a device that delivers an internal defibrillation (shock) whenever the patient's heart rhythm/rate exceeds defined limits. EMS providers may encounter ICD devices which are appropriately or inappropriately delivering shock therapy. Internal shocks cause patient discomfort but **DO NOT** pose a danger to EMS personnel even when in direct contact with patient receiving an internal shock.



3. Treatment

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



IF PATIENT IS IN CARDIAC ARREST, PERFORM CPR AND USE AED AS APPROPRIATE DESPITE THE PATIENT'S ICD WHICH MAY OR MAY NOT BE DELIVERING SHOCKS.



- d) Initiate IV LR KVO.
- e) Monitor cardiac rhythm and treat according to appropriate algorithm(s).
- f) ICD deactivation: Patient must meet the following criteria:
 - (1) Three or more distinct shocks and
 - (2) Obvious device malfunction with an EMS provider-witnessed inappropriate shock
(e.g., alert patient in atrial fibrillation with rapid ventricular rate or SVT)
- g) Place an EMS donut magnet directly over device. Magnet placed directly over will deactivate device and shocks will not be delivered. After defibrillator is deactivated, tape magnet firmly in place and treat according to the appropriate algorithm(s).



IF THE PATIENT HAS A COMBINATION ICD AND PACEMAKER, DEACTIVATING THE ICD MAY OR MAY NOT DEACTIVATE THE PACEMAKER.

- h) Regardless of the decision to deactivate the ICD device, be prepared to manage the underlying rhythm (e.g., treat wide complex tachycardia with cardioversion or lidocaine per protocol as appropriate).



IF PATIENT BECOMES UNSTABLE OR IN THE EVENT OF A RHYTHM CHANGE WHERE A SHOCK IS DESIRED, REMOVE THE MAGNET TO REACTIVATE THE ICD. IF REACTIVATION DOES NOT OCCUR, USE MANUAL DEFIBRILLATOR IN ACCORDANCE WITH TACHYCARDIA PROTOCOL.

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

- i) If ICD deactivation indications are questionable or deactivation is unsuccessful (or a donut magnet is not available) and undesired shocks continue, medications may be administered for patient comfort.

(1) Administer opioid per Pain Management protocol. **(NEW '13)**

OR



(2) Midazolam 0.1 mg/kg (2-5 mg) slow IVP/IM/IO (Paramedic may perform without consult.)

IM administration requires all providers to obtain consultation.

- j) Transport to the closest appropriate facility.

- k) Continue general patient care.



Consult a pediatric base station for children (who have not reached their 18th birthday) with an ICD device delivering shock therapy or malfunctioning.

- l) If ICD deactivation indications are questionable or deactivation is unsuccessful (or a donut magnet is not available) and undesired shocks continue, medications may be administered for patient comfort.

(1) Administer opioid for Pain Management protocol. **(NEW '13)**

OR



(2) Midazolam 0.1 mg/kg slow IV/IO over 1-2 minutes. Maximum single IV/IO dose 2 mg. Maximum total dose 5 mg. If IV cannot be established, administer 0.2 mg/kg IM. Max single IM dose is 5 mg. (IM requires all providers to obtain medical consultation.) Maximum total dose 5 mg.

- m) Transport to the closest appropriate facility.

- n) Continue general patient care.

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

1. Initiate General Patient Care.
2. Presentation



ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS SHORTNESS OF BREATH, CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH OR DIFFICULTY BREATHING.

Inclusion Criteria:

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

- a) Anterior, Inferior, or Lateral MI: ST elevation greater than 1 mm in two or more contiguous leads **and**
QRS complex is narrower than 0.12 seconds; (if wider than 0.12, you are unable to diagnose as STEMI)

OR

- b) Posterior MI: ST depression greater than 1 mm in V1 and V2 with an R/S ratio of greater than or equal to one **and**
QRS complex is narrower than 0.12 seconds; (if wider than 0.12, you are unable to diagnose as STEMI)

OR

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



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

3. Treatment



- a) Follow Chest Pain Protocol for nitrate, aspirin, and pain management.
- b) If patient meets above STEMI criteria, this patient is a priority 1 patient and requires a medical consult.
- c) If a patient meets one of the above condition sets for STEMI inclusion criteria, the patient shall be transported to the closest Cardiac Intervention Center by air or ground as long as the delivery time is not more than 45 minutes greater than transport to the nearest ED. **(NEW '13)**
 - (1) When indicated and based on the EMS provider's report, the Base Station physician at the receiving Cardiac Intervention Center will activate its Cardiac Intervention Team.

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

- (2) The receiving Emergency Department physician will determine if the patient can bypass the Emergency Department and go directly to the cardiac catheterization lab to meet the cardiac interventional team.
- (3) If the patient cannot be delivered to a Cardiac Intervention Center within the allotted time, complete the Fibrinolytic Therapy Checklist for STEMI.
 - (a) If the patient meets all of the criteria for fibrinolytic therapy, transport to the nearest ED.
 -  (b) If the patient does not meet all of the criteria for fibrinolytic therapy, consult with the nearest Cardiac Intervention Center and the nearest ED to determine the most appropriate receiving facility.
- f) If patient does not have ECG ST elevations greater than 1mm in two contiguous leads, the patient shall be transported to the closest appropriate facility.
- g) Patient who presents with inferior wall MI (perform right side V4R to rule out right ventricular involvement- if ST elevation present in V4R withhold nitrates), clear lung sounds, and hypotension (90 systolic) (40% of inferior wall MI have right ventricular infarction) should be given a fluid bolus of 250-500 mL of Lactated Ringer's. For additional bolus, perform medical consult.



CONSULT A PEDIATRIC BASE STATION FOR CHILDREN WHO HAVE **NOT** REACHED THEIR 18TH BIRTHDAY WITH ST ELEVATIONS.

Fibrinolytic Therapy Checklist for STEMI (NEW '13)

Use this checklist if a STEMI patient cannot be delivered to a Cardiac Intervention Center within 45 minutes greater than transport to the nearest ED. All of the "YES" boxes and all of the "NO" boxes must be checked before a patient should be transported to a the nearest emergency department.

INCLUSION CRITERIA

(All of the "YES" boxes must be checked)

YES

- 18 years of age or older
- Signs and symptoms of STEMI
- Patient cannot be delivered to a Cardiac Intervention Center, within 45 minutes greater than transport to the nearest ED

EXCLUSION CRITERIA

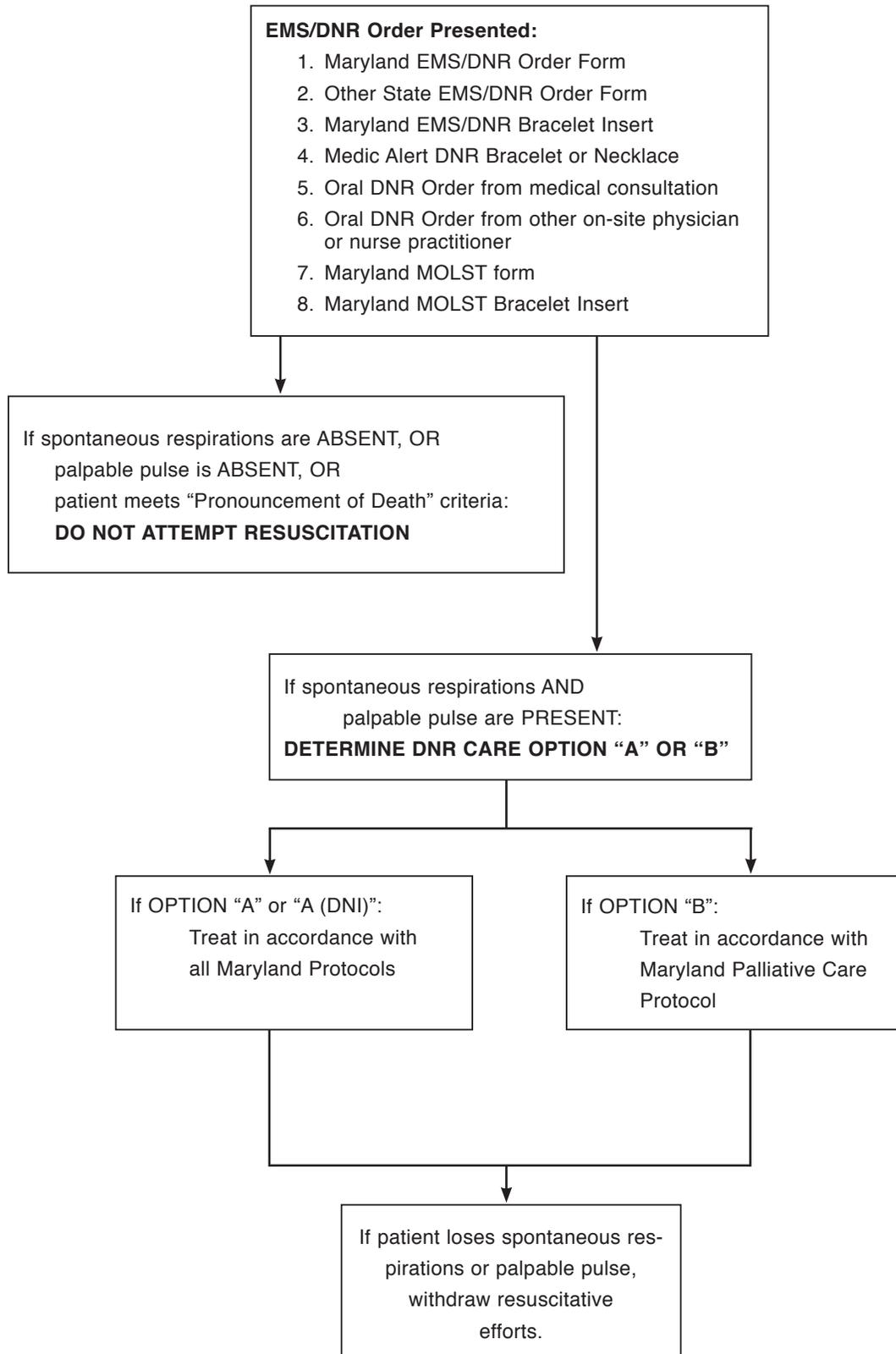
(If any of the "NO" are unchecked, provider **must consult** with a Cardiac Intervention Center and nearest ED to determine most appropriate receiving facility.)

PATIENT HAS NO:

- | | |
|--|--|
| <input type="checkbox"/> Active internal bleeding (eg. GI or urinary bleeding within the last 21 days) | <input type="checkbox"/> Within 14 days of major surgery or serious trauma |
| <input type="checkbox"/> Known bleeding disorder | <input type="checkbox"/> History of intracranial hemorrhage |
| <input type="checkbox"/> Within 3 months of intracranial surgery, serious head trauma, or stroke | <input type="checkbox"/> Witnessed seizure at onset |
| | <input type="checkbox"/> History of cancer of the brain |

P. EMS DNR Flowchart Effective 07/01/11

(Reference DNR Appendix in this document for a thorough explanation.)



Q. ENVIRONMENTAL EMERGENCIES: COLD EMERGENCIES (FROSTBITE)

1. Initiate General Patient Care.

2. Presentation

Exposure to cold environment (not necessarily outdoors). Frostbite usually affects the feet first followed by the hands, face, and/or ears. The skin initially appears reddened, then turns mottled, bluish, white and/or gray with continued freezing of the flesh. Pain persists during initial stages followed by numbness.

3. Treatment



a) Remove patient from cold environment.

b) Handle potential frostbitten areas gently.

c) Cover lightly with gauze.

d) Protect from further heat loss.



DO NOT RUB THE AFFECTED AREAS, AS THIS WILL CAUSE MORE DAMAGE TO THE FROZEN TISSUE.



e) Initiate IV LR KVO, if appropriate.

f) Administer opioid per Pain Management Protocol. **(NEW '13)**

PEDIATRIC SECTION ON NEXT PAGE

ENVIRONMENTAL EMERGENCIES: COLD EMERGENCIES (FROSTBITE) (Continued)



- g) Remove patient from cold environment.
- h) Handle potential frostbitten areas gently.
- i) Cover lightly with gauze.
- j) Protect from further heat loss



-
- k) Consider IV/IO LR KVO.
 - l) Administer opioid per Pain Management Protocol. **(NEW '13)**
4. Continue General Patient Care.

R. ENVIRONMENTAL EMERGENCIES: COLD EMERGENCIES (HYPOTHERMIA)

1. Initiate General Patient Care.
2. Presentation
 - a) Mild to moderate hypothermia (90°-95° F)
Core body temperature (if available) less than 95° F but greater than 90° F. Patient may present with a history of exposure to cold, altered level of consciousness, shivering, stiffness of muscles, stumbling or staggering gait, cool or cold skin, mottled or pale skin, absent or difficult to detect respiratory effort and/or peripheral pulses, respiratory and/or cardiac arrest.
 - b) Severe hypothermia (less than 90° F)
Core body temperature (if available) less than 90° F. Patient may present with any of the symptoms listed above except shivering.



HANDLE ALL HYPOTHERMIC PATIENTS CAREFULLY. ROUGH HANDLING MAY PRECIPITATE CARDIAC ARREST.

IF HYPOTHERMIA IS SUSPECTED AND THE PATIENT DOES NOT HAVE INJURIES INCOMPATIBLE WITH LIFE, THE PATIENT SHOULD BE RESUSCITATED.

3. Treatment



- a) Remove the patient from the cold environment.
- b) Avoid further heat loss by removing wet clothing, replacing with dry blankets and insulating material. Use a thermal type blanket and special attention to covering the patient's head.
- c) PASSIVELY re-warm patient within a warm environment.
- d) If available, administer warmed oxygen.



ADMINISTER SHOCK(S) WITH THE AED IF INDICATED.

- e)  For further AED shocks, obtain medical consultation.

FF. OVERDOSE/POISONING: INJECTION

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

3. Treatment



- a) Identify markings (insects, bites, needlestick, etc.).
- b) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity. **(NEW '13)**
- 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 auto-injector 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) Initiate IV LR fluid therapy 20 mL/kg bolus in uninjured extremity. Titrate to a systolic pressure of 100 mm Hg.
 - g) If narcotic overdose is suspected, administer naloxone 0.4-2 mg slow IVP
 - h)  If **organophosphate poisoning**, consider atropine 2-4 mg IVP 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.

OVERDOSE/POISONING: INJECTION (Continued)



- k) Identify markings (insects, bites, needlestick, etc.).
- l) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity. **(NEW '13)**
- m) 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. **(NEW '13)**



-
- n) Initiate IV LR fluid therapy 20 mL/kg bolus in uninjured extremity. Titrate to a systolic pressure of 100 mm Hg
 - o) If narcotic overdose is suspected, administer naloxone 0.1 mg/kg slow IVP/IO. Maximum dose 0.4-2 mg. ET dose 0.2-0.25 mg/kg.
 - p)  If **organophosphate poisoning**, consider atropine 0.02 mg/kg IV/IO or IM every 5-10 minutes.
 - q)  Consider antidote to specific agent if available.
 - r)  Consider antibiotic specific to agent in mass casualty incident, if available.

4. Continue General Patient Care.

FF1. OVERDOSE/POISONING: STIMULANT TOXICITY (NEW '13)

1. Initiate General Patient Care.
2. Presentation
 - a) Moderate toxicity:
 - Patient exhibits chest pain, hypertension, supraventricular tachycardia, moderate anxiety, respiratory distress, and/or hallucinations
 - b) Moderate to severe toxicity:
 - Includes the symptomatology described above along with severe agitation, seizures, and hyperthermia

3. Treatment



- a) Ensure scene is secure and safe from paraphernalia
- b) Initiate patient care
- c) Identify amount, route, and time the stimulant was introduced into the body if possible



- d) Initiate IV LR KVO. Consider blood draw if possible
- e)  Consider midazolam
0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg
(Reduce by 50% for patients 69 years or older)
If IV unavailable, 5 mg IM may be administered
Larger doses may be needed to treat stimulant toxicity. Additional doses require medical consultation.
- f) Initiate "Chest Pain" protocol and treat accordingly with unstable angina or suspected MI



SUPRAVENTRICULAR TACHYCARDIA (SVT) MAY RESOLVE WITH THE ADMINISTRATION OF MIDAZOLAM. TREATING SVT DUE TO STIMULANT TOXICITY WITH ADENOSINE WILL NOT WORK SINCE THE SUBSTANCE CAUSING THE SVT WILL STILL BE IN THE SYSTEM AND CAUSE REFRACTORY SVT AFTER THE ADENOSINE HAS WORN OFF.

OVERDOSE/POISONING: STIMULANT TOXICITY (Continued)



g) Initiate IV LR KVO

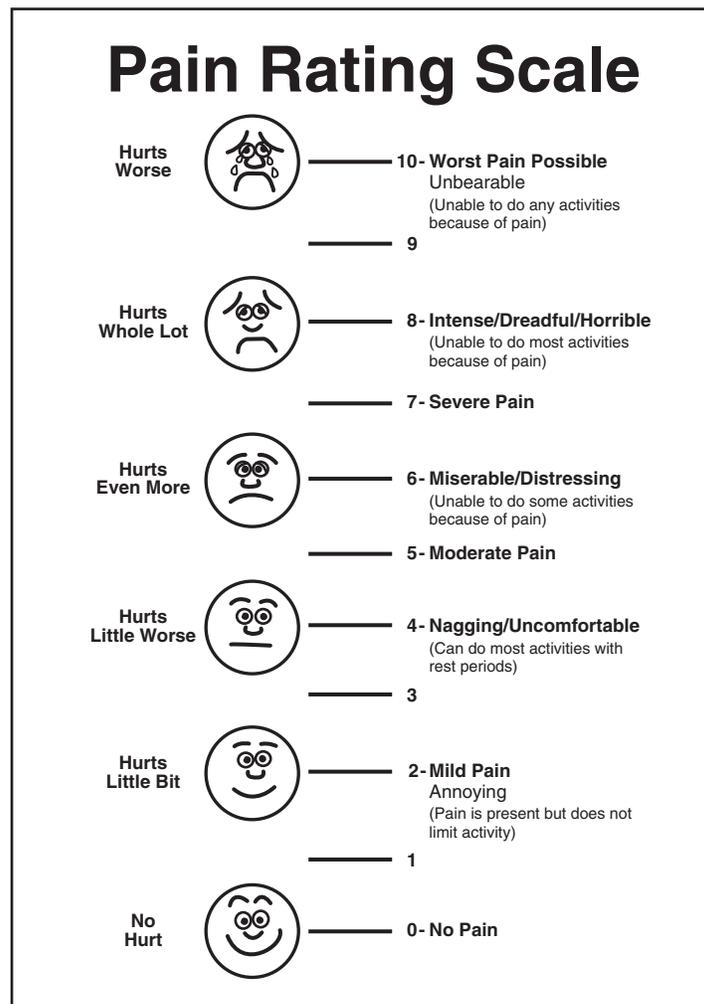
h)  Consider Midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes with maximum single dose of 5 mg
If IV unavailable, administer 0.2 mg.kg IM, maximum single dose 5 mg.
Additional doses require medical consultation.

4. Continue General Patient Care.

GG. 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.



PAIN MANAGEMENT (Continued)

- b) Allow patient to remain in position of comfort unless contraindicated.
- c) Monitor airway and vital signs every 5 minutes for unstable patients
- d) Mild pain



- (1) Indications for pain management
 - (a) Isolated musculoskeletal injuries such as sprains and strains
 - (b) Pain related to childhood illnesses such as headache, ear infection, and pharyngitis
- (2) Contraindications for pain management with acetaminophen
 - (a) Head injury
 - (b) Hypotension
 - (c) Administration of acetaminophen or medications containing acetaminophen within the previous four hours
 - (d) Inability to swallow or take medications by mouth
 - (e) Respiratory distress
 - (f) Persistent vomiting
 - (g) Known or suspected liver disease
 - (h) Allergy to acetaminophen
- (3) Administer acetaminophen to patients ages 3 years and above judged to be in mild to moderate discomfort (2-5 on FACES scale) by child or parent.
 - (a) Standard unit dosing of liquid preparation:
 - (1) Less than 3 years of age: Not indicated
 - (2) 3-5 years: Unit dose 160 mg/5 mL
 - (3) 6-9 years: TWO unit doses of 160 mg/5 mL each for a total of 320 mg/10 mL
 - (4) 10 years and above: FOUR unit doses of 160 mg/5 mL each for a total of 640 mg/20 mL
 - (b) Obtain on-line medical direction for appropriate dosing for patients who are significantly underweight or overweight



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



-
- e) Moderate to severe pain (**NEW '13**)
 - (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 opioid analgesic, including patients that are MOLST and/or EMS/DNR patients

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 < 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/IM/IN
 - (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) 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**
 - (d) Fentanyl IV/IM/IN
 - (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

PAIN MANAGEMENT (Continued)



CHEST PAIN WHICH 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 OPIOID 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.
5. Transport



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.

6. Continue General Patient Care

HH. RESPIRATORY DISTRESS: ALLERGIC REACTION/ANAPHYLAXIS

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



3. Treatment
 - a) Assist the patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's Epinephrine auto-injector or patient's prescribed fast-acting bronchodilator. **(NEW '13)**
 - b) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.

- c)  Consider additional doses of Epinephrine auto-injector or prescribed fast-acting bronchodilator. **(NEW '13)**



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

RESPIRATORY DISTRESS: ALLERGIC REACTION/ANAPHYLAXIS (Continued)

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

f)  Mild Allergic Reaction

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

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



g) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's Epinephrine auto-injector or patient's prescribed fast-acting bronchodilator. **(NEW '13)**

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

i)  Consider additional doses of Epinephrine auto-injector or fast-acting bronchodilator. **(NEW '13)**



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

RESPIRATORY DISTRESS: ALLERGIC REACTION /ANAPHYLAXIS (Continued)

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

II. RESPIRATORY DISTRESS: ASTHMA/COPD

1. Initiate General Patient Care.

2. Presentation

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



3. Treatment



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

a) Assist the 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 (**NEW '13**) or prescribed Epinephrine auto-injector.

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

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

d)  Consider additional doses of patient's prescribed fast-acting bronchodilator (**NEW '13**) or Epinephrine auto-injector.



e) Initiate IV LR KVO (on all Priority 1 or 2 patients and all patients with a history of cardiac disease).

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

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

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

i) Consider continuous positive airway pressure (CPAP) if patients continue to deteriorate in spite of above nebulized treatments. Continue inline nebulizations.

j) Consider the administration of epinephrine 1:1,000
0.01 mg/kg IM
Maximum single dose 0.5 mg
May repeat every 5 minutes for a total of 3 doses for severe reactions.

OR

k) Consider the administration of terbutaline
0.25 mg IM

RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)

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



m)  Consider additional doses of epinephrine, albuterol, or terbutaline.

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 auto-injector or patient's prescribed fast-acting bronchodilator.



MEDICAL CONSULTATION IS REQUIRED IF THE PATIENTS 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 auto-injector. (**NEW '13**)



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:

- **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.

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

AND/OR



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

t) Administer epinephrine 1:1,000
0.01 mg/kg IM
Maximum single dose 0.5 mg
May repeat every 5 minutes for a total of 3 doses for severe reactions.

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 additional doses of albuterol or epinephrine.

w) Consider initiating an IV/IO of LR KVO.

4. Continue General Patient Care.

JJ. RESPIRATORY DISTRESS: CROUP



1. Initiate General Patient Care.

2. Presentation

Forms of Croup:

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

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

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



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



3. Treatment

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



b) Place patient on cardiac monitor and record vital signs. (This may be done concurrently with medication administration if patient is unstable.)

c) MILD: For children exhibiting symptoms of a mild croup presentation, administer dexamethasone 0.5 mg/kg PO.

d) MODERATE: For children who exhibit symptoms of a moderate croup presentation, administer dexamethasone 0.5 mg/kg PO.
If no change in patient's condition, then administer 2.5 mL of epinephrine 1:1,000 via nebulizer.

e) SEVERE: If respiratory distress is so severe that respiratory arrest is imminent:
i) First, administer 0.01 mg/kg of epinephrine 1:1,000 IM (max single dose of 0.5 mg).
ii) Then, administer dexamethasone 0.5 mg/kg IV AND 2.5 mL of epinephrine 1:1,000 via nebulizer. If IV not established, give IM dexamethasone.

f) Establish communications with the appropriate facility and obtain medical direction if patient is less than 1 year of age, if additional nebulized epinephrine is needed due to level of distress, or if other interventions or directions are needed.



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

4. Continue General Patient Care.

TRAUMA PROTOCOL: BURNS (Continued)

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



DO NOT GIVE ANYTHING BY MOUTH.

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

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



- j) Initiate IV LR fluid therapy.
 - (1) 10 mL/kg bolus.
 - (2) For shock patients, administer a fluid bolus of 20 mL/kg LR followed by a second 20 mL/kg LR if needed. Titrate to a systolic pressure of 100 mm Hg.
- k) Administer opioid per Pain Management protocol. **(NEW '13)**



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



- m) Initiate IV LR fluid therapy.
 - (1) 10 mL/kg bolus.
 - (2) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.

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

- o) Administer opioid per Pain Management protocol. **(NEW '13)**

- 4. Continue General Patient Care.

NN. TRAUMA PROTOCOL: EYE TRAUMA

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



NEVER APPLY PRESSURE TO THE EYEBALL OR GLOBE!

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

DO NOT USE CHEMICAL COLD PACKS ON THE FACE.



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



-
- e) Initiate IV LR KVO.
 - f) Administer opioid per Pain Management protocol. **(NEW '13)**

TRAUMA PROTOCOL: EYE TRAUMA (Continued)



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



- k) Initiate IV/IO LR KVO.
 - l) Administer opioid per Pain Management protocol. **(NEW '13)**
4. Continue General Patient Care.

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

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

Upper Extremity

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

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

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



(Hand Center and/or nearest appropriate trauma center)

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

Lower Extremity

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

LIFE BEFORE LIMB.



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

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

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



3. Treatment

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



DO NOT SUBMERGE IN WATER OR FREEZE AMPUTATED PART

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



-
- b) Initiate IV LR fluid therapy 20 mL/kg bolus.
Titrate to a systolic pressure of 100 mm Hg.
 - c) Administer opioid per Pain Management protocol. **(NEW '13)**



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



-
- e) Initiate IV/IO LR.
 - f) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid challenge of 20 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
 - g)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO.
 - h) Administer opioid per Pain Management protocol. **(NEW '13)**

4. Continue General Patient Care.

PP. TRAUMA PROTOCOL: MULTIPLE/SEVERE TRAUMA

1. Initiate General Patient Care.

2. Presentation

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



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

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

3. Treatment



- a) Maintain spine stabilization for blunt trauma patients. Patients with isolated penetrating trauma should not have spinal immobilization performed. **(NEW '13)**
 - b) Control bleeding and immobilize patient, if blunt mechanism indicates. Spinal immobilization should not be performed on patients with isolated penetrating mechanism. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. Backboard may be used for patient transfer maneuvers. **(NEW '13)**
 - c) Hyperventilate the head-injured patient as follows:
 - Adult 20 breaths per minute
 - Child 30 breaths per minute
 - Infant 35 breaths per minute
 - (1) Who has signs of herniation such as unequal pupils, posturing, or paralysis
 - (2) Who is manifesting a rapidly decreasing GCS **or**,
 - (3) With on-line medical consultation.
 - d) Consider pelvic stabilization technique if indicated
-
- e) Initiate IV LR fluid therapy 20 mL/kg bolus. Titrate to a systolic pressure of 100 mm Hg.
 - f)  Consider additional fluid administration
Maximum dose 2,000 mL without medical consultation

TRAUMA PROTOCOL: MULTIPLE/SEVERE TRAUMA (Continued)



- g) Maintain spine stabilization for blunt trauma patients. Patients with isolated penetrating trauma should not have spinal immobilization performed. **(NEW '13)**
- h) Control bleeding and immobilize patient, if blunt mechanism indicates. Spinal immobilization should not be performed on patients with isolated penetrating mechanism. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. Backboard may be used for patient transfer maneuvers. **(NEW '13)**
- i) Hyperventilate the head-injured patient as follows:
 - Adult 20 breaths per minute
 - Child 30 breaths per minute
 - Infant 35 breaths per minute
 - (1) Who has signs of herniation such as unequal pupils, posturing, or paralysis
 - (2) Who is manifesting a rapidly decreasing GCS **or**,
 - (3) With on-line medical consultation.



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

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

4. Continue General Patient Care.

GLASGOW COMA SCALE

Eye Opening

Spontaneously	4
To Voice	3
To Pain	2
No Response	1

Motor Response

To Verbal Command - Obeys	6
To Painful Stimulus - Localizes Pain	5
Flexion - Withdraw	4
Flexion - Abnormal	3
Extension	2
No Response	1

Verbal Response

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

Glasgow Coma Score

	Total	(3-15)
--	-------	--------

TRAUMA PROTOCOL: SPINAL CORD INJURY (Continued)



- g) Spinal Injury Indications for Referral to a Pediatric Trauma Center:
- (1) Signs and symptoms of new paraplegia or quadriplegia in the presence of trauma **and**
 - (2) Patent airway **and**
 - (3) Hemodynamically stable **and**
 - (4) Children who have **not** reached their 15th birthday should be transported to a Pediatric Trauma Center.
 - (5)  Consult with nearest Trauma Center and, when possible, the Pediatric Trauma Center.



h) **Protect Airway!**

i) Maintain appropriate spine stabilization.



j) Initiate IV/IO LR.

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

l)  Third and subsequent fluid bolus at 20 mL/kg LR IV/IO.

4. Continue General Patient Care.

SS. TRAUMA PROTOCOL: TRAUMA ARREST

1. Initiate General Patient Care.

2. Presentation

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

3. Treatment



a) Rapid assessment and extrication

b) Protect cervical spine for blunt trauma patients only. Patients with isolated penetrating trauma should not have spinal immobilization performed. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. **(NEW '13)**

c) CPR

d) Consider AED if arrest is believed to be medical in nature and the patient meets the criteria.



A PATIENT IN CARDIOPULMONARY ARREST SECONDARY TO PENETRATING TRAUMA SHOULD BE TAKEN TO THE NEAREST APPROPRIATE TRAUMA CENTER. CONSIDERATION SHOULD BE GIVEN TO TRANSPORTING THE PATIENT TO THE NEAREST EMERGENCY DEPARTMENT IF THE TRAUMA CENTER IS MORE THAN 15 MINUTES ADDITIONAL TRANSPORT TIME!



e) Initiate IV 20 mL/kg.

Titrate to systolic pressure of 100 mm Hg.

f) Identify rhythm and refer to appropriate algorithm.

g) If traumatic arrest is suspected due to multi-system blunt trauma, or due to penetrating neck, chest, or abdominal trauma, bilateral needle decompressions should be performed. Once catheters are placed **do not remove**.

TRAUMA PROTOCOL: TRAUMA ARREST (Continued)



- h) Rapid assessment and extrication
- i) Protect cervical spine for blunt trauma patients only. Patients with isolated penetrating trauma should not have spinal immobilization performed. If mechanism includes both blunt and penetrating trauma, perform spinal immobilization. **(NEW '13)**
- j) CPR
- k) 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!



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

TT. TRAUMA DECISION TREE

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

Category Alpha

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

YES

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

NO

Assess for other injuries.

Category Bravo

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

YES

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

NO

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

Category Charlie

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

YES

Transport to Trauma Center; alert trauma team. Patients within a **30-minute drive time** of the closest appropriate trauma/specialty center shall go by ground unless there are extenuating circumstances. Receiving Trauma Center Medical Consultation required when considering whether helicopter transport is of clinical benefit (refer to II GPC I). **(Effective 10/14/08)**

NO

Evaluate for other considerations.

Category Delta

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

YES

Consider medical direction and transport to trauma center. Patients within a **30-minute drive time** of the closest appropriate trauma/specialty center shall go by ground unless there are extenuating circumstances. Receiving Trauma Center Medical Consultation required when considering whether helicopter transport is of clinical benefit (refer to II GPC I). **(Effective 10/14/08)**

NO

Transport according to protocol.

SL: Sublingual. Under the tongue.

SMOI: Significant Mechanism Of Injury.

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

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

Sublingually: Under the tongue.

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

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

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

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

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

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

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

VF: Ventricular Fibrillation.

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

VT: Ventricular Tachycardia.

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

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

PROCEDURE	EMR	EMT	CRT-(I)	PM
ADMINISTRATION OF MEDICATIONS				
Buccal, Oral, Sublingual, IM (auto-injector)	OSP	SO	SO	SO
SC, IM, IV, Rectal, Nebulizer, Intranasal	-	-	SO	SO
Intraosseous	-	-	SO	SO
Intradermal PPD (Public Safety Personnel only)	-	-	-	OSP
AIRWAY MANAGEMENT				
Alternative Airway Device (e.g. EasyTube®)	-	-	SO	SO
BiPAP	-	-	-	OSP
Carbon Dioxide Detector (ALS required)	-	SO	SO	SO
Capnograph (ALS required by 2015)	-	-	SO	SO
CPAP	-	-	SO	SO
Cricothyroidotomy	-	-	-	PP
Direct Laryngoscopy	-	-	SO	SO
Gastric Tube (BLS "Burp," ALS insert)	-	-	SO	SO
Impedance Threshold Device (ITD)	-	OSP	OSP	OSP
Laryngeal Tube Airway (King LTS-D)	-	-	OSP	OSP
Nasotracheal Intubation	-	-	-	SO
Oropharyngeal/Nasopharyngeal Airway	SO	SO	SO	SO
Orotracheal Intubation	-	-	SO	SO
Needle Decompression Thoracostomy (NDT)	-	-	SO/MC	SO/MC
Pulse Oximeter (All transport units required by 2012)	-	SO	SO	SO
Suction	SO	SO	SO	SO
Ventilator	-	-	-	OSP
CHEMICAL RESTRAINT	-	-	SO/MC	SO
ELECTROCARDIOGRAM				
Standard Limb Leads	-	-	SO	SO
12 Lead	-	PP	SO	SO
ELECTRICAL THERAPY				
Automated External Defibrillator	SO	SO	SO	SO
Cardioversion	-	-	SO	SO
Defibrillation	-	-	SO	SO
Transcutaneous Cardiac Pacing	-	-	SO	SO
GLUCOMETER	-	OSP	SO	SO
INTRAVENOUS THERAPY				
External Jugular Access & Maintenance	-	-	SO	SO
Intraosseous Infusion & Maintenance	-	-	SO	SO
Peripheral IV Access/Saline Lock/Blood Drawn	-	OSP	SO	SO
Peripheral IV Maintenance	-	SO	SO	SO
SKELETAL STABILIZATION/IMMOBILIZATION	SO	SO	SO	SO
SOFT TISSUE INJURY/TOURNIQUET/BLEEDING MANAGEMENT	SO	SO	SO	SO
VALSALVA MANEUVER	-	-	SO	SO

SO Standing Order

OSP Optional Supplemental Program

MC

Medical Consultation Required

PP

Pilot Program

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

PROCEDURE	EMR	EMT	CRT-(I)	PM
Apnea Monitors	-	SO	SO	SO
Arterial Lines and Cardiac Sheaths	-	-	-	-
Chemotherapy Administration/Drip	-	-	-	-
Chest tubes with Chest Drainage System	-	-	-	-
Chest tubes with Heimlich Valve	-	-	SO	SO
Colostomy bag	-	SO	SO	SO
External Orthopedic Fixators	-	SO	SO	SO
Foley catheter	-	SO	SO	SO
Foley catheter with irrigation	-	SO	SO	SO
Gastrostomy and jejunal feeding tubes (Non-infusing)	-	SO	SO	SO
HALO Cervical Immobilization	-	SO	SO	SO
IABP InterAortic Balloon Pump	-	-	-	-
Ileostomy tube (Non-infusing)	-	SO	SO	SO
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 (Out Patient/Existing)	-	SO	SO	SO
Transvenous Pacemaker (Temporary Transvenous)	-	-	-	-
Ventilators (Acute, Chronic, Scene)	-	-	-	OSP
Ventricular Peritoneal Shunt	-	SO	SO	SO
Wound vacuum device	-	SO	SO	SO

SO Standing Order
OSP Optional Supplemental Program

MC Medical Consultation Required
PP Pilot Program

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

MEDICATIONS	EMR	EMT	CRT-(I)	PM
Acetaminophen	-	SO	SO	SO
Activated Charcoal (Without Sorbitol)	-	MC	MC	MC
Adenosine	-	-	MC	SO
Albuterol/Fast-acting bronchodilator MDI (Patient's Prescribed)	-	SO/MC	SO/MC	SO/MC
Albuterol Sulfate Nebulizer	-	-	SO/MC	SO/MC
Aspirin	-	SO	SO	SO
Atropine Sulfate	-	-	SO/MC	SO/MC
Atrovent	-	-	SO	SO
Calcium Chloride (10% Solution)	-	-	MC	MC
Dexamethasone	-	-	SO	SO
Dextrose 50%	-	-	SO	SO
Diazepam	-	-	MC	SO/MC
Diltiazem	-	-	MC	MC
Diphenhydramine Hydrochloride	-	-	SO/MC	SO/MC
Dopamine Hydrochloride	-	-	MC	MC
Epinephrine Auto-Injector	OSP	SO/MC	SO	SO
Epinephrine Nebulizer	-	-	MC	MC
Epinephrine 1:10,000/1:1,000	-	-	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 (Inter-facility transport only)	-	-	-	OSP
Lidocaine	-	-	SO	SO
MARK I/Duodote (Atropine & 2 PAM)	OSP	OSP	OSP	OSP
Midazolam (Versed)	-	-	MC	SO/MC
Morphine Sulfate	-	-	MC	SO/MC
Morphine Sulfate (Infusion)	-	-	-	MC
Naloxone (IV and intranasal)	-	-	SO	SO
Nitroglycerin Paste	-	-	SO	SO
Nitroglycerin (tablet /spray) (Patient's Prescribed)	-	SO	SO	SO
Nitroglycerin (tablet/spray)	-	-	SO	SO
Ondansetron	-	-	SO/MC	SO/MC
Oral Glucose	-	SO	SO	SO
Oxygen	SO	SO	SO	SO
Purified Protein Derivative (Public Safety Personnel only)	-	-	-	OSP

SO Standing Order

OSP Optional Supplemental Program

MC Medical Consultation Required

PP Pilot Program

EMS/DNR (Continued)

- (3) If, despite these efforts, the patient becomes pulseless or stops breathing spontaneously, EMS providers shall then withhold or withdraw cardiopulmonary resuscitation including, but not limited to, no CPR, no cardiac pacing, no defibrillation, withdrawal of active ventilatory assistance upon cardiac arrest, and withholding or withdrawal of drug therapy (i.e., chemical resuscitation).
- e) **OPTION A (DNI) – 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 AND THE AVAILABILITY OF AN ALS UNIT, AND ITS ABILITY TO ARRIVE OR RENDEZVOUS IN A MEDICALLY APPROPRIATE PERIOD OF TIME.

- f) **OPTION 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 O₂ 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.

EMS/DNR (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. **(NEW '13)**
- (e) Existing IV lines may be in place and if so, shall be monitored to the extent possible according to the provider's level of certification and licensure.
- (2) Inappropriate Care for a Palliative Care Patient
 - (a) Cardiac monitoring, including 12-lead EKG, pacing, cardioversion, and defibrillation
 - (b) Initiation of IV therapy (except when directed by online physician for morphine administration for pain control as in 1 (d) (iii))
 - (c) EMS-Initiated Medications (except oxygen and morphine administration for pain control as in 1 (d) (iii))
 - (d) CPR
 - (e) Intubation (alternative airway device, endotracheal, nasotracheal, or gastric tube)
 - (f) Active ventilatory assistance, unless on an outpatient ventilator (pg. 32 ch. 5)
- g) TRANSPORT
 - (1) Upon request of the patient, family, or caregivers and in lieu of transport to a hospital-based emergency department, EMS providers may transport Option B EMS/DNR patients who require transportation for pain control or symptom management or respite care to a specified inpatient hospice facility.
 - (2) A current list of those facilities is available from the MIEMSS Program Development Office (410) 706-4367 (4DNR). The receiving status of a particular facility can be ascertained from EMRC (24 hours a day) by EMS radio, EMSTEL, or red phone, or by calling 1 (800) 492-3805.

EMS/DNR (Continued)

- (5) If a copy of the EMS/DNR Order or MOLST form is available to EMS providers, it shall be attached to the official copy of the call runsheet 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 (see pg.16 ch. C of the EMS/DNR Program booklet).
- 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 **(see “How to Best Tell the Worst News” on pp.105-106 of the EMS/DNR program booklet);**
 - (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 which 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.

F. PRONOUNCEMENT OF DEATH IN THE FIELD (NEW '13)

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.

G. TERMINATION OF RESUSCITATION (Medical and Traumatic) (NEW '13)



IF ANY DOUBT EXISTS, INITIATE RESUSCITATION AND TRANSPORT

1. PURPOSE

This protocol is designed to guide the provider in determining a futile resuscitation and managing the patient after this determination.

2. PROCEDURE

(a) Exclusions to this protocol.

- (1) If arrest is believed to be secondary to hypothermia or submersion, treat according to appropriate protocol and transport to the nearest appropriate facility.
- (2) If patient is pregnant, treat according to appropriate protocol and transport to the nearest appropriate facility.
- (3) If patient has not reached their 18th birthday, treat according to appropriate protocol and transport to the nearest appropriate facility.

b) Medical Arrest

- (1) EMS providers may terminate resuscitation without medical consult when all three criteria are met.
 - a. The arrest was not witnessed by an EMS provider (and patient is unresponsive, pulseless, and apneic). **AND**
 - b. There is no shockable rhythm identified by an AED or there is asystole or PEA on a manual cardiac monitor. **AND**
 - c. There is no return of spontaneous circulation (ROSC) prior to decision to terminate resuscitation despite appropriate field EMS treatment that includes **15 minutes** of minimally-interrupted EMS CPR. **OR**
- (2)  EMS providers may terminate resuscitation with medical consult when there is no ROSC prior to decision to terminate resuscitation despite appropriate field EMS treatment that includes 15 minutes of minimally-interrupted CPR in the presence of an arrest witnessed by an EMS provider or the presence of a shockable rhythm.

c) Trauma Arrest

- (1) EMS providers may terminate resuscitation without medical consult when both criteria are met. (If medical etiology is suspected, use "Medical Arrest" above.)
 - a. There are no signs of life. **AND**
 - b. The patient is in asystole. **OR**
- (2)  EMS providers may terminate resuscitation with medical consult when both criteria are met in either blunt or penetrating trauma.
 - a. Blunt
 - i. There are no signs of life. **AND**
 - ii. The patient is in a rhythm other than asystole and there is no ROSC despite 15 minutes of appropriate treatment which includes 15 minutes of minimally-interrupted CPR.

**G. TERMINATION OF RESUSCITATION (Medical and Traumatic)
(Continued)**

b. Penetrating

i. There are no signs of life. **AND**

ii. The patient is in a rhythm other than asystole and there is no ROSC.
If less than 15 minutes from a trauma center, transport the patient. If
transport time exceeds 15 minutes, consult.



THERE ARE SOME CAUSES OF TRAUMATIC CARDIOPULMONARY ARREST (I.E. PENETRATING TRAUMA) THAT MAY BE REVERSED IF APPROPRIATELY AND EMERGENTLY MANAGED. THEREFORE, EMS PROVIDERS SHOULD FOLLOW APPROPRIATE PROTOCOLS FOR TRAUMATIC ARREST INCLUDING APPROPRIATE AIRWAY MANAGEMENT AND CONSIDERATION FOR BILATERAL NEEDLE DECOMPRESSION THORACOSTOMY. HOWEVER, EVEN WITH THE APPLICATION OF THESE MANEUVERS, ASYSTOLE AND PULSELESSNESS FOR GREATER THAN 10 MINUTES ARE INDEPENDENT PREDICTORS OF MORTALITY.

d) Pronouncement of Death in the Field protocol.

10. AIRWAY MANAGEMENT: TRACHEOSTOMY SUCTIONING



a) PURPOSE

Tracheostomy suctioning may be required to maintain a patent airway in patients who present with respiratory distress secondary to tracheostomy tube occlusion or obstruction.

b) INDICATIONS

- (1) Increased secretions from tracheostomy site or a mucous plug
- (2) Hypoxia, cyanosis, or decreased oxygen saturation levels
- (3) Increased work of breathing
- (4) Altered mental status secondary to hypoxia

c) CONTRAINDICATIONS

None

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Bleeding at tracheal stoma site
- (2) Dislodgment of tracheostomy tube
- (3) Exaggerated cough reflex with introduction of saline
- (5) Increased hypoxia/respiratory distress
- (6) Infection

e) PROCEDURE

- (1) Two providers or provider and trained family member
- (2) Use latex-safe sterile gloves and equipment.
- (3) Position patient with the head and neck hyperextended to expose the tracheostomy site.
- (4) Pre-oxygenate patient at the tracheostomy site:
 - (a) NRB mask if patient has adequate effective spontaneous respirations
 - (b) BVM if ventilator-dependent or there are ineffective spontaneous respirations
- (5) Select appropriately sized suction catheter (2 x internal diameter of tracheostomy tube)
- (6) Insert suction catheter:
 - (a) Measure from the tracheostomy site to the sternal notch**OR**
 - (b) Insert until there is a cough reflex.
- (7) Apply suction ONLY as the catheter is withdrawn, rotating the catheter in a twisting motion between thumb and finger.
- (8) Suction for maximum of 10 seconds.
- (9) Re-oxygenate and re-evaluate patient.
- (10) Repeat suction procedure as needed (for thick secretions instill 3- 5 cc sterile saline/water prior to repeat suctioning).

10A. AIRWAY MANAGEMENT: 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)  Midazolam up to 0.05 mg/kg (2-5 mg) IVP over 1-2 minutes, titrated to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg.

(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. **(NEW '13)**

(3) Continue to monitor oxygen saturation and ventilate to desired end tidal carbon dioxide 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 $[70 + (2 \times \text{years}) = \text{systolic BP}]$ for patients greater than 1 year of age.

(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 $[70 + (2 \times \text{years}) = \text{systolic BP}]$ for patients greater than 1 year of age. **(NEW '13)**

(7) Continue to monitor oxygen saturation and ventilate to desired end tidal carbon dioxide level.

(8) Obtain on-line medical direction if further problems present.

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

f) SPECIFIC DOCUMENTATION

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



12. ELECTRICAL THERAPY: CARADIOVERSION

a) PURPOSE

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

b) INDICATIONS FOR TREATMENT

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

c) DOSAGE

(1) Adult

(a) For symptomatic PSVT or atrial flutter:

- (i) Initial 50 J
- (ii) Subsequent 100 J, 200 J, 300 J, 360 J

(b) For symptomatic atrial fibrillation (**NEW '13**):

- (i) Initial 200 J
- (ii) Subsequent 200 J, 300 J, 360 J

(c) For other symptomatic tachydysrhythmias

- (i) Initial 100 J
- (ii) Subsequent 200 J, 300 J, 360 J

(2) Pediatric

Symptomatic tachydysrhythmias

(a) Initial 0.5 J/kg; if the calculated joules setting is lower than the defibrillation device is able to deliver, use the lowest joules setting possible or obtain medical consultation.

(b) Subsequent 1 J/kg; repeat at 2 J/kg, then 4 J/kg

(c) If refractory after 4 shocks, increase dosage to 6 J/kg, 8 J/kg, then 10 J/kg.

(3) If the patient exhibits ventricular fibrillation following emergency cardioversion, immediately turn off the synchronizer and defibrillate



14. ELECTRICAL THERAPY: EXTERNAL TRANSCUTANEOUS CARDIAC PACING

a) PURPOSE

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

b) INDICATIONS

- (1) It is indicated for the treatment of hemodynamically compromised patients in settings where cardiac output is compromised due either to the complete failure of cardiac rhythm or to an insufficient rate of the patient's intrinsic pacemaker.
- (2) Bradycardia. (ECG other than second-degree Mobitz Type II or third-degree AV Block.)
- (3) Second-degree Mobitz Type II and third-degree AV block with a systolic BP of less than 80 mmHg, or 80-100 mm Hg with shock-like signs or symptoms.
 -  In the presence of Mobitz II and third-degree AV block, medical consultation is required for atropine administration.
- (4)  Pacing may be indicated in certain instances in which the heart rate is 60-75 BPM and shock-like symptoms persist. Pacing in these instances requires medical consultation from a physician.
-  (5)  Pediatric patients with profound symptomatic bradycardia unresponsive to optimal airway management, oxygenation, epinephrine, and atropine.

c) DOSAGE

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

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



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

d) CONTRAINDICATIONS

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

e) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

- (1) Patient may experience mild to moderate discomfort.
Administer opioid per Pain Management Protocol. **(NEW '13)**
OR
 Midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg
(Reduce by 50% for patients 69 years or older)
Administer midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment to a maximum total dose of 5 mg.
- (2) Musculoskeletal twitching in upper torso may occur during pacing.

f) PRECAUTIONS

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

20A. Patient Initiated Refusal of EMS

a) Initiate General Patient Care.

For the purposes of this protocol, a patient is defined as any person encountered by in-service Rescue or Emergency Medical personnel with an actual or potential injury or medical problem. (The term “patient,” in this protocol only, refers both to patients and to persons who are potential patients. This protocol is not intended to determine the legal status of any person, the establishment of a provider-patient relationship, or a legal standard of care.)



A minor patient is defined as a patient who has not reached their 18th birthday and is not

- (1) Married, **OR**
- (2) Parent of a child, **OR**
- (3) Requesting:
 - (a) Treatment for drug abuse or for alcoholism,
 - (b) Treatment for Sexual Transmitted Infection (STI) or for contraception,
 - (c) Treatment of injuries from alleged rape or sexual offense, **OR**
- (4) Living separate and apart from the minor’s parent, parents, or guardian, whether with or without consent of the minor’s parent, parents, or guardian and is not self-supporting, regardless of the source of the minor’s income. **(NEW ’13)**

An authorized decision maker for minor patients is defined as an adult who identifies themselves as the parent or guardian, or has written authorization for medical decision making or states that they have written authorization for medical decision making. Providers may request the parent or guardian to present identification and will document the name of the individual who identifies themselves as the decision maker.



IN CASES OF ALLEGED RAPE OR SEXUAL OFFENSE, LAW ENFORCEMENT OR SOCIAL SERVICES SHALL BE NOTIFIED

- ### b) These persons may have requested an EMS response or may have had an EMS response requested for them. Because of the hidden nature of some illnesses or injuries, an assessment must be offered and performed, to the extent permitted, on all patients. For patients initially refusing care, attempt to ask them, “Would you allow us to check you out and evaluate whether you are OK?”



IF THE AUTHORIZED DECISION MAKER REFUSES TO PERMIT THE EMS PROVIDER TO EXAMINE A MINOR PATIENT TO DETERMINE THE SEVERITY OF THE ILLNESS OR INJURY THEN CONSIDER CONTACTING LAW ENFORCEMENT FOR ASSISTANCE. CONSIDER CONSULTATION WITH PEDIATRIC BASE STATION.

- c) Each patient's assessment shall include:
 - (1) visual assessment - injuries, responsiveness, level of consciousness, orientation, respiratory distress, gait, skin color, diaphoresis.
 - (2) primary survey - airway, breathing, circulation, and disability.
 - (3) vital signs - pulse, blood pressure, respiratory rate and effort, pulse oximeter when available.
 - (4) secondary survey - directed by the chief complaint.
 - a) Medical calls - exam of lungs, heart, abdomen, and extremities. Blood glucose testing for patients with Diabetes Mellitus. Neurological exam for altered consciousness, syncope, or possible stroke.
 - b) Trauma calls - for patients meeting criteria in the Maryland Medical Protocols Trauma Decision Tree recommending transport to a Trauma Center: exam of neck and spine, neurological exam, palpation and auscultation affected body regions (chest, abdomen, pelvis, extremities).
 - (5) Capability to make medical decisions (complete questions 1 through 4 on the Patient Initiated Refusal of EMS Form):
 - (a) Disorientation to person, place, time, situation.
 - (b) Evidence of altered level of consciousness resulting from head trauma, medical illness, intoxication, or other cause.
 - (c) Evidence of impaired judgment from alcohol or drug ingestion.
 - (d) Language communication barriers were removed by assuring "language line" translation when indicated.
 - (e) The patient understands the nature of the illness.

- d) Following the assessment, complete items 5 - 9 on the Patient Initiated Refusal of EMS Form, noting the presence of conditions which may place the patient at higher risk of hidden illness/injury or of worse potential outcome.

Management

- (1) Patients at the scene of an emergency who meet criteria to allow self-determination shall be allowed to make decisions regarding their medical care, including refusal of evaluation, treatment, or transport. These criteria include:
 - a) Medical capacity to make decisions - the ability to understand and discuss and understanding of the nature and consequences of the medical care decision.
 - b) Adult
(eighteen years of age or greater)
 - c) Those patients who are under eighteen years of age and are:
 - (i) Married, **OR**
 - (ii) Parent of a child, **OR**
 - (iii) Requesting:
 - a. Treatment for drug abuse or for alcoholism,
 - b. Treatment for STI or for contraception,
 - c. Treatment of injuries from alleged rape or sexual offense **OR**

- (iv) Living separate and apart from the minor's parent, parents, or guardian, whether with or without consent of the minor's parent, parents, or guardian and is self-supporting, regardless of the source of the minor's income. **(NEW '13)**
 - d) A patient that has been evaluated by EMS providers as having 'no' answers to questions 1, 2, 3, 4a or 4b on the Patient Initiated Refusal of EMS Form shall be considered to be medically capable to make decisions regarding his/her care.
 - e) Patients with 'no' answers to questions 1, 2, 3, 4a, 4b on the Patient Initiated Refusal of EMS Form but one or more 'yes' answers to questions 5-8 (medical conditions) have a higher risk of medical illness. The EMS provider should consider consulting medical direction if the patient does not wish transport. The purpose of the consultation is to obtain a 'second opinion' with the goal of helping the patient realize the seriousness of his/her condition and accept transportation.
 - f) If the EMS provider is unsure whether the patient has adequate ability to make medical decisions, he/she should seek medical consultation.
 - g) At any time the EMS provider identifies patient conditions which indicate that the patient should be transported to a hospital, and the patient is refusing transport, then the provider should consult medical direction.
- (2) Any person at the scene of an emergency requesting an EMS response, or for whom an EMS response was requested, and who is evaluated to have any one of the following conditions, shall be considered incapable of making medical decisions regarding care and shall be transported, with law enforcement involvement, to the closest appropriate medical facility for further evaluation:
- a) Continued altered mental status from any cause including altered vital signs, influence of drugs and/or alcohol, metabolic causes (CNS or hypoglycemia), head trauma or dementia.
 - b) Attempted suicide, danger to self or others or verbalizing suicidal intent.
 - c) Acting in an irrational manner, to the extent that a reasonable person would believe that the medical capacity to make decisions is impaired.
 - d) Severe illness or injury to the extent that a reasonable and medically capable person would seek further medical care.
 - e) On an Emergency Petition.
- (3) Further care should be provided according to Maryland Medical Protocols, "III E. Behavioral Emergencies" or other protocol sections as appropriate, based on patient's condition.

e) Base Station Hospital Physician Consultation

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

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

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

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

f) Documentation

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

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

a) Indications:

Increased brain temperature contributes to ischemic brain damage in patients post-cardiac arrest. Studies have shown that lowering brain temperature, even by a few degrees, decreases ischemic brain damage. In studies of out-of-hospital cardiac arrest, induced hypothermia protocols have contributed to improved neurological outcomes. The initiating of hypothermia without the ability to continue the hypothermic intervention is detrimental. **(NEW '13)**

b) Patient Inclusion Criteria:

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

c) Patient Exclusion Criteria:

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

d) Procedure:

- (1) Institute cooling as early as possible. Core temperature goal is 33°C.
- (2) Acutely cooled with either:
 - (a) Rapid IV infusion of ice-cold (4°C) LR (allowed to be carried on Supervisor units or ambulance). Give 2 liters for adult IV in single dose over a period of 30 minutes immediately.
 - (b) If not able to administer ice-cold IV fluids, apply ice/cold packs bilaterally to patient's neck, axilla, and femoral groins

PLUS

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

25. 12-LEAD ELECTROCARDIOGRAM (NEW '13)

a) PURPOSE

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

b) INDICATIONS

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

c) PROCEDURE

- (1) Position patient.
- (2) Place chest and limb leads.
- (3) Set patient age and a patient identifier (minimum of patient's initials).
- (4) Acquire 12-lead (15-lead, if trained).
- (5) Continue patient care.

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3. ALBUTEROL (PROVENTIL, VENTOLIN)

(Patient Prescribed, Patient Assisted)

(Also applies to other fast-acting bronchodilators) (NEW '13)

a) Indications

- (1) Signs and symptoms of respiratory distress
- (2) Bronchospasm/wheezing associated with:
 - (a) Asthma
 - (b) Chronic bronchitis
 - (c) Emphysema
 - (d) Allergic reactions (anaphylaxis)

b) Adverse Effects

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

c) Precautions

- (1) May cause severe bronchospasm from repeated excessive use.
- (2) Patient must have his/her own physician-prescribed hand-held aerosol inhaler.

d) Contraindications

Inhaler not prescribed for the patient.

e) Preparations

Hand-held (unit dose) aerosol inhaler.

f) Dosage

- (1) Adult: Patient may receive a maximum of 2 doses (4 puffs) over a 30-minute period.
- (2) Pediatric: Patient may receive a maximum of 2 doses (4 puffs) over a 30-minute period.
- (3)  Additional doses may be administered with medical consultation.



3A. ASPIRIN

a) Pharmacology

- (1) Platelet inhibitor
- (2) Anti-inflammatory

b) Pharmacokinetics

Blocks platelet aggregation

c) Indications

Chest pain when acute myocardial infarction is suspected.

d) Contraindications

Known hypersensitivity

e) Adverse Effects

- (1) Heartburn
- (2) Nausea and vomiting
- (3) Wheezing

f) Precautions

GI bleeding and upset

g) Dosage

- (1) Adult: 324 mg or 325 mg chewed
- (2) Pediatric: Not Indicated



5. ASPIRIN

a) Pharmacology

- (1) Platelet inhibitor
- (2) Anti-inflammatory

b) Pharmacokinetics

Blocks platelet aggregation

c) Indications

Chest pain when acute myocardial infarction is suspected.

d) Contraindications

Known hypersensitivity

e) Adverse Effects

- (1) Heartburn
- (2) Nausea and vomiting
- (3) Wheezing

f) Precautions

GI bleeding and upset

g) Dosage

- (1) Adult: 324 mg or 325 mg chewed
- (2) Pediatric: Not Indicated



6. ATROPINE SULFATE

a) Pharmacology

- (1) Parasympatholytic (vagolytic action)
- (2) Anticholinergic (accelerates the heart rate)

b) Pharmacokinetics

- (1) Accelerated heart rate within minutes of IV injection.
- (2) Peak effect is seen within the first 15 minutes.
- (3) Atropine disappears rapidly from the blood.
- (4) Excreted in the urine within the first 12 hours.

c) Indications

- (1) Symptomatic bradycardia
- (2) Organophosphate poisoning
- (3) Nerve agents

d) Contraindications

- (1) Known hypersensitivity
- (2) Dysrhythmias in which enhancement of conduction may accelerate the ventricular rate and cause decreased cardiac output (e.g. atrial fibrillation, atrial flutter, or PAT with block)
- (3) Relative Contraindications (Weigh risk/benefits.):
 - (a) AV block at His-Purkinje level (second-degree Type II AV Block and third-degree AV Block)
 - (b) Suspected acute myocardial infarction or ischemia
 - (c) Glaucoma

e) Adverse Effects

- (1) Excessive doses of atropine can cause delirium, restlessness, disorientation, tachycardia, coma, flushed and hot skin, ataxia, blurred vision, dry mucous membranes.
- (2) Ventricular fibrillation and tachycardia have occurred following IV administration of atropine.

f) Precautions

Not clinically significant



g) Dosage

(1) Adult:

Bradycardia: Administer 0.5-1 mg IVP repeated every 3-5 minutes to a total dose of 0.04 mg/kg

(2) Pediatric:

Bradycardia: Administer 0.02 mg/kg IV/IO; minimum dose 0.1 mg; maximum single dose 0.5 mg; ET 0.04-0.06 mg/kg, dilute 5 mL; repeat once

(3)  Organophosphate poisoning:

(a) Adult: Administer 2-4 mg IVP or IM every 5-10 minutes

(b) Pediatric: Administer 0.02 mg/kg IVP/IO or IM every 5-10 minutes

(4) Nerve agent exposure

See MARK I / DuoDote protocol.



7. ATROVENT (Ipratropium)

a) Pharmacology

- (1) Anticholinergic (parasympatholytic) bronchodilator
- (2) Bronchodilator is site-specific, not systemic
- (3) Dries respiratory tract secretions
- (4) Most effective in combination with a beta-adrenergic bronchodilator

b) Pharmacokinetics

- (1) Improved pulmonary function in 15 - 30 minutes
- (2) Peak effects occur in 1 - 2 hours
- (3) Duration of action is usually 4 - 5 hours

c) Indications

- (1) Allergic reactions/ anaphylaxis
- (2) Bronchial asthma
- (3) Reversible bronchospasms associated with chronic bronchitis and emphysema

d) Contraindications

- (1) Hypersensitivity to the drug
- (2) Hypersensitivity to atropine
- (3) Less than one year of age

e) Adverse Effects

- (1) More common: dry mouth, cough, or unpleasant taste
- (2) Less common: vision changes, eye burning or pain, dizziness, headache, nervousness, palpitations, sweating, trembling, chest tightness, rash, hives, or facial sweating

f) Precautions

- (1) Use with caution in patients with congestive heart failure, heart disease, hypertension, glaucoma and elderly patients.
- (2) May worsen the condition of glaucoma if it gets into the eyes. Having the patient close his/her eyes during nebulization may prevent this.
- (3) Not to be used as a single agent — must be used in combination with a beta-agonist.



(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 Lactated Ringer's

(3) Allergic Reaction/Anaphylactic Shock/Asthma

(a)  FOR ANAPHYLACTIC SHOCK ONLY

Consider Epinephrine 1:10,000 (0.1 mg/mL) with medical consultation; 0.01 mg/kg slow IVP/IO; maximum dose 1 mg (1 mL increments) Additional doses of Epinephrine require medical consultation.

(b) Adult Epinephrine: 1:1,000

0.01 mg/kg IM;
maximum single dose 0.5 mg

(c) Pediatric Epinephrine: 1:1,000

0.01 mg/kg IM;
maximum single dose: 0.5 mg

(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



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



16.

FENTANYL (NEW '13)

(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 min – 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 that are MOLST and/or EMS/DNR patients

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 < 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.

f) Dosage

- (1) Adult: IV/IM/IN
 - (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 nostrils to a maximum of 1 mL per nostril.)

- (c) Obtain on-line medical direction for additional doses, if required.
- (2) Pediatric: IV/IM/IN
 - (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 nostrils to a maximum of 1 mL per nostril.)
 - (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

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21. MIDAZOLAM (VERSED)

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

- (1) Sustained and/or recurrent seizures
- (2) Precardioversion to reduce anxiety
- (3) Awake patient requiring transcutaneous pacing (TCP)
- (4) Nasal Tracheal Intubation
- (5) Implanted Cardioverter Defibrillator (ICD) Malfunction
- (6) Nerve/ organophosphate exposure
- (7)  Bucking Endotracheal Intubated patient
- (8) Chemical Restraint
- (9) Moderate to severe stimulant toxicity (**NEW '13**)

d) Contraindications

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

e) Adverse Effects

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

f) Precautions

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

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

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

- (1) Adult: (Reduce the below IV/IO/IM by 50% for patients 69 years or older.)

0.1mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg
If IV unavailable, 5 mg IM may be administered

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

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

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

- (2) Pediatric:
0.1mg/kg in 2 mg increments. Slow IV push over one to two minutes per increment to a maximum total dose of 5 mg
If IV unavailable, 0.2 mg/kg IM
Maximum total dose 5 mg

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

For life threatening conditions, consider IO administration of midazolam.

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

Chemical Restraint

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



Bucking Endotracheal Intubated patient

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

- (2) Pediatric: Administer 0.05 mg/kg slow IVP over 1-2 minutes, while maintaining systolic BP greater than 60 in neonates, 70 in infants, $[70 + (2 \times \text{years}) = \text{systolic BP}]$ for patients greater than 1 year of age.



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



22. MORPHINE SULPHATE

(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 (NEW '13)

- (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 that are MOLST and/or EMS/DNR patients

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 < 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) Narcan 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 (NEW '13)

- (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.



23. 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.
- (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 narcotics

c) Indications

To reverse respiratory depression induced by opiates

d) Contraindications

Not clinically significant

e) Adverse Effects

Opiate withdrawal

f) Precautions

- (1) Naloxone may induce opiate 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

- (1) Adult: Administer 0.4-2 mg IVP/IM/Intranasal (if delivery device is available divide administration of the dose equally between the nostrils to a maximum of 1mL per nostril) (**NEW '13**); repeat as necessary to maintain respiratory activity.
- (2) Pediatric: Administer 0.1 mg/kg IVP/IM/Intranasal (if delivery device is available divide administration of the dose equally between the nostrils to a maximum of 1mL per nostril) (**NEW '13**), 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

- (3)  Greater than 2 mg IV may be administered with medical consultation.



28. SODIUM BICARBONATE

a) Pharmacology

Sodium bicarbonate corrects acidosis.

b) Pharmacokinetics

- (1) Rapid onset of action in the blood
- (2) Delayed onset of action in the tissues

c) Indications

- (1) Used in cardiac arrest only after more definitive treatments
- (2) Hyperkalemia
- (3) Tricyclic and phenobarbital overdose
- (4) Pretreatment for patients with decreased renal function that will be receiving IV contrast dye (**NEW '13**)

d) Contraindications

Pre-existing alkalosis

e) Adverse Effects

- (1) Worsened intracellular acidosis due to carbon dioxide formation
- (2) Hyperosmolality
- (3) May precipitate congestive heart failure
- (4) Metabolic alkalosis
- (5) Acute hypokalemia
- (6) Exacerbation of central venous acidosis
- (7) Shifting the oxyhemoglobin dissociation curve, inhibiting the release of oxygen to the tissues

f) Precautions

- (1) Inactivates simultaneously administered catecholamines
- (2) Priorities before use:
 - (a) Intubation
 - (b) Hyperventilation
 - (c) Defibrillation
 - (d) Epinephrine
 - (e) Antiarrhythmics

g) Dosage

- (1) Should only be given after airway has been secured and ventilations achieved
- (2) Adult: Administer 1 mEq/kg IVP bolus initially with 0.5 mEq/kg at 10-minute intervals.
- (3) Pediatric: Administer 1 mEq/kg IVP/IO; for patients less than 1 year of age, must be diluted (1:1) with LR.

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



FLUSH IV WITH 5 ML OF LACTATED RINGER'S BETWEEN CALCIUM AND BICARBONATE ADMINISTRATION

Adult:



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

Pediatric: **(NEW '13)**



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

- (5) V 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 IV push medications through the same IV line as the bicarbonate drip unless compatibility has been established. Flush the line well before and after giving any IV push medication.

FIND THE PILOT, OPTIONAL, AND WMD PROTOCOLS
ON THE MIEMSS WEBSITE: www.miemss.org

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