

The Maryland
Medical Protocols
for Emergency Medical Services Providers

Effective July 1, 2011

**Maryland Institute for
Emergency Medical Services Systems**



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

To All Health Care Providers in the State of Maryland:

Re: 2011 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. They will also be receiving a single copy of the 2011 pocket protocols which will have the core protocol changes for quick reference and review. The EMS Board has approved these protocols for implementation on July 1, 2011. Prior to July 1, 2011, all EMS providers must complete a protocol rollout session that will cover the new material. The major protocol additions, deletions, and changes are listed below, but this list is not comprehensive.

Protocol Changes

- Pulse oximetry will be required on all transport units by 2012
- End-tidal CO₂ waveform monitoring will be required on all ALS transport units by 2015
- A Go-Team Activation protocol has been added
- Trauma categories have been renamed Alpha, Bravo, Charlie, and Delta to improve comprehension via radio
- Pain management
 - Documentation of pain scale rating before and after medication administration
 - The dosage of morphine has been changed to 0.1 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg with a repeat dose as needed in 5-10 minutes at half of the initial dose
- Three options for DNR are available
 - DNR A- Maximal (Restorative) Care (with intubation) Before Arrest, then DNR
 - DNR A (DNI)- Comprehensive Efforts to Prevent Arrest But Do Not Intubate
 - DNR B- Limited (Palliative) Care Only Before Arrest, then DNR
- Maximum dose for glucagon indicated for beta-blocker overdose has been removed
- Dexamethasone has been added for moderate to severe asthma/COPD
 - 10 mg **IV**/PO for adult
 - 0.5 mg/kg up to 10 mg **PO**/IV for pediatric
- Ventilatory Difficulty Secondary to Bucking protocol is available to ALS providers with consult in patients with advanced airway management
 - Midazolam 0.05 mg/kg and/or morphine (if thought to be pain-related) 0.05 mg/kg titrated to effect
 - Dependent on SBP greater than 90 mmHg
- Optional Protocols
 - Adjustable pressure support is a required feature on chronic/scene and acute ventilators
 - Maximum PEEP has been increased to less than 10 cm H₂O for chronic ventilated patients
 - BiPAP is available for interfacility ALS transports of patients already on BiPAP, within certain guidelines

Remember – it is the responsibility of each provider to review the 2011 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.

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I. GENERAL INFORMATION

A. GENERAL PROVISIONS

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

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

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

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

Unless otherwise specified, a mandate with a stated year but no date shall be interpreted as taking effect on the protocol implementation date for that year. **(NEW '11)**



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

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



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

THE FIRST RESPONDER SHALL DOCUMENT ALL PATIENT CARE.

B. IMPORTANT NUMBERS

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

IMPORTANT NUMBERS (Continued)



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

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

C. HEALTH CARE FACILITY CODES

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

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, Primary Stroke)
239	Frederick Memorial Hospital (Base Station)
253	Freeman Hospital
286	Fulton County Medical Center, PA
322	Garrett County Memorial Hospital (Base Station)
580	Geisinger Medical Center, PA
335	George Washington University Hospital, DC
337	Georgetown University Hospital, DC
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, Primary Stroke)
450	Hospice of Baltimore - Gilchrist Center - Baltimore, MD
268	HSC Pediatric Center, DC
223	Howard County General Hospital (Base Station, 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, Neonatal, Perinatal, Primary Stroke)
761	Johns Hopkins Comprehensive Geriatric Center
766	Johns Hopkins Bayview Medical Center Transitional Care Unit
204	Johns Hopkins Hospital (Adult Trauma, Base Station, 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 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 (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, 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 (formerly National Rehabilitation Hospital)
408	Peninsula Regional Medical Center (Adult Trauma, Base Station, 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, 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, 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, Primary Stroke)
405	Saint Joseph Hospital, PA
367	Saint Luke Institute
333	Saint Mary's Hospital (Base Station, Primary Stroke)
455	Salisbury Genesis Center
265	Shady Grove Adventist Hospital (Base Station, 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, 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, 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, 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
224	Upper Chesapeake Health System
374	U.S. Naval Medical Clinic, Annapolis
576	U.S. Public Health Hospital, MD
375	U.S. Soldier's and Airmen's Home, DC
298	Union Hospital of Cecil County (Base Station)
214	Union Memorial Hospital (Base Station, Hand/Upper Extremity, Primary Stroke)
215	University of Maryland Medical System (Base Station, 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, 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)
327	Washington Hospital Center, DC (Adult Trauma, Burn)
727	Washington Hospital Center, DC, Burn Center
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, 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

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
- 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
- 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 (NEW '11)

- 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

MARYLAND TRAUMA AND SPECIALTY REFERRAL CENTERS (Continued)

Primary Stroke (Continued)

- Sinai Hospital of Baltimore
- Southern Maryland Hospital, Clinton
- St. Agnes Hospital, Baltimore
- St. Joseph Medical Center, Baltimore
- St. Mary's Hospital, Leonardtown
- Suburban Hospital, Bethesda
- Union Hospital of Cecil County, Elkton
- Union Memorial Hospital, Baltimore
- University of Maryland Medical Center, Baltimore
- Upper Chesapeake Medical Center, Bel Air
- Western Maryland Regional Medical Center, Cumberland

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E. PROTOCOL KEY



1. Basic Life Support Level Care



2. Advanced Life Support Level Care



3. Requires Medical Consultation

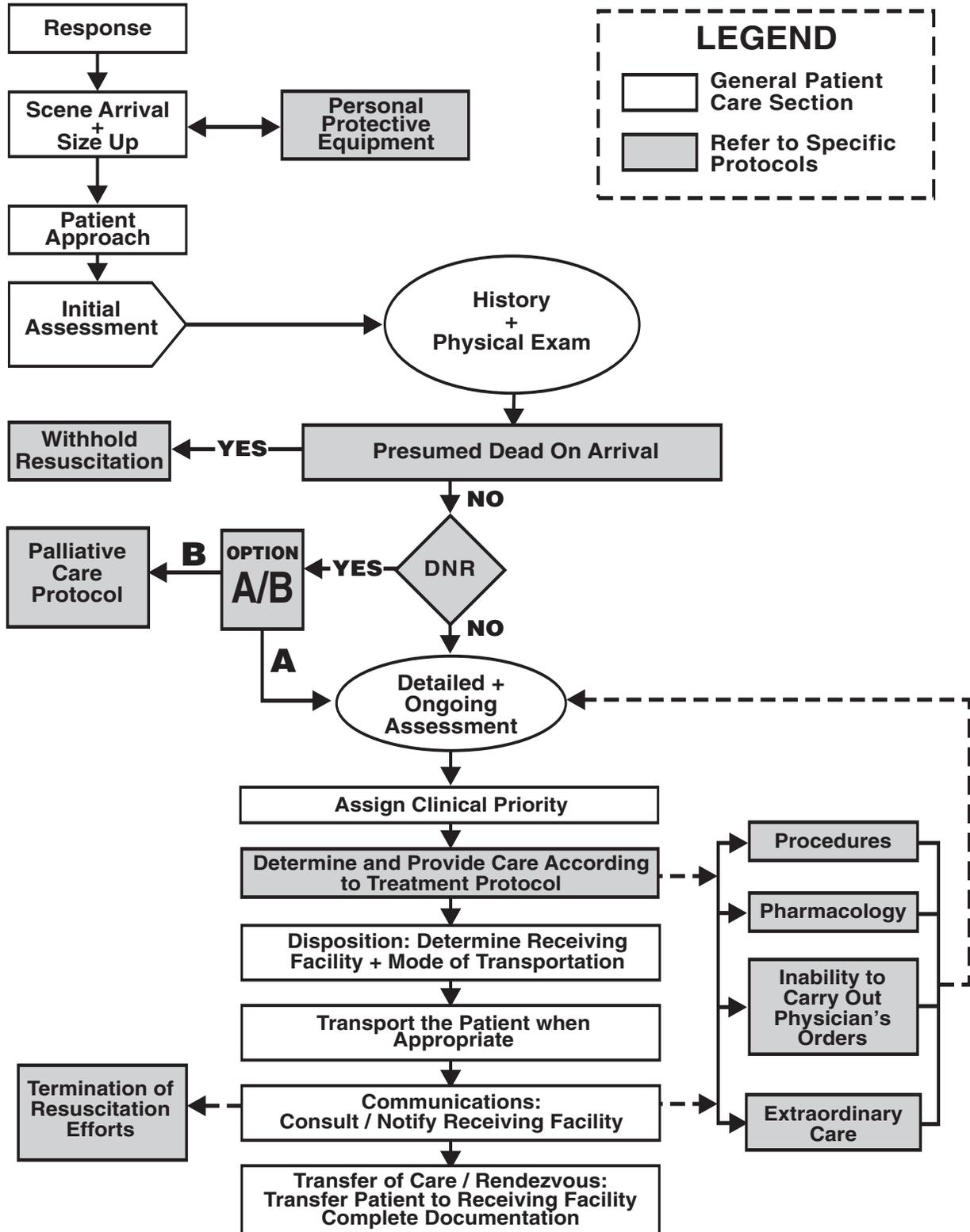


4. Pediatric Care
NOTE: ALL PROVIDERS (BLS & ALS) SHOULD CHECK ALL PEDIATRIC SECTIONS FOR NECESSARY CARE.



5. Caution/Warning/Alert

F. PROTOCOL USAGE FLOW DIAGRAM

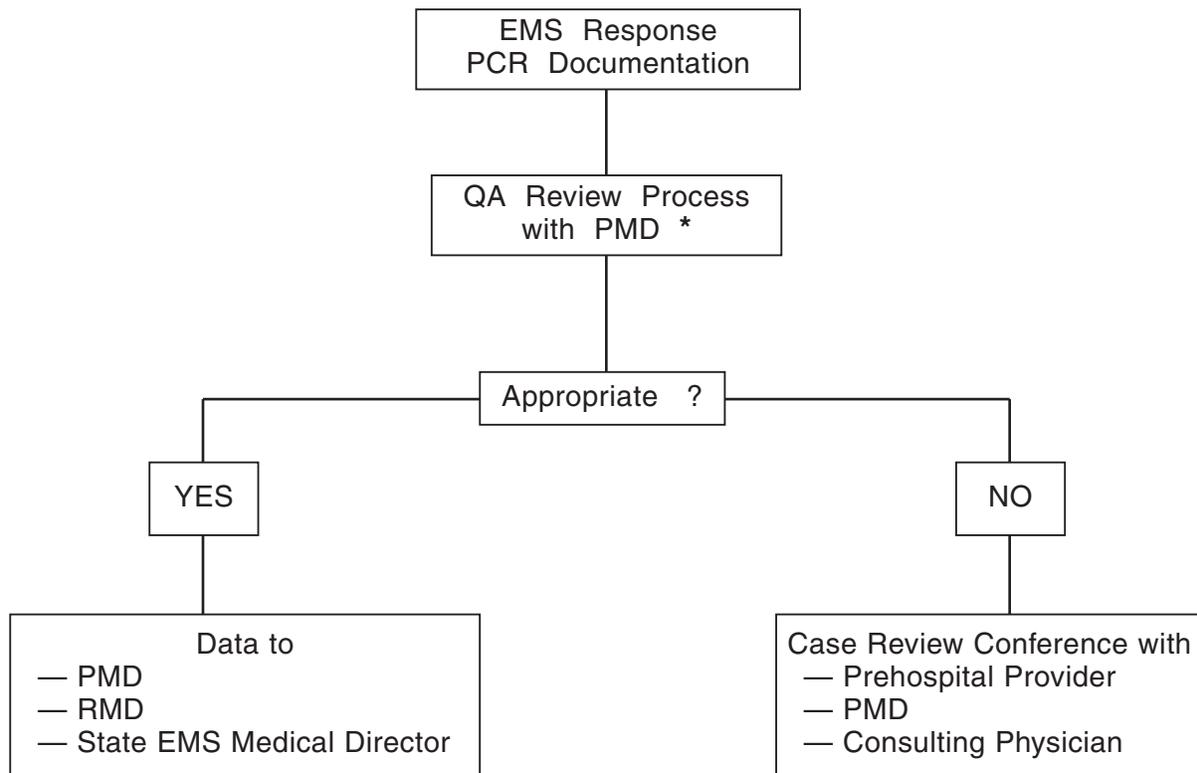


**J. QUALITY REVIEW PROCEDURE FOR PILOT PROGRAMS
(Old Class B)**

1. Through a quality assurance review process directly involving the Program Medical Director (PMD), developed by the local program and approved by the PMD, the respective Regional Medical Director (RMD) and the State EMS Medical Director, the local program will review the runsheet and patient outcome records to determine the appropriateness of each individual use of the skill or administration of the medication. If the pilot procedure or medication is judged to be an appropriate intervention, the occurrence is added to the jurisdictional database and forwarded to the Regional Medical Director and the State EMS Medical Director.

2. If a variance or questions arise from the review of the case, a case review conference will be held with the provider, the PMD, and if indicated, the on-line medical consultant with the summary of the findings to be reported to the Regional Medical Director and the State EMS Medical Director.

**Quality Assurance Mechanism
for PILOT Programs and Procedures**



* — Approved by PMD, RMD, MIEMSS State EMS Medical Director

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II. GENERAL PATIENT CARE (GPC)

A. RESPONSE

Review the dispatch information and select appropriate response.

B. SCENE ARRIVAL AND SIZE-UP

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

C. PATIENT APPROACH

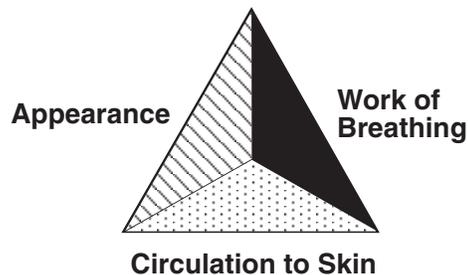
1. Determine the Mechanism of Injury (MOI)/Nature of Illness (NOI).
2. If appropriate, begin triage and initiate Mass Casualty Incident (MCI) procedures.

D. INITIAL ASSESSMENT



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

FOR PEDIATRIC PATIENTS, CONSIDER USING THE PEDIATRIC ASSESSMENT TRIANGLE.



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



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

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

3. Breathing

- a) Determine if breathing is adequate.
 - (1) If patient's ventilations are not adequate, provide assistance with 100% oxygen using Bag-Valve-Mask (BVM). (The use of a manually activated positive pressure oxygen delivery device is allowed when a BVM is not available.)
 - (2) Consider pulse oximetry (required for all transport units by 2012). **(NEW '11)**
 - (3) Consider end-tidal CO₂ waveform monitoring (required on all ALS transport units for advanced airway management by 2015). **(NEW '11)**

Percent O ₂ Saturation	Ranges	General Patient Care
95–100%	Normal	Give Oxygen as necessary
91–94%	Mild Hypoxia	Give Oxygen as necessary
86–90%	Moderate Hypoxia	Give 100% Oxygen Assisting Ventilations
≤ 85%	Severe Hypoxia	Give 100% Oxygen Assist Ventilations if necessary If indicated, Intubate
<i>False SPO₂ readings may occur in the following patients:</i> Hypothermic, Hypoperfusion (Shock), Carbon Monoxide Poisoning, Hemoglobin Abnormality, Anemic, and Vasoconstriction.		

- b) Hyperventilate the head-injured patient as follows:
 - Adult 20 breaths per minute
 - Child 30 breaths per minute
 - Infant 35 breaths per minute
 - (1) Who has signs of herniation such as unequal pupils, posturing, or paralysis
 - (2) Who is manifesting a rapidly decreasing GCS **or,**

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



NEVER WITHHOLD OXYGEN FROM A PATIENT IN RESPIRATORY DISTRESS!

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

- 4. Circulation
 - a) Assess pulse.
 - 1) Patients less than 1 year of age:
 - (a) If pulse is absent, begin CPR and use manual defibrillator.
 - (b) If patient is symptomatic with poor perfusion (unresponsive or only responds to painful stimuli) and pulse is less than 60 bpm:
 - (i) Ventilate for 30 seconds.
 - (ii) If after 30 seconds, the pulse is less than 60 bpm, begin CPR.
 - (c) If pulse greater than 60 bpm, continue assessment.
 - 2) Patients 1 year of age or greater but who have not reached their 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.
 - (3) Patients 12 year of age or older:
 - (a) If pulse is absent, use AED/manual defibrillator or begin CPR.
 - (b) If pulse is present, continue assessment.
 - b) Assess for and manage profuse bleeding.
 - c) Assess skin color, temperature, and capillary refill.
5. Disability
- a) Perform Mini-Neurologic Assessment (Pulse/Motor/Sensory).
 - b) Cervical Spine Immobilization
 - (1) The provider shall determine the appropriate device for use in spinal 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 a traumatic mechanism which could cause cervical spine injury and meets ANY of the following criteria, complete Spinal Immobilization (C-spine and back maintaining neutral alignment and padding when appropriate) should occur.
 - (a) History of Loss of Consciousness (LOC) or Unconscious?
 - (b) Disoriented or altered LOC?
 - (c) Suspected use of Drugs or Alcohol?
 - (d) Midline Cervical Tenderness or Pain?
 - (e) Focal Neurologic Deficit?
 - (f) Has a painful distracting injury that could mask cervical pain or injury?
 - (g) Child less than 8 years of age
 - (3) If NO to all of the above, transport as appropriate.



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

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

E. HISTORY AND PHYSICAL EXAMINATION/ASSESSMENT

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

F. TREATMENT PROTOCOLS

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



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(s), 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. **(NEW '11)**

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.

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). **(NEW '11)**
- e) On-line medical direction should be obtained from the local trauma center and the specialty referral center when transport to the specialty center would require more than 10-15 minutes additional transport time.
 - (1) Pediatric Trauma Patients: Indications as per the pediatric section of the trauma protocols.

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

3. Status

Evaluate the need for emergent versus non-emergent transportation.



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

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

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

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

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

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

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

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

K. DOCUMENTATION

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

L. CONFIDENTIALITY

Patient confidentiality must be maintained at all times.

M. PROFESSIONAL CONDUCT

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

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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**

OR

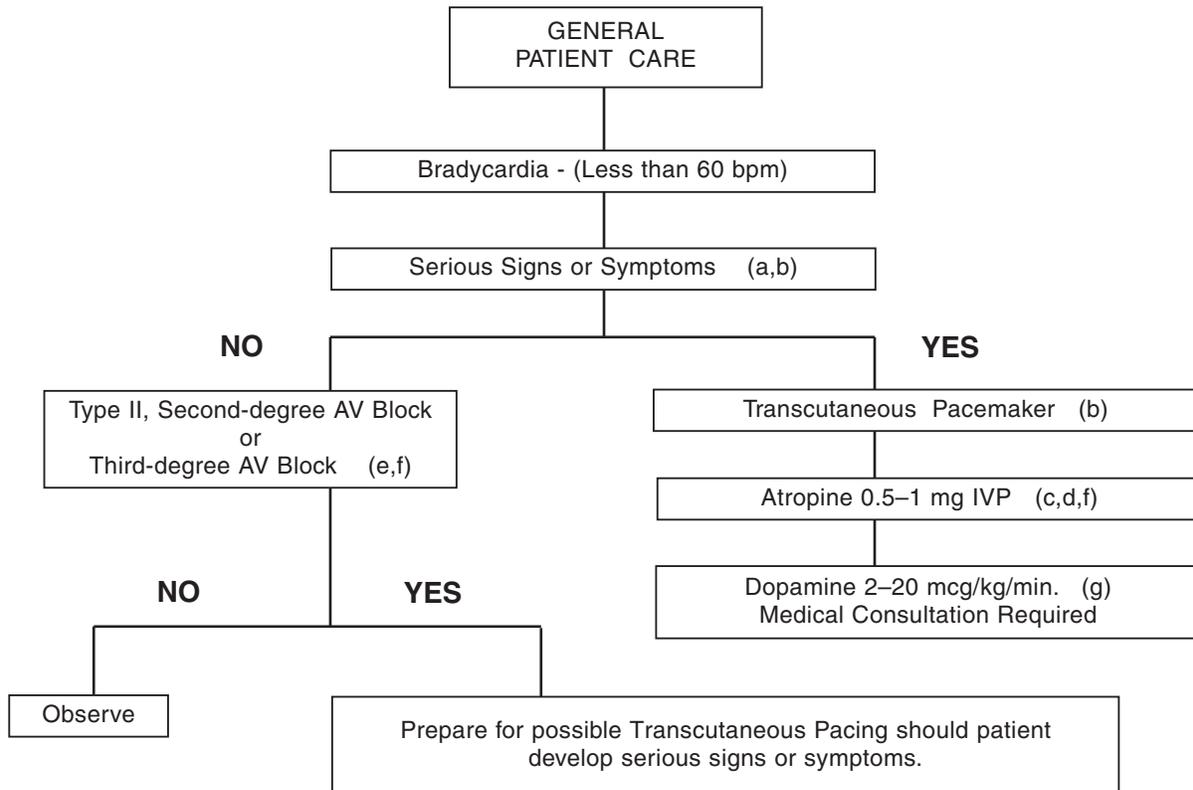
Consider midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg. (Reduce by 50% for patients 69 years or older.)

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, or if patient is provider-witnessed asystole.

(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. Medical consultation required. Consider shorter intervals in severe clinical conditions. Atropine shall be used with caution in AV block at the His-Purkinje level (Type II AV block and new third-degree block with wide QRS complexes).

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

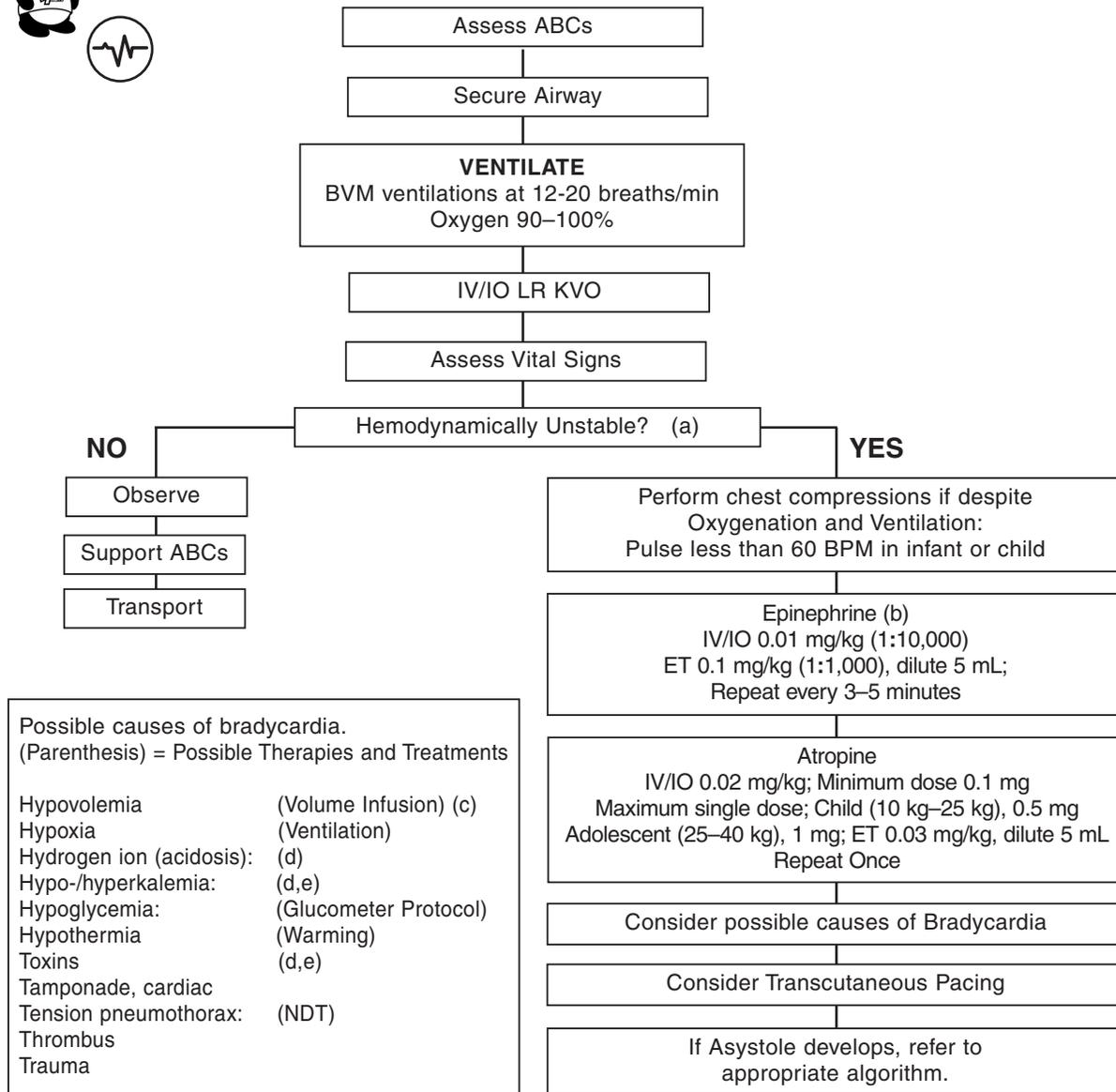
(f) - In the presence of Mobitz II and third-degree AV block, medical consultation is required for atropine administration.

(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



Possible causes of bradycardia. (Parenthesis) = Possible Therapies and Treatments	
Hypovolemia	(Volume Infusion) (c)
Hypoxia	(Ventilation)
Hydrogen ion (acidosis):	(d)
Hypo-/hyperkalemia:	(d,e)
Hypoglycemia:	(Glucometer Protocol)
Hypothermia	(Warming)
Toxins	(d,e)
Tamponade, cardiac	
Tension pneumothorax:	(NDT)
Thrombus	
Trauma	

(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.

Pacer Age-Related Rates

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

H. CARDIAC EMERGENCIES: CARDIAC ARREST

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



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



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



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



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



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

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

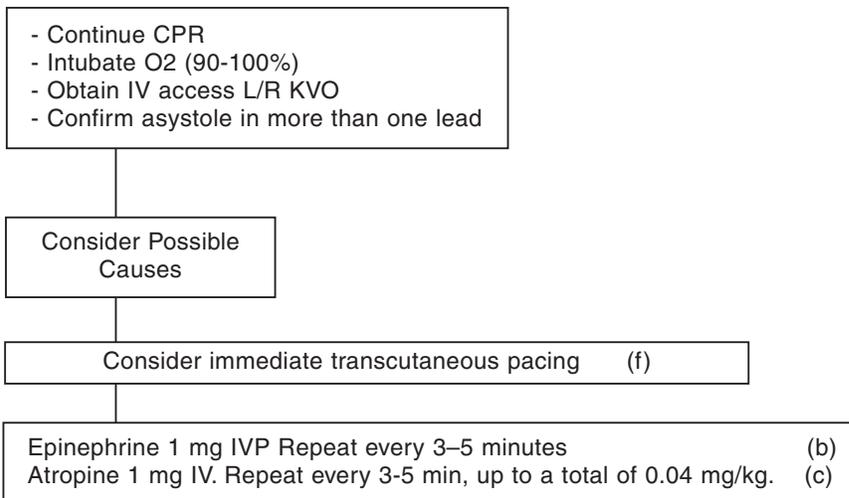


-
- h) Identify rhythm and treat according to appropriate algorithm.



4.

ADULT ASYSTOLE ALGORITHM



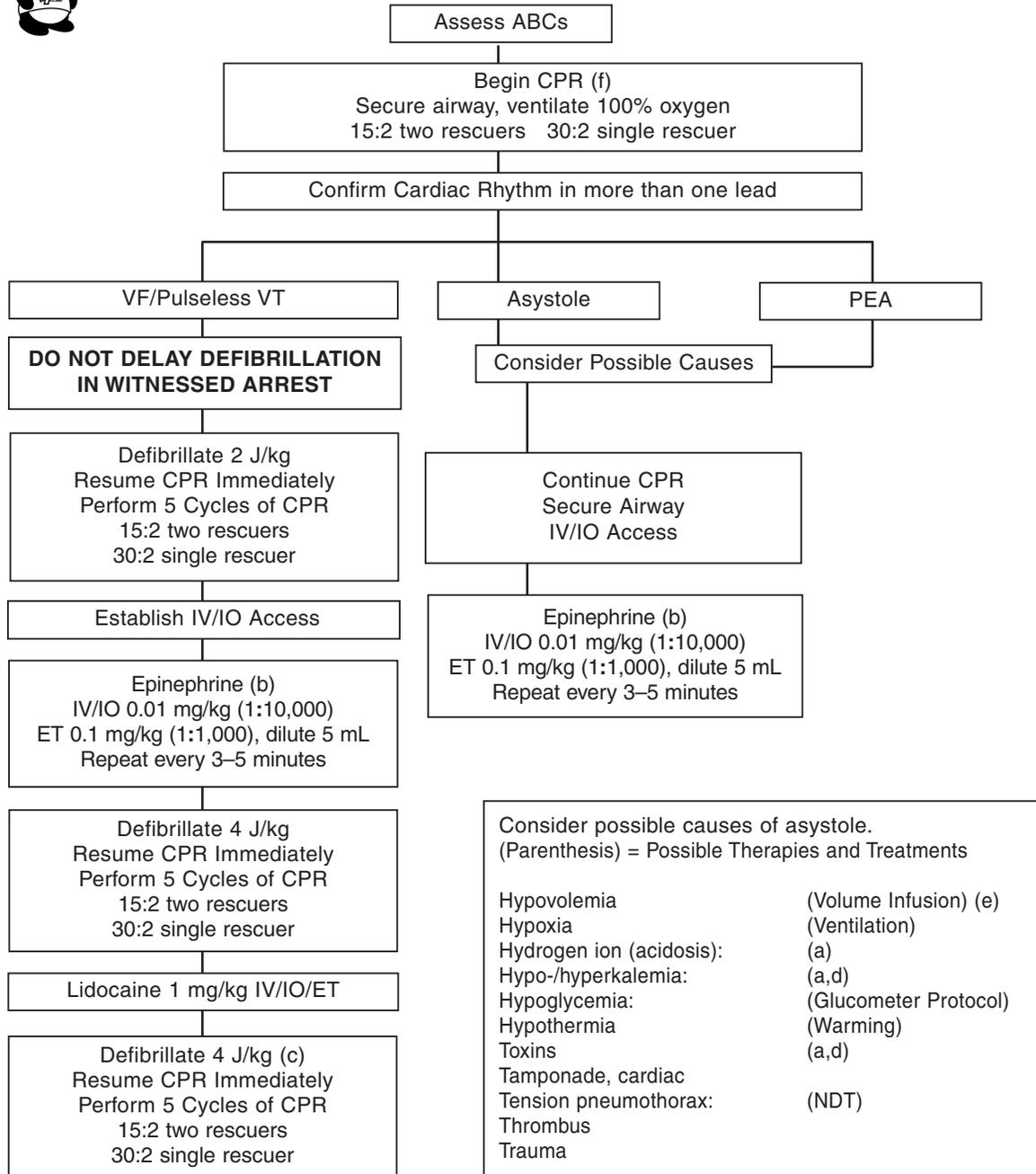
Consider possible causes of asystole.
(Parenthesis) = Possible Therapies and Treatments

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

- (a) - Sodium bicarbonate 1 mEq/kg, with medical consultation. See sodium bicarbonate.
- (b) - The recommended dose for epinephrine is 1 mg IVP every 3-5 minutes.
- (c) - Shorter atropine dosing intervals are acceptable, possibly helpful in asystolic arrest.
- (d) - Calcium Chloride, 0.5-1 gram IVP, with medical consultation. See calcium chloride.
- (e) - Volume infusion is 20 mL/kg.
- (f) - Do not delay TCP if patient is provider-witnessed asystole.



5. **PEDIATRIC ASYSTOLE & PULSELESS ARREST ALGORITHM**



- (a) - Sodium bicarbonate, 1 mEq/kg, with medical consultation. See sodium bicarbonate.
- (b) - Neonates (0-28 days), epinephrine ET 0.03 mg/kg (1:10,000) dilute with 1 mL.
- (c) - Alternate: lidocaine, defibrillate, then epinephrine, defibrillate.
- (d) - Calcium Chloride, 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min). Max dose 1 gram.
- (e) - Volume infusion for neonates and volume sensitive children, 10 mL/kg; for infant and child 20 mL/kg.
- (f) - For patients in unwitnessed cardiac arrest 5 cycles of CPR should be completed prior to defibrillation.

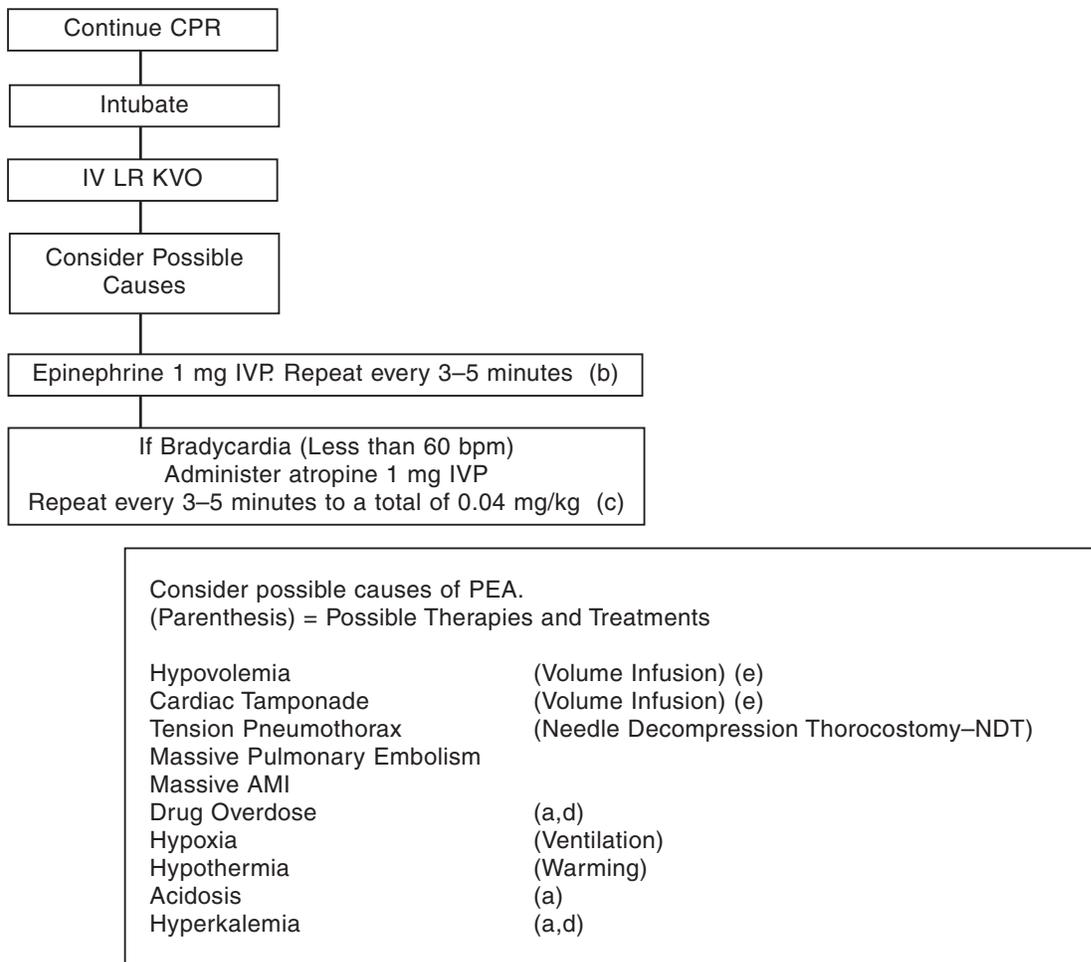


6.

PULSELESS ELECTRICAL ACTIVITY (PEA) ALGORITHM

Includes:

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

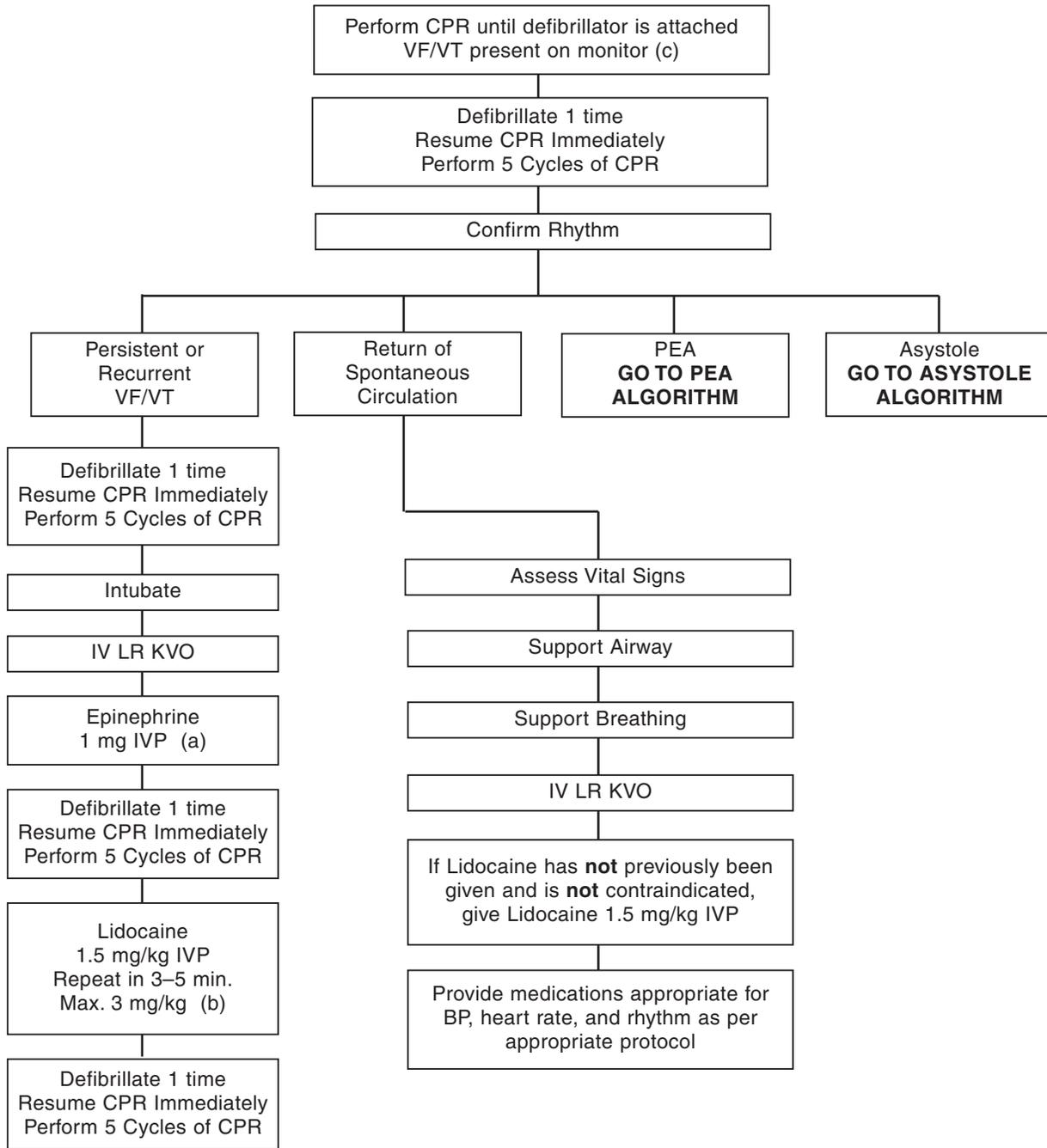


- (a) - Sodium bicarbonate 1 mEq/kg, with medical consultation. See sodium bicarbonate.
- (b) - Administer epinephrine 1 mg IVP every 3-5 minutes.
- (c) - Shorter atropine dosing intervals are acceptable, possibly helpful in asystolic arrest.
- (d) - Calcium Chloride, 0.5-1 gram IVP, with medical consultation. See calcium chloride.
- (e) - Volume infusion is 20 mL/kg.



7.

VENTRICULAR FIBRILLATION PULSELESS VENTRICULAR TACHYCARDIA



(a) - The recommended dose of epinephrine is 1 mg IVP every 3-5 minutes.

(b) - Sodium bicarbonate 1 mEq/kg, if medical consult directed. See sodium bicarbonate.

(c) - For patients in unwitnessed cardiac arrest 5 cycles of CPR should be completed prior to defibrillation.

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-B assisted).
- c) Assess and treat for shock if indicated.
- d) Constantly monitor airway and reassess vital signs every 5 minutes.



NITROGLYCERIN IS CONTRAINDICATED FOR ANY PATIENT HAVING TAKEN MEDICATION FOR 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.

- e)  Additional doses of nitroglycerin require medical consultation.



-
- f) Initiate IV LR KVO.
 - g) Shall perform a 12 lead ECG for patients with ACS. (If trained, providers may perform a 15 lead ECG.)
 - h) 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)

- i) 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.
- j) If IV cannot be established, nitroglycerin may be administered with medical consultation.
- k) Identify rhythm and treat according to appropriate algorithm.
- l)  Administer additional doses of nitroglycerin.
- m)  Administer morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**
- n) Consider aspirin 324 mg or 325 mg chewed, if acute myocardial infarction is suspected.



CONSULT A PEDIATRIC BASE STATION FOR CHILDREN (WHO HAVE NOT REACHED THEIR 15TH 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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.)
(NEW '11)
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 15th birthday) with an ICD device delivering shock therapy or malfunctioning.

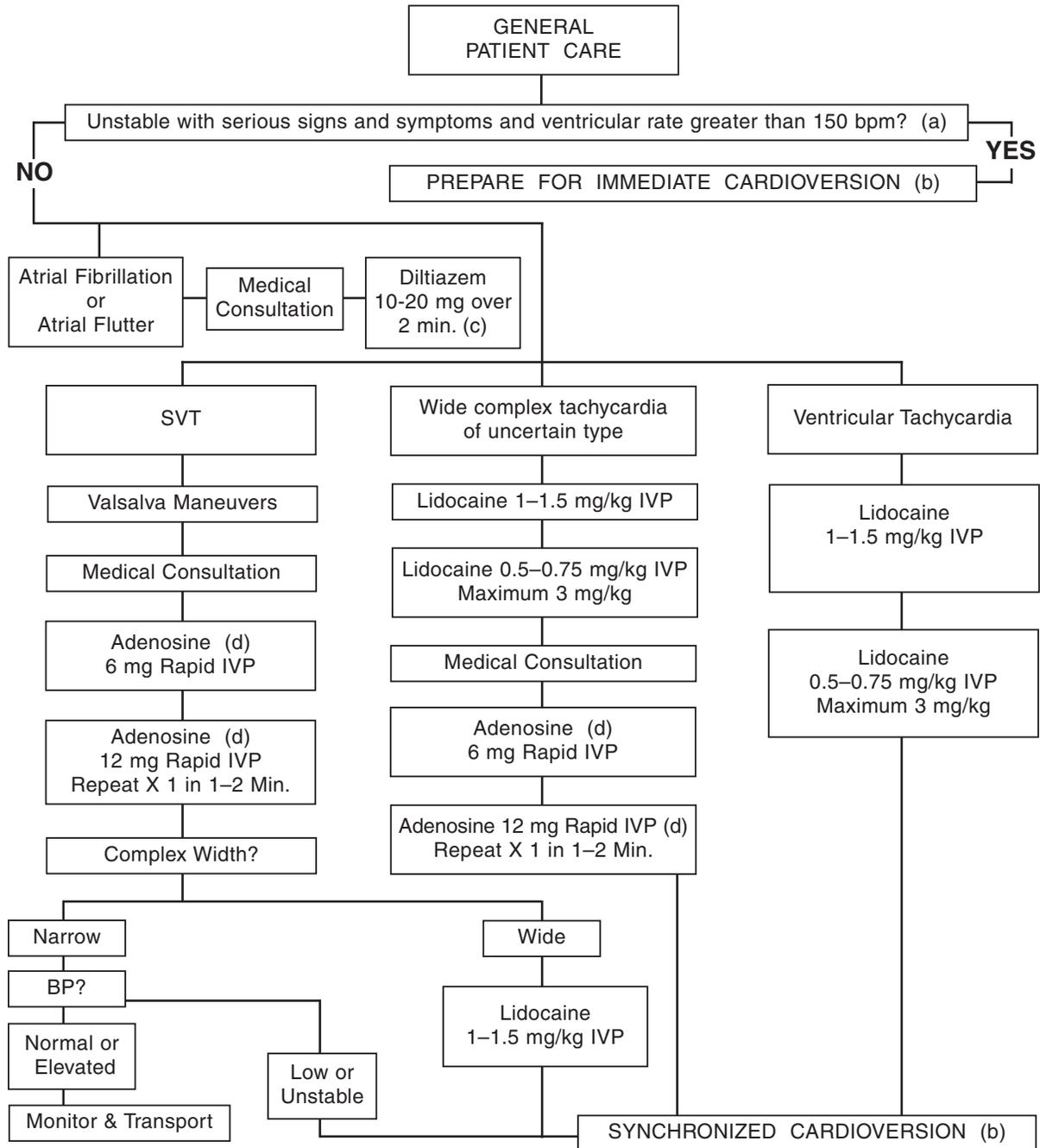
- l)  If ICD deactivation indications are questionable or deactivation is unsuccessful (or a donut magnet is not available) and undesired shocks continue, medications may be administered for patient comfort.
 - (1) Administer morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**
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.

CARDIAC EMERGENCIES: TACHYCARDIA (Continued)

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



5.

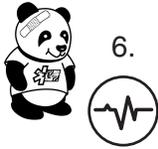
ADULT TACHYCARDIA ALGORITHM

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

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

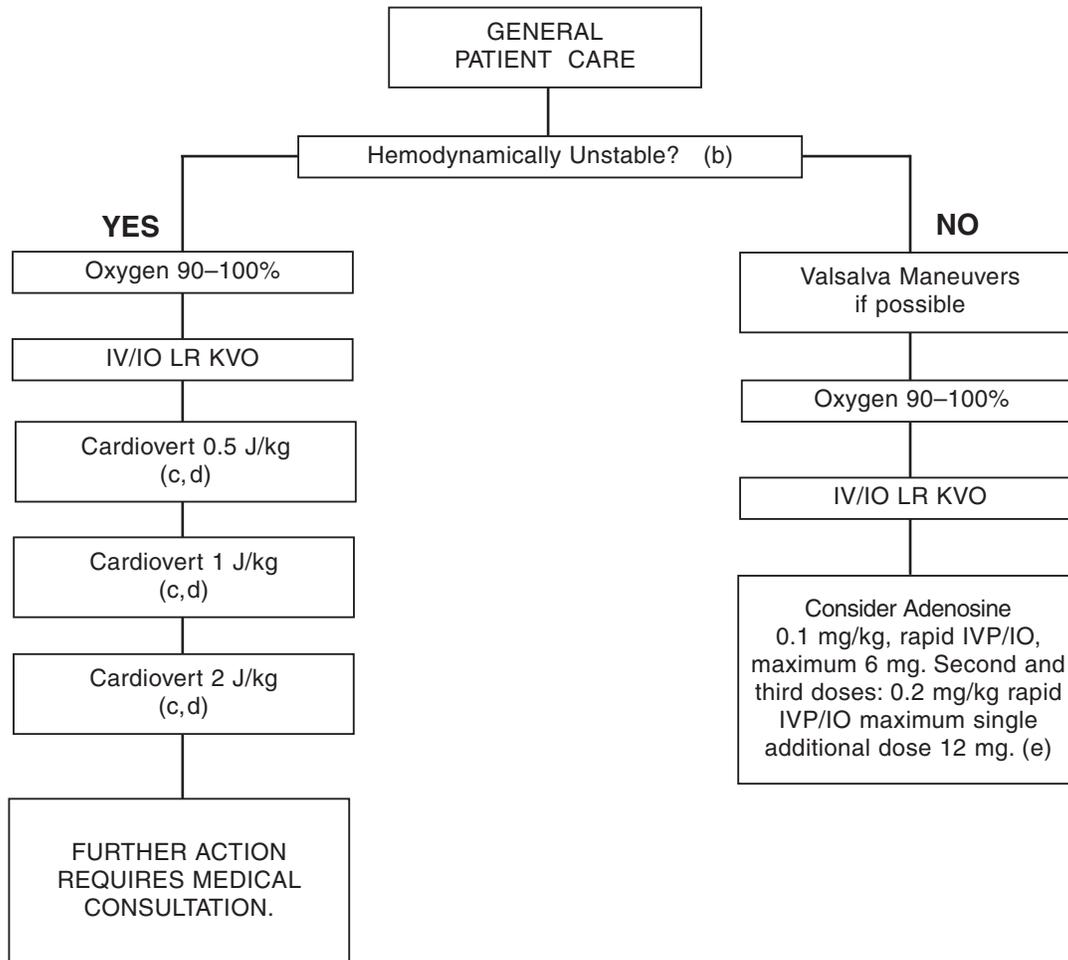
(c) - Consider calcium chloride 250 mg IVP for hypotension induced by diltiazem. Medical consultation required. If rate does not slow in 15 minutes, administer a second dose of diltiazem (15-25 mg over 2 minutes.) Medical consultation required.

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



6.

PEDIATRIC SUPRAVENTRICULAR TACHYCARDIA ALGORITHM (a)



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

(b) - 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), less than $[70 + (2 \times \text{years}) = \text{systolic BP}]$ for patients greater than 1 year of age; altered mental status with hypoperfusion evidenced by delayed capillary refill; pallor; or peripheral cyanosis.

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

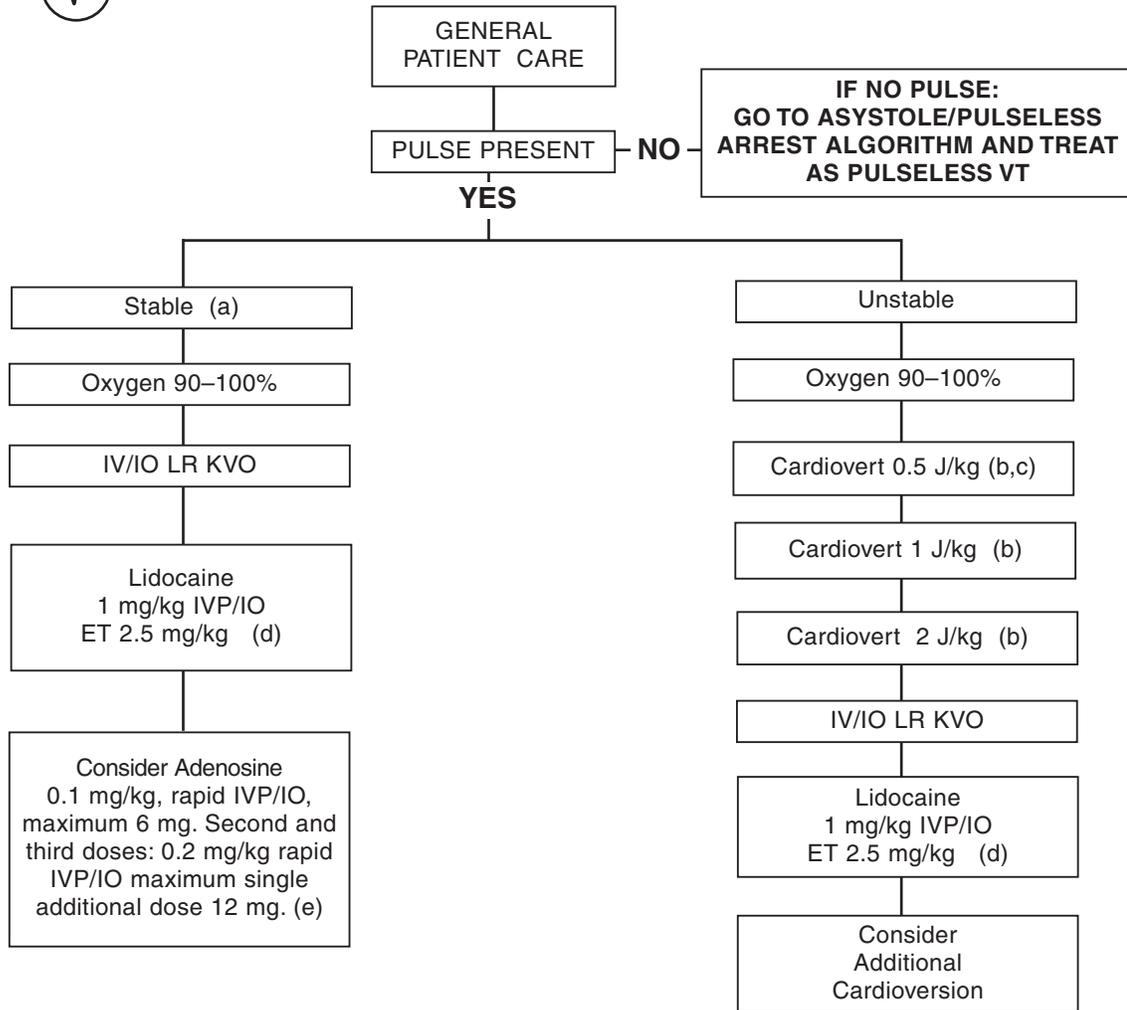
(d) - Consider sedation (midazolam with medical consultation). However, overall patient status, including BP, may affect ability to administer sedative.

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



7.

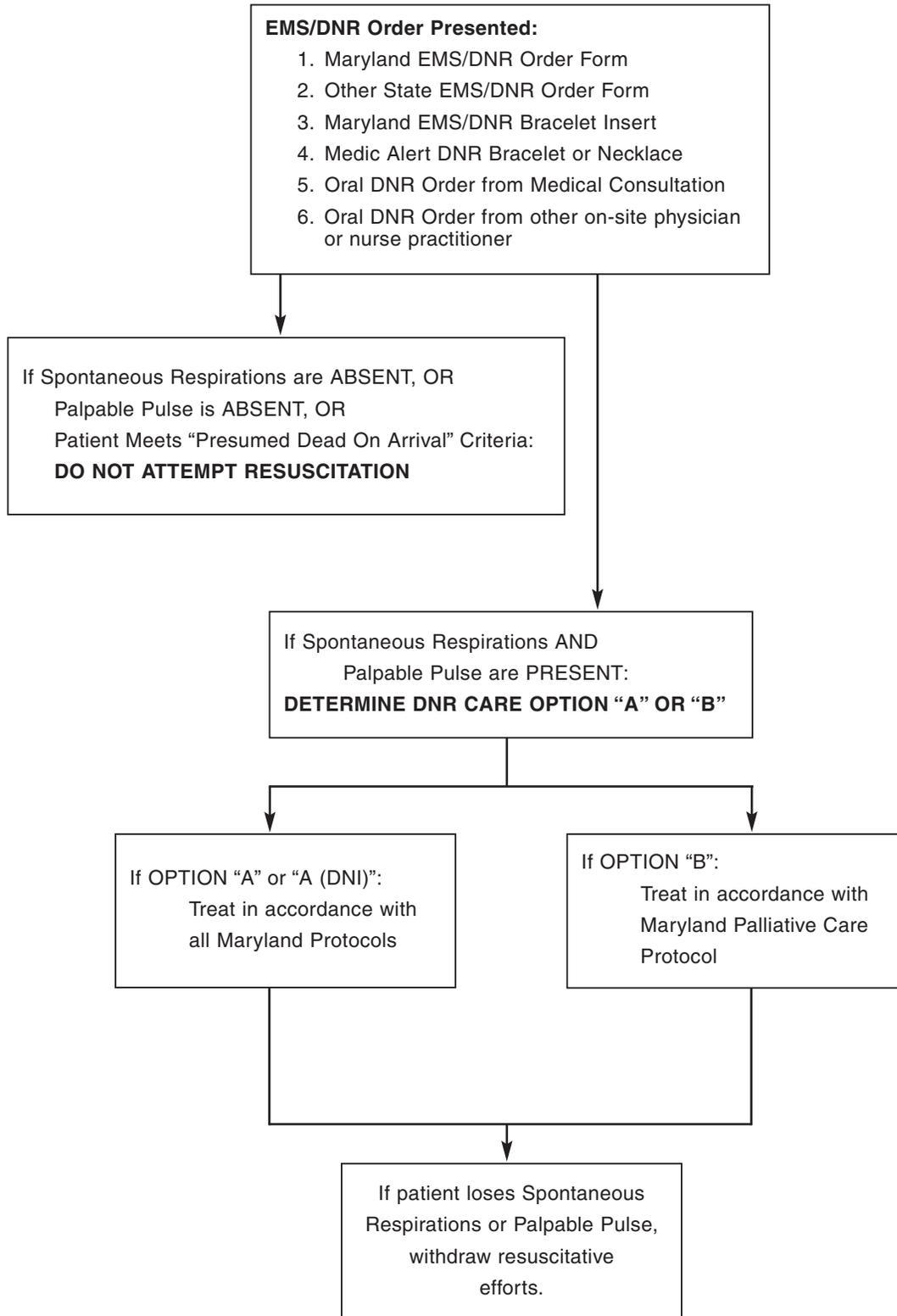
PEDIATRIC VENTRICULAR TACHYCARDIA ALGORITHM



- (a) - If patient decompensates, move directly to unstable path and cardioversion
- (b) - Cardioversion. If calculated joules setting is lower than cardioversion device is able to deliver, use the lowest joules setting possible or obtain medical consultation.
- (c) - Consider sedation (midazolam with medical consultation). However, overall patient status, including BP, may affect ability to administer sedative.
- (d) - Lidocaine administration: 1 mg/kg IV/IO bolus, followed by 0.5 mg/kg at 8-minute intervals until a maximum dose of 3 mg/kg has been administered or rhythm conversion has occurred. A paper tracing must be obtained prior to each administration. ET Dose is 2-2.5 times the above dose.
- (e) - Be prepared for up to 40 seconds of asystole. (Paramedic may administer without consult.)

P. EMS DNR Flowchart Effective 07/01/11 (NEW '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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**

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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**

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.

T. ENVIRONMENTAL EMERGENCIES: HAZARDOUS MATERIALS EXPOSURE

1. Initiate General Patient Care.

2. Presentation

Exposure to a known or unknown hazardous material. Patient may present with a wide array of signs and symptoms due to the variables of substance exposure. Any patient who is exposed to a hazardous material is considered contaminated until the patient is decontaminated thoroughly.

3. Treatment



DO NOT ENTER THE SCENE UNLESS PROPERLY TRAINED AND EQUIPPED TO DO SO.

PROPER LEVELS OF PERSONAL PROTECTIVE EQUIPMENT (PPE) ARE TO BE WORN BY ALL PERSONNEL, DEPENDING ON THE MATERIAL INVOLVED AND THE ZONE OCCUPIED.

IT IS ESSENTIAL TO HAVE THE EMS PROVIDER IN CHARGE NOTIFY EMRC AND POTENTIAL RECEIVING HOSPITALS OF A HAZARDOUS MATERIALS EVENT IN WHICH THEY MAY BE CONSULTED. NOTIFY EMRC/RECEIVING HOSPITALS ABOUT THE FIRST PATIENT'S ETA, THE NUMBER OF VICTIMS, AND THE TYPE OF HAZARDOUS MATERIAL AS SOON AS INFORMATION BECOMES AVAILABLE.

a) Transport of patients even after decontamination will be by ground units only.



THE USE OF AEROMEDICAL TRANSPORT IS CONTRAINDICATED FOR ANY POTENTIALLY CONTAMINATED PATIENT.



b) Triage and decontaminate if indicated.

c) Protect the patient from the environment and ensure the patient is not/does not become hypothermic.



d) Initiate IV LR KVO in a clean area if medication administration is anticipated.

e)  Consider antidote to specific agent if available.

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

ENVIRONMENTAL EMERGENCIES: HAZARDOUS MATERIALS (Continued)

g) Medical Follow-Up

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

4. Continue General Patient Care.

BB. OBSTETRICAL/ GYNECOLOGICAL EMERGENCIES: VAGINAL BLEEDING

1. Initiate General Patient Care.
2. Presentation
Unusually heavy vaginal bleeding as a result of possible pregnancy, miscarriage, postpartum bleeding, or sexual assault. Patient may exhibit the signs and symptoms of hypoperfusion.

3. Treatment



- a) Place absorbent pads underneath patient.
- b) Treat for hypoperfusion.
- c) If post-partum bleeding, consider uterine massage from pubis toward umbilicus only.
- d) Reconsider ALS.



PRODUCTS OF CONCEPTION SHOULD BE BROUGHT TO THE HOSPITAL!

DO NOT PULL CONCEPTUAL PRODUCTS FROM VAGINAL OPENING WITHOUT MEDICAL CONSULTATION!



-
- 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

4. Continue General Patient Care.

CC. OVERDOSE/POISONING: ABSORPTION

1. Initiate General Patient Care.

2. Presentation

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



3. Treatment

- a) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
- b) Identify agent and mechanism of exposure.
- c) Decontaminate as appropriate.



d) Initiate IV LR KVO in a clean area, if medication administration is anticipated.

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

f)  Consider antidote to specific agent if available.

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



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

i) Identify agent and mechanism of exposure.

j) Decontaminate as appropriate.

OVERDOSE/POISONING: ABSORPTION (Continued)

- k) Initiate IV/IO LR KVO in a clean area, if medication administration is anticipated.
 - l)  If **organophosphate poisoning**, consider atropine 0.02 mg/kg IV/IO or IM every 5-10 minutes.
 - m)  Consider antidote to specific agent if available.
 - n)  Consider antibiotic specific to agent in mass casualty incident, if available.
4. Continue General Patient Care.

DD. OVERDOSE/POISONING: INGESTION

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



DO NOT GIVE ANYTHING BY MOUTH WITHOUT MEDICAL CONSULTATION!

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



a) Identify substance and amount ingested.

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



c) Initiate IV LR KVO in a clean area, if medication administration is anticipated.

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

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

f)  If **beta-blocker** overdose, consider glucagon
1 mg every 5 minutes IVP (**NEW '11**)

g)  If **calcium channel blocker** overdose, consider calcium chloride;
0.5 - 1 gram slow IVP (50 mg/min)



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

OVERDOSE/POISONING: INGESTION (Continued)

- h)  If **organophosphate poisoning**, consider atropine
2-4 mg IVP or IM every 5-10 minutes
- i)  If **tricyclic** overdose, consider sodium bicarbonate
1 mEq/kg IVP Bolus initially with 0.5 mEq/kg at 10 minute intervals
- j)  Consider antidote to specific agent if available.
- k)  Consider antibiotic specific to agent in mass casualty incident, if available.



- l) Identify substance and amount ingested.
- m)  Consider activated charcoal **without** Sorbitol 1 gram/kg PO.



-
- n) Initiate IV/IO LR KVO in a clean area, if medication administration is anticipated.
 - o)  Consider activated charcoal **without** Sorbitol 1 gram/kg PO.
 - p)  If **dystonic, extrapyramidal, or mild allergic reaction**, consider diphenhydramine 1 mg/kg IVP/IO or IM
Maximum single dose 25 mg
 - q)  If **beta-blocker** overdose, consider glucagon
1 mg IVP (25-40 kg);
0.5 mg IVP (less than 25 kg);
every 5 minutes as necessary **(NEW '11)**
 - r)  If **calcium channel blocker** overdose, consider calcium chloride
20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/mL)
Maximum dose 1 gram or 10 mL



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

OVERDOSE/POISONING: INGESTION (Continued)

- s)  If **organophosphate** poisoning, consider atropine;
0.02 mg/kg IVP/IO or IM
Maximum single dose 2 mg
May be repeated every 5-10 minutes
- t)  If **tricyclic** overdose, consider sodium bicarbonate
1 mEq/kg diluted 1:1 slow IVP/IO
- u)  Consider antidote to specific agent if available.
- v)  Consider antibiotic specific to agent in mass casualty incident, if available.

4. Continue General Patient Care.

EE. OVERDOSE/POISONING: INHALATION

1. Initiate General Patient Care.

2. Presentation

Presentation may vary depending on the concentration and duration of exposure. Symptoms may include, but are not limited to, the following: nausea, vomiting, diarrhea, altered mental status, abnormal skin color, dyspnea, seizures, burns to the respiratory tract, stridor, sooty sputum, known exposure to toxic or irritating gas, sweating, tearing, constricted/dilated pupils, and/or dizziness.



PULSE OXIMETRY MAY NOT BE ACCURATE FOR TOXIC INHALATION VICTIMS!

PATIENTS PRESENTING WITH ALTERED MENTAL STATUS OR NAUSEA WITH VOMITING, SEIZURES, LOSS OF CONSCIOUSNESS OR MARKED DYSPNEA IN THE FACE OF SUSPECTED CARBON MONOXIDE OR TOXIC INHALATION WITH OR WITHOUT MINOR BURNS SHOULD BE CONSIDERED FOR TRANSPORT TO THE HYPERBARIC SPECIALTY CENTER. PATIENTS IN CLOSED SPACE INCIDENTS ARE MORE LIKELY TO MANIFEST THESE SYMPTOMS.



3. Treatment

- a) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
- b) Identify agent and mechanism of exposure.
- c) Decontaminate as appropriate.



-
- d) Consider obtaining blood sample using closed system, if indicated.
 - e) Initiate IV LR KVO in a clean area, if medication administration is anticipated.
 - f)  If **organophosphate poisoning**, consider Atropine 2-4 mg IVP or IM every 5-10 minutes
 - g)  Consider antidote to specific agent if available.
 - h)  Consider antibiotic specific to agent in mass casualty incident, if available.

OVERDOSE/POISONING: INHALATION (Continued)



- i) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
- j) Identify agent and mechanism of exposure.
- k) Decontaminate as appropriate.



-
- l) Initiate IV/IO LR KVO in a clean area, if medication administration is anticipated.
 - m)  If **organophosphate poisoning**, consider atropine 0.02 mg/kg IV/IO or IM every 5-10 minutes
 - n)  Consider antidote to specific agent if available.
 - o)  Consider antibiotic specific to agent in mass casualty incident, if available.
4. Continue General Patient Care.

FF. OVERDOSE/POISONING: INJECTION

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

3. Treatment



- a) Identify markings (insects, bites, needlestick, etc.).
- b) Place distal and proximal constricting band (allowing arterial flow) for poisonous snakebite to an extremity.
- c) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's Epinephrine auto-injector or patient's prescribed albuterol.



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. **(NEW '11)**
 - 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) Place distal and proximal constricting bands (allowing arterial flow) for a poisonous snakebite to an extremity.
- 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 albuterol.



-
- 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.

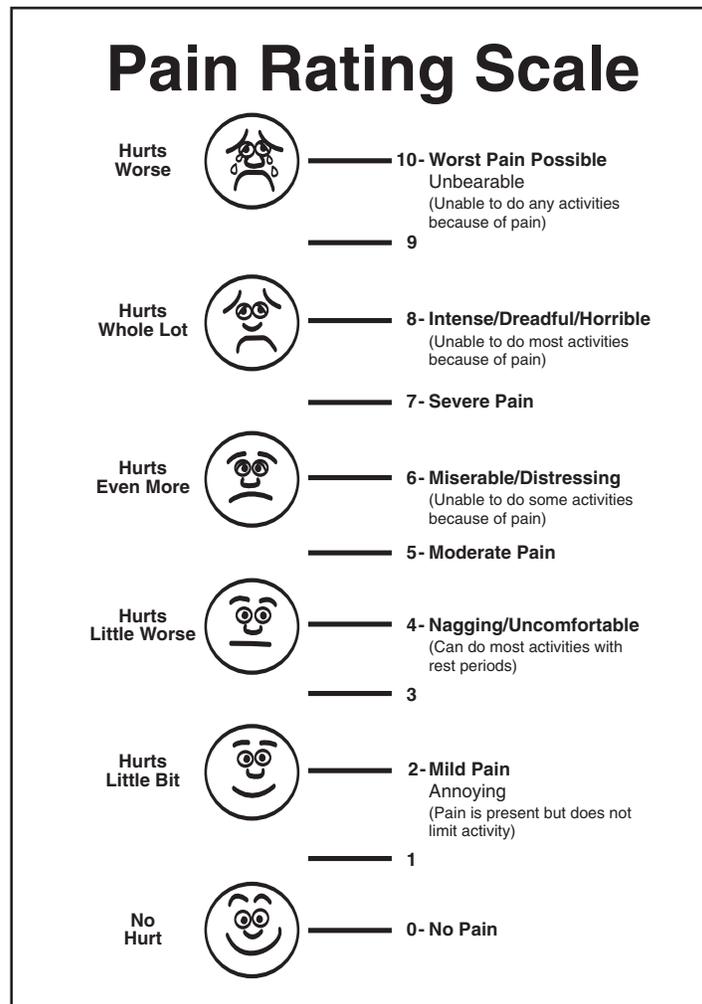
4. Continue General Patient Care.

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. Use of certain drugs for analgesia (reduction of pain) may also interfere with diagnostic procedures in the emergency department, and their use in such circumstances must be judicious, with medical control consulted when necessary.
3. Treatment Indications
 - a) Measure level of pain. Ask adults to rate their pain on a scale from 0 (**no pain**) to 10 (**worst pain imaginable**). Young children can be asked to rate their pain using the FACES scale, which provides 5 levels of pain perception.



PAIN MANAGEMENT (Continued)

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



- (1) Indications for pain management
 - (a) Isolated musculoskeletal injuries such as sprains and strains
 - (b) Pain related to childhood illnesses such as headache, ear infection, and pharyngitis
- (2) Contraindications for pain management with acetaminophen
 - (a) Head injury
 - (b) Hypotension
 - (c) Administration of acetaminophen or medications containing acetaminophen within the previous four hours
 - (d) Inability to swallow or take medications by mouth
 - (e) Respiratory distress
 - (f) Persistent vomiting
 - (g) Known or suspected liver disease
 - (h) Allergy to acetaminophen
- (3) Administer acetaminophen to patients ages 3 years and above judged to be in mild to moderate discomfort (2-5 on FACES scale) by child or parent.
 - (a) Standard unit dosing of liquid preparation:
 - (1) Less than 3 years of age: Not indicated
 - (2) 3-5 years: Unit dose 160 mg/5 mL
 - (3) 6-9 years: TWO unit doses of 160 mg/5 mL each for a total of 320 mg/10 mL **(NEW '11)**
 - (4) 10 years and above: FOUR unit doses of 160 mg/5 mL each for a total of 640 mg/20 mL **(NEW '11)**
 - (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
 - (1) Indications for pain management
 - (a) Acute myocardial infarction
 - (b) Burns
 - (c) Isolated injuries requiring pain relief such as suspected fractures or dislocations
 - (d) Acute sickle cell pain crisis
 - (e) Abdominal pain with consult
 - (f) EMS/DNR A, A (DNI), or B Protocol **(NEW '11)**

PAIN MANAGEMENT (Continued)

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



- (1) AMI: Administer 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**
- (2) Isolated injury (including burns, frostbite, eye trauma): Administer 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**



- Administer 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**

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

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RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)

- l) For moderate to severe exacerbations, consider the administration of dexamethasone 10 mg IV/PO. **(NEW '11)**



- 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 albuterol.



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

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

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



-
- 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. **(NEW '11)**
- 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

Pediatric Respiratory Distress with Stridor (Suspected Croup) "Barking Cough and Audible Stridor"

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

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



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



3. Treatment

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



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

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

TRAUMA PROTOCOL: BURNS (Continued)



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.



-
- e) Initiate IV LR fluid therapy 20 mL/kg bolus in unburned area, if possible. Titrate to a systolic pressure of 100 mm Hg.
 - f)  Obtain medical consultation to initiate an IV in an area of burn, if unable to obtain an IV in unburned area.
 - g)  Administer morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**
 - h)  Consider additional fluid administration
Maximum dose 2,000 mL without medical consultation



-
- i) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO in unburned area, if possible. If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
 - j)  Obtain medical consultation to initiate an IV in an area of burn, if unable to obtain an IV in unburned area.
 - k)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO
 - l)  Administer morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**

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; apply cold packs if the eyeball is NOT injured.
- 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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**



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; apply cold packs if the eyeball is NOT injured.
- 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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**

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 (eg 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
 - (1) 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.
Titrated to a systolic pressure of 100 mm Hg.
- c)  Administer morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**



- 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 morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**

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.
- b) Control bleeding and immobilize patient, if indicated.
- 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: TRAUMA ARREST (Continued)



- h) Rapid assessment and extrication
 - i) Protect cervical spine.
 - 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 (NEW '11)

<input type="checkbox"/> GCS less than or equal to 8 or Systolic BP less than 90 (Adult) less than 60 (Peds) or Respiratory rate less than 10 or greater than 29		
<input type="checkbox"/> Flail chest	<input type="checkbox"/> Pelvic fracture	<input type="checkbox"/> Penetrating injuries to head, neck, or torso
<input type="checkbox"/> Rapidly declining GCS	<input type="checkbox"/> Paralysis (spine)	<input type="checkbox"/> Open or depressed skull fracture
<input type="checkbox"/> 2 or more proximal long-bone fractures		

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 (NEW '11)

<input type="checkbox"/> GCS 9 - 14	<input type="checkbox"/> Crushed, degloved, or mangled extremity
<input type="checkbox"/> Paralysis or vascular compromise of limb	<input type="checkbox"/> Penetrating injuries to extremities proximal to elbow or knee
<input type="checkbox"/> Amputation proximal to wrist or ankle	<input type="checkbox"/> Combination trauma with burns

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 (NEW '11)

<input type="checkbox"/> High Risk Auto Crash		
<ul style="list-style-type: none"> Intrusion 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 (20 mph) impact Motorcycle crash greater than 20 mph 	
<input type="checkbox"/> Falls greater than 3 times patient'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 (NEW '11)

<input type="checkbox"/> Age less than 5 or greater than 55	<input type="checkbox"/> Burns without trauma mechanism go to burn center
<input type="checkbox"/> Patient with bleeding disorder or patient on anticoagulants	<input type="checkbox"/> Pregnancy greater than 20 weeks
<input type="checkbox"/> Dialysis patient	<input type="checkbox"/> EMS provider judgment

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.

EMT-P: Emergency Medical Technician - Paramedic.

EOC: Emergency Operations Center.

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

ETA: Estimated Time of Arrival.

EtCO₂: Non-invasive measurement (numeric and/or waveform) of carbon dioxide levels in exhaled breaths. **(NEW '11)**

Extrapyramidal: Pertaining to tissues and structures outside of the cerebrospinal pyramidal tracts of the brain that are associated with movement of the body, excluding stimulation from the motor neurons, the motor cortex, and the corticospinal and corticobulbar tracts. Symptoms that “appear” to be of a focal seizure-like nature with an awake and alert person and no history of seizures but who probably has a recent history of anticholinergic medication use (e.g., anti-psychotic, anti-vomiting).

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

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

FR: First Responder.

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

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

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

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

HTN: Hypertension.

Hypoxia: Too little oxygen in the cells.

IM: Intramuscular injection.

IV: Intravenous line or administration of medication through IV.

IVP: Intravenous push.

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

JVD: Jugular vein (external) distention.

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

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

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

Lividity: Venous pooling in dependent body parts.

LOC: Level of consciousness.

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

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

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

Meconium: The first feces of an infant.

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

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

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

MOI: Mechanism of Injury.

NDT: Needle Decompression Thoracostomy.

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

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

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

NOI: Nature of Illness.

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

NRB: Non-rebreather mask.

NTG: Nitroglycerin.

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

OIC: Officer in Charge.

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

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

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

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

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

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

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

PDOA: Presumed dead on arrival.

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

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

PMD: Program Medical Director.

PO: By mouth.

PPE: Personal Protective Equipment.

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

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

PVC: Premature ventricular contraction.

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

RMD: Regional Medical Director.

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

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

SC: Subcutaneously.

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

SL: Sublingual. Under the tongue.

SMOI: Significant Mechanism Of Injury.

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

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

Sublingually: Under the tongue.

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

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

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

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

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

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

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	EMT-B	CRT-(I)	EMT-P
ADMINISTRATION OF MEDICATIONS			
Oral, Sublingual, IM (auto-injector)	SO	SO	SO
SC, IM, IV, Rectal, Nebulizer, Intranasal	-	SO	SO
Intraosseous	-	SO	SO
Intradermal PPD (Public Safety Personnel only)	-	-	OSP
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) (NEW '11)	-	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
Orotacheal Intubation	-	SO	SO
Needle Decompression Thoracostomy (NDT)	-	SO/MC	SO/MC
Pulse Oximeter (All transport units required by 2012) (NEW '11)	SO	SO	SO
Suction	SO	SO	SO
Ventilator	-	-	OSP
CHEMICAL RESTRAINT			
ELECTROCARDIOGRAM			
Standard Limb Leads	-	SO	SO
12 Lead			
ELECTRICAL THERAPY			
Automated External Defibrillator	SO	SO	SO
Cardioversion	-	SO	SO
Defibrillation	-	SO	SO
Transcutaneous Cardiac Pacing	-	SO	SO
GLUCOMETER			
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			
SOFT TISSUE INJURY & BLEEDING MANAGEMENT			
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)**

DEVICE	EMT-B CRT-(I) EMT-P		
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	EMT-B	CRT-(I)	EMT-P
Acetaminophen	SO	SO	SO
Activated Charcoal (Without Sorbitol)	MC	MC	MC
Adenosine	–	MC	SO
Albuterol Unit Dose Inhaler (Patient's Prescribed)	SO/MC	SO/MC	SO/MC
Albuterol Sulfate Nebulizer	–	SO/MC	SO/MC
Aspirin	–	SO	SO
Atropine Sulfate	–	SO/MC	SO/MC
Atrovent	–	SO	SO
Calcium Chloride (10% Solution)	–	MC	MC
Captopril (Capoten)	–	SO	SO
Dexamethasone (NEW '11)	–	SO	SO
Dextrose 50%	–	SO	SO
Diazepam	–	MC	SO/MC
Diltiazem	–	MC	MC
Diphenhydramine Hydrochloride	–	SO/MC	SO/MC
Dopamine Hydrochloride	–	MC	MC
Epinephrine Auto-Injector	SO/MC	SO	SO
Epinephrine Nebulizer	–	MC	MC
Epinephrine 1:10,000/1:1,000	–	SO	SO
Etomidate (Amidate)	–	–	PP
Furosemide	–	MC	MC
Glucagon	–	SO/MC	SO/MC
Glycoprotein IIb/IIIa	–	–	OSP
Haldol	–	–	MC
Hemophilia Blood Factor (VIII or IX)	–	SO	SO
Heparin (Inter-facility transport only)	–	–	OSP
Lidocaine	–	SO	SO
MARK I/Duodote (Atropine & 2 PAM)	OSP	OSP	OSP
Midazolam (Versed)	–	MC	SO/MC
Morphine Sulfate	–	MC	SO/MC
Morphine Sulfate (Infusion)	–	–	MC
Naloxone (IV and intranasal)	–	SO	SO
Nitroglycerin Paste	–	SO	SO
Nitroglycerin (tablet /spray) (Patient's Prescribed)	SO	SO	SO
Nitroglycerin (tablet/spray)	–	SO	SO
Ondansetron	–	SO/MC	SO/MC
Oral Glucose	SO	SO	SO
Oxygen	SO	SO	SO
Purified Protein Derivative (Public Safety Personnel only)	–	–	OSP

SO Standing Order
OSP Optional Supplemental Program

MC Medical Consultation Required
PP Pilot Program

D. NORMAL VITAL SIGNS AND APGAR CHART

Normal Vital Signs

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

APGAR Chart

SIGN	0	1	2
MUSCLE TONE (ACTIVITY)	LIMP	SOME FLEXION	ACTIVE, GOOD FLEXION
PULSE	ABSENT	LESS THAN 100/MIN	GREATER THAN 100/MIN
REFLEX IRRITABILITY* (GRIMACE)	NO RESPONSE	SOME GRIMACE OR AVOIDANCE	COUGH, CRY OR SNEEZE
COLOR (APPEARANCE)	BLUE, PALE	PINK BODY, BLUE HANDS/FEET	PINK
RESPIRATIONS	ABSENT	SLOW/IRREGULAR, INEFFECTIVE	CRYING, RHYTHMIC EFFECTIVE
<i>*Nasal or Oral Suction Catheter Stimulus</i>			

E. EMS/DNR



THE FOLLOWING SECTION IS ABSTRACTED FROM THE ORIGINAL MARYLAND EMERGENCY MEDICAL SERVICES DO NOT RESUSCITATE PROGRAM 2ND REVISION (07/01/98). THE PAGE (pg.) AND THE CHAPTER (ch.) NUMBER HAVE BEEN APPENDED TO THE FOLLOWING CHAPTER TITLES FOR EASY REFERENCE. BECAUSE THIS ABSTRACT IS CONDENSED FROM THE ORIGINAL DOCUMENT, SOME CHAPTER NUMBERS OR LETTERS WERE INTENTIONALLY LEFT OUT. PLEASE REFER TO THE ORIGINAL MARYLAND EMS/DNR DOCUMENT FOR FURTHER INFORMATION

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

1. PREFACE EMS/DNR Order forms, bracelets, and necklaces will recognize three patient options for care prior to arrest: (pg. 15 ch. A)
 - a) **Option A (ALS)**—Maximal (Restorative) Care (with intubation) Before Arrest, then DNR (**NEW '11**)
 - b) **Option A (DNI)**—Comprehensive Efforts to Prevent Arrest But Do Not Intubate, then DNR (**NEW '11**)
 - c) **Option B (BLS)**—Limited (Palliative) Care Only Before Arrest, then DNR (**NEW '11**)
2. VALID EMS/DNR BRACELET WITH INSERT or AUTHORIZED METAL EMBLEM HAS THE SAME EFFECT AS THE FORM. (pg. 17 ch. D)
 - a) Typically only one EMS/DNR device is needed to initiate the EMS/DNR protocol.
 - b) EMS providers should only request a second instrument (i.e., a bracelet when a form has already been presented) if there is reason to question the validity of the first produced notification device.
3. RECIPROCITY (pg. 19 ch. E)
 - a) A standardized EMS/DNR Order from another state may be honored.
 - b) Treat out-of-state EMS/DNR Orders as Option “B” EMS/DNR patients.
 - c) See chart in “EMS/DNR Program” booklet for how other states will treat Maryland devices.
4. ORAL EMS/DNR ORDERS (pg. 19 ch. G)
 - a) EMS providers may follow an oral EMS/DNR Order directly from a Maryland- licensed physician (MD or DO) or nurse practitioner that is physically present “on-site.” EMS shall not accept orders from private physician attendings or nurse practitioner by telephone.
 - b) **EMS providers may follow an oral EMS/DNR Order from a Maryland- licensed physician “on-line” via the EMS Communications System (i.e. radio or telephone consult that is routed through a public service access point [PSAP] for audio recording).**
5. ACCEPTABLE AND UNACCEPTABLE EMS/DNR ORDERS (pg. 19 ch. H)
 - a) The following **are** acceptable for implementing the EMS/DNR protocol:
 - (1) Original Maryland EMS/DNR Order Form

EMS/DNR (Continued)

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

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

a) DISPATCH

- (1) Option B EMS/DNR patients (7/98 version) or patients with older version EMS/DNR orders (pg. 22 ch K) only require a BLS response. Once the on scene BLS provider has determined the need for additional pain control, an ALS Rendezvous may be requested. Medevac requests are not appropriate for these patients.
- (2) Option A or A (DNI) EMS/DNR patients (7/98 version) who are not in arrest may require a range of responses from BLS through the highest echelon of response available. This will depend on the information available to dispatch and the service requested. The response complement in these cases will be dictated by local standard operating procedures (SOP). **(NEW '11)**
- (3) If a dispatch center is unclear whether the DNR order is an EMS/DNR order or is unclear about the pre-arrest patient care option selected (A, A (DNI), or B), the dispatch center shall dispatch the appropriate resources based on the information available. **(NEW '11)**
- (4) In the absence of knowledge to the contrary, information from medical professionals at a health care facility about the EMS/DNR status of a patient may be presumed to be reliable.

EMS/DNR (Continued)

- b) **PERFORM LIMITED PATIENT ASSESSMENT**
Vital signs:
- (1) Check for absence of a palpable pulse.
 - (2) Check for absence of spontaneous respirations in an unresponsive patient.
 - (3) Check for a valid EMS/DNR Order form, vinyl bracelet insert worn either on the wrist, as a necklace, or pinned to clothing, or for a metal emblem (bracelet or necklace).
- c) **RESUSCITATE/DO NOT RESUSCITATE CRITERIA**
- (1) If an EMS /DNR Order is not present, revoked, or otherwise void, the EMS provider shall treat and, if necessary, transport the patient.
 - (2) If an EMS/DNR Order is not present, but the EMS provider believes that resuscitation or further resuscitation is futile, they may contact on-line medical direction to consult regarding “physician-directed termination of unsuccessful non-traumatic resuscitation in the field.”
 - (3) If a valid EMS/DNR order is found and the patient is in cardiac or respiratory arrest, no resuscitative measures shall be initiated.
 - (4) If the patient is conscious and able to communicate that he/she revokes the EMS/DNR orally directly to EMS providers, EMS providers shall treat and, if necessary, transport the patient.
 - (5) If the EMS/DNR patient (Option A, A (DNI), or B) arrests, withhold or withdraw further resuscitation and provide support to the family and caregivers. Consider notifying appropriate personnel. **(NEW '11)**
- d) **OPTION A – MAXIMAL (RESTORATIVE) CARE PROTOCOL**
- (1) When Option A - “Maximal (Restorative) Care (with intubation) Before Arrest, then DNR” is selected on an EMS/DNR Order, the patient shall receive the full scope of restorative interventions permissible under the Maryland EMS Medical Protocols (including Continuous Positive Airway Pressure (CPAP), cardiac monitoring, synchronized cardioversion for pulse-**present** ventricular or supraventricular tachycardia, cardiac pacing for pulse-**present** symptomatic bradycardia, insertion of IVs, and drug therapy), in an attempt to forestall cardiac or respiratory arrest. **(NEW '11)**
 - (2) This option was requested primarily by long-term care facilities for their patients who are on DNR orders for potentially prolonged periods of time. Many of these patients are less concerned about palliation of pain and more concerned about the quality of life after a stroke or heart attack. The primary medical conditions seen in the field necessitating this option have been the desire to administer Lasix for pulmonary edema, dextrose for diabetic emergencies, and epinephrine for anaphylactic reactions in patients who, upon arrest, are not to be resuscitated.

EMS/DNR (Continued)

- (3) If, despite these efforts, the patient becomes pulseless or stops breathing spontaneously, EMS providers shall then withhold or withdraw cardiopulmonary resuscitation including, but not limited to, no CPR, no cardiac pacing, no defibrillation, withdrawal of active ventilatory assistance upon cardiac arrest, and withholding or withdrawal of drug therapy (i.e., chemical resuscitation).
- e) **OPTION A (DNI) – COMPREHENSIVE EFFORTS TO PREVENT ARREST BUT DO NOT INTUBATE, THEN DNR (NEW '11)**
- (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, morphine may be administered.
 - (e) Existing IV lines may be in place and if so, shall be monitored to the extent possible according to the provider's level of certification and licensure.
- (2) Inappropriate Care for a Palliative Care Patient
- (a) Cardiac monitoring, including 12-lead EKG, pacing, cardioversion, and defibrillation
 - (b) Initiation of IV therapy (except when directed by online physician for morphine administration for pain control as in 1 (d) (iii))
 - (c) EMS-Initiated Medications (except oxygen and morphine administration for pain control as in 1 (d) (iii))
 - (d) CPR
 - (e) Intubation (alternative airway device, endotracheal, nasotracheal, or gastric tube)
 - (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.

PRESUMED DEAD ON ARRIVAL (PDOA) (Continued)

- e) Do not delay action to find out facts about patient's history. If summoned, one must respond. If the patient has a chronic disease (for instance, cancer), the time to educate relatives as to the inevitability of death (if indeed that is appropriate) is at the hospital, not in the field.

5. SPECIAL CONSIDERATIONS

- a) Be careful to avoid discussion of the mechanism of death in the presence of relatives. In early grief, it is easy to misinterpret even well meaning expressions of concern. Moreover, because a patient is doing well in the field does not mean that survival is assured. Misguided optimism in the field will make grieving more difficult.
- b) Rescue personnel, like Emergency Department personnel, must have the ability to discuss their own grief over problem cases with one another and their advisers. Moreover, they must come to terms with their mission, what can be accomplished in the field (not every life can be saved), and the importance of having resolved ethical issues before taking care of individual problems. Critical Incident Stress Management is a valuable EMS resource.
- c) When you, as an EMS responder, are summoned, you should assume that you are summoned for life-saving skills, and initiate resuscitation. In these days when we are becoming more concerned with the right to die with dignity, do not allow premature judgment to delay or withhold life-saving skills. Despite much press to the contrary, BLS and even ALS measures are extremely unlikely to "bring back" an otherwise unsalvageable person.

G. PHYSICIAN-DIRECTED TERMINATION OF UNSUCCESSFUL, NON-TRAUMATIC FIELD RESUSCITATION

1. PURPOSE

This protocol may, under medical consultation, be used after unsuccessful, non-traumatic field resuscitation.

2. INDICATIONS

- a) Patient must be 18 years of age or older,
- b) Patient must be in asystole,
- c) Patient must be pulseless and apneic for at least 30 minutes,
- d) Patient must have had resuscitation attempts based on the full algorithm for the appropriate rhythm, and
- e) Patient must have no return of spontaneous circulation for more than 2 minutes during the resuscitation.

3. CONTRAINDICATIONS

- a) Patients who are exhibiting any neurological activity such as spontaneous respiration, eye opening, or motor response
- b) Patients under 18 years old
- c) Patients with suspected hypothermia

4. PROCEDURE

- a)  Follow appropriate ALS algorithms and obtain medical consultation.
- b) Request that the consulting physician authorize termination of resuscitation.
- c) If approved, discontinue resuscitation and follow local jurisdictional policies.

5. SPECIAL RURAL CONSIDERATIONS

- a)  In rare circumstances, such as rural areas, it may be appropriate for BLS providers to discontinue resuscitation. This must be approved by medical consultation and can be considered when:
 - (1) The patient has been pulseless and apneic for more than 30 minutes and
 - (2) The AED recommends “no shock advised” on three separate occasions.
- b) When “Special Rural Consideration” is used, the provider will mark the “exceptional call” block on the PCR. The jurisdictional EMS program and Jurisdictional Medical Director will be notified immediately. Within 7 days, the Jurisdictional Medical Director will conduct a case review of the incident and document/provide this review for the MIEMSS Regional/EMS Administrator and regional medical director.



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

e) PRECAUTIONS

- (1) Topical anesthesia (lidocaine 4% spray or gel) should be applied to both nares to minimize discomfort.
- (2) Confirmation of ET placement
 - (a) Utilization of the beck airway airflow monitor [BAAM] device when available
 - (b) Auscultation of all lung fields to confirm air exchange
 - (c) Auscultation of the epigastrium to deny disturbance of gastric fluids upon ventilation
 - (d) Observation of bilateral expansion of the thorax
 - (e) End tidal CO₂ detection device required. At a minimum, use colorimetric devices.
 - (f) The esophageal detection device
 - (g) Documentation of tube depth at the nares
 - (h) Other clinical signs of improved perfusion and ventilation (i.e. pupillary response, skin color, etc.)
- (3)  Nasal intubation may require facilitation with sedation. When hypovolemia is unlikely, morphine or midazolam, or a combination of both may be given by direct medical consultation to achieve mild sedation.



6. AIRWAY MANAGEMENT: NEEDLE DECOMPRESSION THORACOSTOMY (NDT)

a) PURPOSE

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

b) INDICATIONS



MEDICAL CONSULTATION REQUIRED UNLESS THE DELAY WOULD COMPROMISE PATIENT CARE

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

c) CONTRAINDICATIONS

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

d) POTENTIAL ADVERSE EFFECTS / COMPLICATIONS

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

e) PRECAUTIONS

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

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 (NEW '11)

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, morphine may be used in addition to, or instead of midazolam: Morphine 0.1 mg/kg IV/IO at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg at a rate of 2 mg/min to a maximum single dose of 10 mg. Titrate to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg.
- (3) Continue to monitor oxygen saturation and ventilate to desired 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, morphine may be used in addition to, or instead of, midazolam: Morphine 0.1 mg/kg IV/IO at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg at a rate of 2 mg/min to a maximum single dose of 10 mg. 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.
- (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.



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11. ELECTRICAL THERAPY: AUTOMATED EXTERNAL DEFIBRILLATION (AED)

a) INDICATIONS

Sudden cardiac arrest (patients with no pulse and not	
Infant less than 1 year	Not indicated
Infant 1 year - Child 8 years	Pediatric AED or AED with pediatric capability only
Child 8 years of age or greater	Adult AED

b) CONTRAINDICATIONS

- (1) Infant less than 1 year of age (estimate based upon information available to individual operating AED).
- (2) Patient exhibiting signs of life.



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

c) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

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

d) PRECAUTIONS

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

e) PROCEDURE

- (1) Initiate analysis of rhythm. If unwitnessed arrest without CPR in progress, EMS should perform 5 cycles of CPR then apply AED.
- (2) If shock is indicated:
 - (a) Ensure all individuals are clear of the patient.
 - (b) Initiate shock to the patient.



14. ELECTRICAL THERAPY: EXTERNAL TRANSCUTANEOUS CARDIAC PACING

a) PURPOSE

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

b) INDICATIONS

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



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

c) DOSAGE

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

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



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

d) CONTRAINDICATIONS

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

e) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

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

If patient is conscious and has adequate blood pressure consider:



Morphine 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**

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.



15. GO-TEAM ACTIVATION (NEW '11)

a) PURPOSE

The University of Maryland Medical System, R Adams Cowley Shock Trauma Center (STC) maintains a deployable advanced surgical team (Go-Team) that includes an attending physician with surgical skills and an anesthetist capable of assisting EMS providers with the care of seriously injured patients when extrication times are anticipated to be more than 1 hour. On-scene incident commanders may request the Go-Team by contacting SYSCOM.

b) INDICATIONS

The on-scene incident commander may contact SYSCOM and request the Go-Team for seriously injured patients with potentially life or limb threatening injuries when extrication times are anticipated to be more than 1 hour and who may require advanced resuscitative or surgical services that are beyond the scope of prehospital emergency services.

Examples include:

- (1) During a prolonged extrication, assist rescue personnel with planning the type and pace of the rescue by assessing the extent of injury and determine potential consequences that delays in time to definitive care might have on patient outcome.
- (2) A patient trapped in heavy machinery requiring anesthesia/pain management to perform extrication.
- (3) A patient surviving a building collapse requiring an amputation to enable extrication.
- (4) A patient with a prolonged extrication requiring advanced fluid resuscitation including the administration of blood products.
- (5) Insertion of chest tubes or gastric and urinary catheters during the course of prolonged extrication.

c) PROCEDURE

- (1) On-scene incident commander will request the Go-Team by contacting SYSCOM. SYSCOM will coordinate the Go-Team's transport to and from the scene with Maryland Express Care.
- (2) If the Go-Team is dispatched by air, then SYSCOM will notify the Go-Team when the aircraft is landing on the STC helipad. If the Go-Team is dispatched by land, then Maryland Express Care will coordinate the Team's response.
- (3) Prior to the Go-Team's departure to the scene, SYSCOM will notify the on-scene incident commander for the Go-Team's ETA and re-confirm the need for the Go-Team.

- (4) If the Go-Team is dispatched, the EMS medical commander will contact them using the “Trauma Line” (or other radio) to update them about the circumstances of the entrapment and the patient’s condition.
- (5) When the Go-Team arrives on the scene, they are to report to the on-scene incident commander and operate within the Incident Command System.
- (6) Once the patient is extricated, the EMS system will transport the patient to the appropriate facility under established EMS guidelines with consultation by the Go-Team physician.
- (7) The Go-Team will document the care they provide and file a patient care report with the State EMS Medical Director at MIEMSS.



16. IV ACCESS AND MAINTENANCE: EXTERNAL JUGULAR (EJ) INTRAVENOUS ACCESS

a) PURPOSE

The external jugular vein is a large vessel in the neck that may be used by a CRT-(I) or EMT-P for intravenous cannulation.

b) INDICATIONS

EJs are appropriate when IV access is emergently indicated, but an extremity vein cannot be catheterized.

c) CONTRAINDICATIONS

- (1) Inability to visualize the vein
- (2) Suspected spinal trauma

d) POTENTIAL ADVERSE EFFECTS /COMPLICATIONS

Hematoma, pain, infiltration, infection, dislodged catheter, nerve injury, thrombosis, air embolism, airway occlusion, and pneumothorax.

e) PRECAUTIONS

Carefully secure EJ catheter and tubing.

17. GLUCOMETER PROTOCOL

a) PURPOSE

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

b) INDICATIONS

The glucometer should be utilized for any patient presenting with an altered mental status, seizure activity, or unresponsiveness.

c) TREATMENT

(1) ADULT

- (a) If blood glucose is less than 70 mg/dl, administer 25 grams 50% dextrose IVP.
- (b) If unable to initiate an IV and blood glucose is less than 70 mg/dl, administer glucagon 1 mg IM (if over 25 kg) or 0.5 mg IM (if less than 25 kg).
- (c) If blood glucose is greater than 300 mg/dl, administer 10 mL/kg LR bolus unless rales, wheezing, pedal edema, or history of renal failure or CHF is present.

- (d)  If blood glucose is less than 40 mg/dl, obtain medical consultation for authorization to administer a second dose of D50W.



(2) PEDIATRIC

- (a) **Patient 2 months of age or less** - If blood glucose is less than 30 mg/dl, administer 5–10 mL/kg of 10% dextrose IV/IO (D10W is prepared by mixing one part of D50W with four parts LR).
- (b) **Patient greater than 2 months but less than 2 years of age** - If blood glucose is less than 70 mg/dl, administer 2-4 mL/kg of 25% dextrose IV/IO; (D25W is prepared by mixing D50W with an equal volume of LR).
- (c) **Patient 2 years of age or greater** - If blood glucose is less than 70 mg/dl, administer 1–2 mL/kg of 50% dextrose IV/IO. Maximum dose 25 grams.

- (d) If blood glucose is greater than 300 mg/dl, administer 10 mL/kg LR bolus unless rales, wheezing, pedal edema, or history of renal failure or CHF is present.
- (e)  If blood glucose is less than 40 mg/dl, obtain medical consultation for authorization to administer second dose of D25W or D10W.



18. INTRAOSSEOUS INFUSION (IO)

a) PURPOSE

The administration of fluids and medications via intraosseous infusion has long been known to be a relatively safe and effective procedure in the treatment of critically ill patients.

b) INDICATIONS

Patients in which the following conditions are present:

- (1) Cardiac arrest, **OR**
- (2) Profound hypovolemia, **OR**
- (3) No available vascular access, or following two unsuccessful peripheral IV attempts for patients with any other life-threatening illness or injury requiring immediate pharmacological or volume intervention **OR**
- (4) In pediatric patients in cardiac arrest, go directly to IO if no peripheral sites are obvious and without having to attempt peripheral access.



c) PROCEDURES

Allowable sites for IO:

- (1) Sites for manual placement of IO needle:
 - (a) Patients 6 years of age or less, use the proximal tibial site: locate the preferred site 1-3 cm distal to the tibial tuberosity on the anteromedial surface of the tibia.
 - (b) Patients greater than 6 years of age, use the distal tibial site: locate the medial surface of the distal tibia just proximal to the medial malleolus.
- (2) Sites for mechanical placement of IO needle:
 - (a) Patients 3-39 kg, use a pediatric needle (15 ga, 15 mm length) in the proximal tibial site as in manual placement above.
 - (b) Patients 40 kg and greater, use an adult needle (15 ga, 25 mm length) in the proximal tibial site: locate the preferred site 1-3 cm distal to the tibial tuberosity on the anteromedial surface of the tibia. **(NEW '11)**
 - (c) Patients 40 kg and greater where the adult needle is not long enough (less than 5 mm of the needle is visible when the tip of the needle touches the bone), use the distal tibial site: locate the medial surface of the distal tibia just proximal to the medial malleolus or use a longer adult needle (15 ga, 35 mm length). **(NEW '11)**

- (d) Patients 40 kg and greater where a lower extremity site is not available, use the proximal humerus site: adduct the humerus, position the elbow posteriorly to the back of the stretcher or floor, and place the patient's hand on his/her abdomen near the umbilicus. Go two finger breaths below the tip of the acromion to locate the tuberosity. Insert at 90 degree angle to lateral surface of the tuberosity.



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



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

d) CONTRAINDICATIONS

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

e) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

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

f) PRECAUTIONS

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



19. INTRAVENOUS MAINTENANCE THERAPY FOR EMT-B

a) Provider-controlled IV solutions

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

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

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

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

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

(d) No other ALS interventions are required.

(2) IV fluids

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

- (a) Lactated Ringer's solution
- (b) 2.5%-10.0% dextrose in water
- (c) 0.25%-0.9% saline solution
- (d) Potassium chloride (KCL) added to the solution. The amount of KCL in solution shall not exceed 20 milli-equivalents (mEq)/liter
OR
- (e) Total Parenteral Nutrition (TPN)



IF IV FLUIDS OR TPN ARE BEING ADMINISTERED VIA INFUSION PUMP AND NOT PATIENT-CONTROLLED, THE PATIENT MUST BE ACCOMPANIED BY A NURSE OR APPROPRIATELY TRAINED ALS PROVIDER.

b) Patient-controlled medications or IV solutions

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

20. MEDEVAC UTILIZATION

a) PURPOSE

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

b) INDICATIONS FOR “MEDEVAC REQUEST”

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

- (1) Trauma Category Alpha, Bravo, Charlie*, Delta* (**NEW '11**)
- (2) Specialty Category
 - (a) Burn
 - (b) Hand *
 - (c) Eye
 - (d) Head
 - (e) Spinal
- (3) Medical Category
 - (a) Stroke
 - (b) STEMI
 - (c) Hyperbaric (CO, Toxic Inhalation, or SCUBA)
- (4) Consult Approved Critical/ Unstable (Time critical illness or disease requiring specialized care) *

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

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

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

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

Special Consideration:

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

d) CONTRAINDICATION FOR MEDEVAC REQUEST

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



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

e) FORMAL REQUEST PROCESS

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

EMS provider and 911 center Medevac request process:

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

21. PERIPHERAL IV ACCESS FOR CRT-(I) & EMT-P, AND IV ACCESS OPTION FOR EMT-B APPROVED BY THE EMS OPERATIONAL PROGRAM

a) PURPOSE

IV access is an invasive skill reserved for ALS providers and “Program Approved Option” EMT-Bs with IV Technician training. The purpose of establishing an IV line, or a saline-lock, is to provide direct venous access for the possible administration of fluids and ALS medications (ALS only), if necessary and appropriate.

b) INDICATIONS

- (1) See treatment protocols for initiation of IV.
- (2) If the protocol indicates to start an IV, the “Program Approved Option” EMT-B may initiate an IV or saline-lock, if appropriate.
- (3) **Saline locks** may be substituted for IV KVO anywhere in the protocol with the understanding that if the patient needs a fluid challenge or medication, the saline lock is converted to an IV of LR.
- (4) All ALS providers in the event of a life-threatening emergency (with medical consult) or cardiac arrest, may access indwelling or implanted, central or peripheral venous catheters for medication administration.
- (5) When a patient is a **Hemophiliac A or B** (Factor VIII or IX) and the family or patient states that the patient must have factor concentrate administered, the ALS provider may assist the patient in the IV administration of the patient’s own factor concentrate (VIII or IX). Notify the receiving hospital of the administration of blood factor concentrate.
- (6) All ALS providers may access lower extremity IV sites. The CRT-(I) & EMT-P should consider lower extremity IV sites prior to IO attempts (EMT-IV technicians may not access lower extremity IV sites).
- (7) The ALS provider may establish a peripheral IV in a patient whose vasoactive medication has been interrupted due to a malfunctioning long-term access device that cannot be repaired by the home health caregiver. The ALS provider can assist in reestablishment of an existing vasoactive infusion at the same dose or setting. Patient shall be transported to the nearest appropriate facility to access patient’s long-term device. When in doubt, obtain medical consultation.
- (8)  Maximum 2,000 mL LR without medical consultation
- (9)  Second IV requires medical consultation.

c) CONTRAINDICATIONS

See treatment protocols.

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

See IV Maintenance Therapy for EMT-B.

e) PRECAUTIONS

All sharps must be properly disposed of in an appropriate container.

22. FUTURE PROTOCOL DEVELOPMENT

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23. PHYSICAL AND CHEMICAL RESTRAINTS

a) PURPOSE

To prevent harm to patient and/or others

b) INDICATIONS

- (1) Patient restraints (physical and/or chemical) should be utilized only when necessary and only in situations where the patient is exhibiting behavior that the EMS Provider believes will present a danger to the patient or others.
- (2) The procedure does apply to patients treated under implied consent.

c) PROCEDURE

- (1) The physical restraint procedure applies to patients greater than 1 year of age.
 - (a) Ensure that the scene is safe.
 - (b) Ensure sufficient personnel are present to control the patient while restraining. **USE POLICE ASSISTANCE WHENEVER AVAILABLE.**
 - (c) Position the patient for safe transport:



PATIENT POSITIONING SHOULD BE MODIFIED WHEN RESTRAINING PATIENTS WITH LIMITED MOBILITY (E.G. CONFINED TO BED OR WHEELCHAIR). USE PASSIVE RESTRAINT AND PLACE PATIENTS WITH PREVIOUS INJURY OR PRE-EXISTING CONDITIONS, SUCH AS OSTEOPOROSIS OR CONTRACTURE, IN A NEUTRAL POSITION.

PATIENTS ARE NOT TO BE RESTRAINED IN A PRONE, HOBBLER, OR HOG-TIED POSITION. WHENEVER POSSIBLE, ALL PATIENTS THAT ARE PHYSICALLY RESTRAINED AND CONTINUE TO FIGHT THE RESTRAINTS SHOULD BE CONSIDERED FOR CHEMICAL RESTRAINT.

Method. (Be prepared to logroll immediately in the event of vomiting.)

1. Place patient face up or on his/her side, if at all possible.
2. Secure extremities:
For adults, use 4-point restraints (ideally with one arm up and the opposite arm down) or use a sheet to carefully wrap the patient before applying a Reeves-type stretcher.
For patients 12 years and under, use 3-point restraints (two arms, one leg) or use a sheet to carefully wrap the patient before applying a Reeves-type stretcher.



IF POLICE HANDCUFFED THE PATIENT, JOINTLY WITH POLICE, REPOSITION THE PATIENT IN FACE-UP POSITION AND WITH HANDS ANTERIOR AND SECURED TO STRETCHER.

3. If necessary, utilize cervical-spine precautions to control violent head or body movements.

4. Place padding under patient's head. Pad any other area needed to prevent the patient from further harming him or herself or restricting circulation.
 5. Secure the patient onto the stretcher for transport, using additional straps if necessary. Be prepared at all times to logroll, suction, and maintain airway.
- (d) Monitor airway status continuously, utilize pulse oximetry when available, vital signs, and neurocirculatory status distal to restraints. Document findings every 15 minutes, along with reason for restraint.
 - (e) For interfacility transfers, obtain a written physician's order for use of restraints.



(2) Chemical Restraint Procedure



BE SURE TO ASSESS FOR EVIDENCE OF TRAUMATIC OR MEDICAL CAUSES FOR PATIENT'S AGITATION.

- (a) Prepare airway equipment, including suction, BVM, and intubation equipment
- (b) Adults
 - (1) Administer combined medications of haloperidol and midazolam which can be mixed in the same syringe. (If patient has head injury consider administration of only midazolam.)
 - a. **Patient 15-69 years of age:**
 - (i) Haloperidol 5 mg IM/IV **and**
 - (ii) Midazolam 5 mg IM/IV
 - b. **Patient greater than 69 years of age:**
 - (i) Haloperidol 2.5 mg IM/IV **and**
 - (ii) Midazolam 2.5 mg IM/IV



- (2) Repeat doses may be given with medical direction.
- (c) Pediatric
 - (1) Administer haloperidol only.
 - a. **Less than 6 years of age is contraindicated.**
 - b. **6-11 years of age**
 - (i) Haloperidol 0.05 mg/kg IM/IV
 - (ii) Max dose 2.5 mg
 - c. **12-14 years of age**
Haloperidol 2.5-5 mg IM/IV
 - (2) Repeat doses may be given with medical direction.
- (d) Start IV LR KVO, if possible.
- (e) Use Glucometer and treat accordingly.
- (f) Monitor vital signs, ECG, and pulse oximetry.
- (g) Be prepared to treat hypotension with fluid challenge.

- (h)  Treat acute dystonic or extrapyramidal reactions with Diphenhydramine adult: 25-50 mg IV/IM; pediatrics 1 mg/kg slow IV/IO/IM; Maximum single dose 25 mg. Additional doses of diphenhydramine require medical consultation.
- (i) Monitor airway status continuously, utilize pulse oximetry when available, vital signs, and neurocirculatory status distal to restraints. Document findings every 15 minutes, along with reason for restraint.

d) ADDITIONAL INFORMATION

- (1) Physical-restraint guidelines:
 - (a) Use the minimum restraint necessary to accomplish necessary patient care and ensure safe transportation (soft restraints may be sufficient in some cases). If law-enforcement or additional personnel are needed, call for assistance prior to attempting restraint procedures. Do not endanger yourself or your crew.
 - (b) Avoid placing restraints in such a way as to preclude evaluation of the patient's medical status (airway, breathing, and circulation). Consider whether placement of restraints will interfere with necessary patient-care activities or will cause further harm.
 - (c) Once restraints are placed, do not remove them until you arrive at the hospital unless there is a complication from their use. If at all possible, take extra personnel during transport to hospital to deal with potential complications.
- (2) Chemical-restraint guidelines:

Sedative agents may be used to provide a safe method of restraining violently combative patients who present a danger to themselves or others, and to prevent violently combative patients from further injury while secured with physical restraints.

I. BLS PHARMACOLOGY



1. ACETAMINOPHEN

a) Indications

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

b) Adverse Effects

Not clinically significant

c) Precautions

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

d) Contraindications

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



MANY COMMON COLD PREPARATIONS CONTAIN ACETAMINOPHEN.

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

e) Preparations Use Unit Dose Only

(DO NOT USE MULTIDOSE BOTTLE)

Unit dose 160 mg/5 mL

f) Dosage

- (1) Less than 3 years of age: Not indicated
- (2) 3-5 years: Unit dose 160 mg/5 mL
- (3) 6-9 years: TWO unit doses of 160 mg/5 mL each for a total of 320 mg/10 mL **(NEW '11)**
- (4) 10 years and above: FOUR unit doses of 160 mg/5 mL each for a total of 640 mg/20 mL **(NEW '11)**
- (5) Obtain on-line medical direction for appropriate dosing for patients who are significantly underweight or overweight.



2. ACTIVATED CHARCOAL (WITHOUT SORBITOL)

a) Indications

Poisoning by mouth

b) Adverse Effects

May indirectly induce vomiting and cause nausea

c) Precautions

Does not absorb all drugs and toxic substances

d) Contraindications

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

e) Preparations

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

f) Dosage

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



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

J. ALS PHARMACOLOGY



1. ACETAMINOPHEN

a) Indications

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

b) Adverse Effects

Not clinically significant

c) Precautions

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

d) Contraindications

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



MANY COMMON COLD PREPARATIONS CONTAIN ACETAMINOPHEN.

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

e) Preparations Use Unit Dose Only

(DO NOT USE MULTIDOSE BOTTLE)

Unit dose 160 mg/5 mL

f) Dosage

- (1) Less than 3 years of age: Not indicated
- (2) 3-5 years: Unit dose 160 mg/5 mL
- (3) 6-9 years: TWO unit doses of 160 mg/5 mL each for a total of 320 mg/10 mL (**NEW '11**)
- (4) 10 years and above: FOUR unit doses of 160 mg/5 mL each for a total of 640 mg/20 mL (**NEW '11**)
- (5) Obtain on-line medical direction for appropriate dosing for patients who are significantly underweight or overweight.

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2. ACTIVATED CHARCOAL (WITHOUT SORBITOL)

- a) **Pharmacology**
Variable drug or toxin absorption when ingested
- b) **Pharmacokinetics**
Absorbs poisons and prevents toxins from entering body systems
- c) **Indications**
Poisoning by mouth
- d) **Contraindications**
 - (1) Altered mental status
 - (2) Patients who have received an emetic
- e) **Adverse Effects**
Not clinically significant
- f) **Precautions**
Does not adsorb all drugs and/or toxic substances
- g)  **Dose**
 - (1) Adult: Administer 1 gram/kg
 - (2) Pediatric: Administer 1 gram/kg



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



3. ADENOSINE (ADENOCARD)

a) Pharmacology

- (1) Naturally occurring purine nucleoside
- (2) Used to treat narrow complex tachycardia, PSVT with WPW
- (3) Slows conduction through the AV node
- (4) No effect on ventricular contractility
- (5) Causes peripheral vasodilatation (often dramatic)

b) Pharmacokinetics

Onset of action within 5 to 20 seconds following an IV dose;
half-life is 10 seconds.

c) Indications

- (1) To slow the rate of narrow complex tachycardia
- (2) Is only effective on SVT/PSVT
- (3) No effect on VT, atrial fibrillation, or flutter
- (4) In stable, wide complex tachycardia (possible VT) for pediatric with medical consultation and caution.

d) Contraindications

Known hypersensitivity

e) Adverse Effects

Flushing, dyspnea, chest pressure, nausea, headache, dizziness,
and hypotension

f) Precautions

- (1) Effects antagonized by theophylline
- (2) Effects enhanced by dipyridamole (Persantine), digitalis, carbamazepine, calcium channel blockers, and benzodiazepines.
- (3) Be prepared for up to 40 seconds of asystole

g) Dosage (Paramedic May Administer Without Consult)

- (1) Adult:
6 mg rapid IVP bolus followed by a rapid flush
Give 12 mg if no response within 2 minutes
Give 12 mg more if no response within another 1 to 2 minutes
- (2) Pediatric: 0.1 mg/kg rapid IVP/IO, maximum initial dose 6 mg. Second and third doses: 0.2 mg/kg rapid IVP/IO maximum single additional dose 12 mg.



g) Dosage

(1) Adult:

- a) Asystole: Administer 1 mg IVP repeated every 3-5 minutes to a total of 0.04 mg/kg; maximum dose not to exceed 3 mg
- b) Bradycardia: Administer 0.5-1 mg IVP repeated every 3-5 minutes to a total dose of 0.04 mg/kg

(2) Pediatric:

- (a) Bradycardia: Administer 0.02 mg/kg IV/IO; minimum dose 0.1 mg; maximum single dose Child (10 kg-25 kg), 0.5 mg; Adolescent (25-40 kg), 1 mg; ET 0.03 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 in WMD Protocols.



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



9. CAPTOPRIL (Capoten)

a) Pharmacology

- (1) Inhibits angiotensin converting enzyme, which converts angiotensin I to angiotensin II
- (2) Reduces after load on the heart

b) Pharmacokinetics

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

c) Indications

- (1) Respiratory distress from Pulmonary Edema or Congestive Heart Failure

d) Contraindications

- (1) Known hypersensitivity
- (2) Known history of angioedema

e) Adverse Effects

- (1) Angioedema, hyperkalemia, renal impairment, cough, rash

f) Precautions

- (1) Not for use with pregnant females

g) Dosage

- (1) Adult: 25 mg sub-lingual for moderate and severe symptoms so long as systolic blood pressure is equal to or greater than 110 after nitroglycerin administration
- (2) Pediatric: Not indicated



9A. DEXAMETHASONE (NEW '11)

a) Indications

Moderate to severe asthma exacerbation

b) Adverse Effects

- (1) Headache
- (2) Edema
- (3) Vertigo
- (4) Fluid retention
- (5) Adrenal insufficiency and immunosuppression with long-term use
- (6) HTN
- (7) CHF

c) Precautions

- (1) Caution with DM
- (2) Known TB
- (3) Osteoporosis
- (4) Hepatic impairment
- (5) CHF

d) Contraindications

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

e) Dosage (IV solution used for PO administration)

- (1) Adult: 10 mg IV (preferred, if established) or PO
- (2) Pediatric: 0.5 mg/kg PO (preferred) or IV to a maximum of 10 mg



10. DEXTROSE 50%

a) Pharmacology

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

b) Pharmacokinetics

- (1) Dextrose restores circulating blood sugar and is rapidly utilized following IV injection.
- (2) Excess dextrose is rapidly excreted unchanged in the urine.

c) Indications

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

d) Contraindications

Known hyperglycemia

e) Adverse Effects

May worsen hyperglycemia (high blood sugar)

f) Precautions

- (1) May worsen pre-existing hyperglycemia
- (2) Tissue necrosis if extravasation occurs

g) Dosage

- (1) Adult: Administer 25 grams in 50 mL IV (1 ampule of 50% solution)
- (2) Pediatric:
 - (a) If less than 2 months of age - Administer 5–10 mL/kg D10W IV/IO (D10W is prepared by mixing one part of D50W with four parts LR).
 - (b) If greater than 2 months but less than 2 years of age - Administer 2-4 mL/kg of 25% dextrose IV/IO; (D25W is prepared by mixing D50W with an equal volume of Lactated Ringer's).
 - (c) If greater than 2 years of age - Administer D50W 1–2 mL/kg IV/IO. Maximum dose 25 grams.

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

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

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

d) Contraindications

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

e) Adverse Effects

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

f) Precautions

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

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

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



12. DILTIAZEM (Cardizem)

a) Class

Calcium channel blocker

b) Actions

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

c) Indications

Symptomatic atrial fibrillation and atrial flutter

d) Contraindications

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

e) Precautions

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

f) Side effects

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

g) Significant interactions

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

h)  Dosage

(1) Adult

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

(2) Pediatric:

Contraindicated for patients less than 12 years of age.



i) Overdose or Toxicity Presentation

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

j) Treatment of Overdose or Other Adverse Reactions

- (1) Give general supportive measures, monitor vitals, administer oxygen.
- (2) Hypotension: Consider calcium chloride 250 mg SLOW IVP with medical consultation and IV fluid challenge with lactated Ringer's; evaluate legs.
- (3) Bradycardia: Consider atropine (0.5 to 1 mg); if necessary, consider pacing.



13. DIPHENHYDRAMINE HYDROCHLORIDE (BENADRYL)

a) Pharmacology

Antihistamine

b) Pharmacokinetics

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

c) Indications

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

d) Contraindications

Known allergy to diphenhydramine

e) Adverse Effects

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

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

- (1) Severe vomiting
- (2) Alcohol intoxication

(3)  Medical consultation required for:

- (a) Asthma
- (b) Nursing mothers

g) Dosage

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



14. DOPAMINE HYDROCHLORIDE (INTROPIN)

a) Pharmacology

- (1) Alpha and beta adrenergic receptor stimulator
- (2) Dopaminergic receptor stimulator
- (3) Precursor of norepinephrine
- (4) At low doses, less than 2 **mcg/kg/min**
 - (a) Dilates renal and mesenteric blood vessels
 - (b) Venoconstricts
 - (c) Arterial resistance varies
- (5) At moderate doses, 2-6 **mcg/kg/min** beta1 stimulating effect on heart
Results in increased cardiac output
- (6) High dose, 6-10 **mcg/kg/min**
Exhibits alpha1 effects; peripheral vasoconstriction including renal and mesenteric vessels, increases left and right ventricular preload
- (7) Doses greater than or equal to 10 **mcg/kg/min**
Alpha1 stimulating effects may reverse mesenteric and renal artery dilatation resulting in decreased blood flow, causing increased preload due to effects on venous system

b) Pharmacokinetics

- (1) Extremely rapid onset of action
- (2) Extremely brief duration of action
- (3) The rate of administration may be used to control the effect of dopamine.

c) Indications

- (1) Cardiogenic shock
- (2) Septic shock
- (3) Anaphylactic shock
- (4) Hypovolemic shock (after sufficient volume replacement)

d) Contraindications

- (1) Pheochromocytoma (adrenal tumor which causes excessive release of epinephrine and norepinephrine)
- (2) Pre-existing tachydysrhythmias
- (3) Uncorrected hypovolemia



e) Adverse Effects

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

f) Precautions

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

g)  Dosage

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



17. GLUCAGON

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

- (1) Patients with altered mental status who are suspected of being hypoglycemic where IV access is not obtainable **(NEW '11)**
- (2) Beta blocker overdose **(NEW '11)**

d) Contraindications

Known hypersensitivity

e) Adverse Effects

Nausea and vomiting

f) Precautions

Glucagon only works if liver has significant glycogen stores.

g) Dosage

- (1) For suspected hypoglycemia without IV access:
 - (a) Adult: Administer 1 mg IM (Medical consult for additional dosing to a maximum of 3 mg IM) **(NEW '11)**
 - (b) Pediatric:
 - (i) 1 mg IM (25-40 kg) (Medical consult for additional dosing to a maximum of 3 mg IM) **(NEW '11)**
 - (ii) 0.5 mg IM (less than 25 kg) (Medical consult for additional dosing to a maximum of 3 mg IM) **(NEW '11)**
- (2)  For suspected beta blocker overdose:
 - (a) Adult: Administer 1 mg IVP every 5 minutes
 - (b) Pediatric: Administer every 5 minutes
 - (i) 1 mg IVP (25-40 kg) every 5 minutes **(NEW '11)**
 - (ii) 0.5 mg IVP (less than 25 kg) every 5 minutes **(NEW '11)**



18. HALOPERIDOL (HALDOL) (EMT-P Only)

a) Pharmacology

- (1) An effective anxiolytic agent. Very effective in the management of aggressive and violent patients.
- (2) Also has antiemetic properties. Useful in the management of severe nausea and vomiting.
- (3) Weak anticholinergic (atropine-like) and alpha-blocking agent (vasodilation).

b) Pharmacokinetics

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

c) Indications

Chemical restraint for violent, agitated, and aggressive patients who present a danger to themselves or to others and who cannot be safely managed otherwise. Most violent/agitated patients can be handled with verbal or physical restraint alone. This is a joint paramedic–base station physician decision that relies heavily on paramedic judgment.

d) Contraindication

- (1) Children under 6 years of age
- (2) Parkinson's disease
- (3) CNS depression
- (4) Acute CNS injury

e) Adverse Effects

- (1)  Extrapyramidal symptoms (dystonic reaction) are the most common side effects. These are generally not encountered with short-term use. In the event that they should develop, a single dose of diphenhydramine 25-50 mg (1 mg/kg for pediatrics to a max of 25 mg) will generally relieve symptoms.
- (2) Hypotension and tachycardia are common (20-25%) but usually self-limiting side effects. Fluid challenge is indicated with a significant drop blood pressure or hypotension.
- (3) Haloperidol has been known to cause torsades de pointes ventricular tachycardia. Once the patient has been medicated place the patient on a cardiac monitor and monitor for dysrhythmias.



21. MIDAZOLAM (VERSED)

a) Pharmacology

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

b) Pharmacokinetics

- (1) A short-acting benzodiazepine with strong hypnotic, anticonvulsant activity and amnestic properties
- (2) Onset of action is extremely rapid following IV administration approximately 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

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

Adult: Patient 15-69 years: midazolam 5 mg IM/IV



Patient greater than 69 years: midazolam 2.5 mg IM/IV

Repeat doses may be given with medical direction

Pediatric: Not indicated



Bucking Endotracheal Intubated patient

- (1) Adult: Administer 0.05 mg/kg (2-5 mg) slow IVP over 1-2 minutes, while maintaining systolic BP greater than 90 mmHg (**NEW '11**). 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

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

- (1) Acute myocardial infarction
- (2) Burns
- (3) Isolated injuries requiring pain relief
- (4) Sedative for transcutaneous pacing

d) Contraindications

- (1) Head injury
- (2) Multiple trauma
- (3) COPD with compromised respiratory effort
- (4) Hypotension
- (5) Sensitivity to morphine, codeine, or percodan

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 (pin-point)
- (6) Increased cerebral blood flow



f) Precautions

- (1) Narcan reverses all effects.
- (2) Administration masks pain, making hospital diagnosis difficult.
- (3) Should be administered slowly and titrated to effect.
- (4) Vital signs should be monitored frequently.
- (5) Hypotension is a greater possibility in volume-depleted patients.

g)  Dosage

- (1) Adult:
 - (a) AMI: Administer 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**
 - (b) Administer 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. (Paramedic may perform without consult.) **(NEW '11)**
- (2) Pediatric: Administer 0.1 mg/kg IV/IO titrated to effect at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg titrated to effect at a rate of 2 mg/min to a maximum single dose of 10 mg. For IM, administer 0.1 mg/kg. **(NEW '11)**



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 and central nervous system depression induced by opiates

d) Contraindications

Not clinically significant

e) Adverse Effects

Not clinically significant

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); repeat as necessary to maintain respiratory activity.
- (2) Pediatric: Administer 0.1 mg/kg IVP/IM/Intranasal (if delivery device is available) , 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

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25. NITROGLYCERIN PASTE

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

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

d) Contraindications

- (1) Known hypersensitivity
- (2) Pediatric patient under the age of 12
- (3) Any patient having taken medication for erectile dysfunction (eg, Viagra™, Levitra™, or Cialis™) within the past 48 hours. Medical consultation is required to override this contraindication.
- (4) Asymptomatic hypertension
- (5) Blood pressure below 90 mmHg systolic
- (6) Heart rate less than 60

e) Adverse Effects

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

f) Precautions

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

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

g) Dosage

- (1) Adult: 1 inch of the NTG paste is applied. Measuring applicators are supplied. **(NEW '11)**
- (2) Pediatric: Not indicated

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

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

a) Indication

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

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 **(NEW '11)**

OR

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

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

- (2) If ventilatory difficulty is thought to be the result of pain response, Morphine may be used in addition to, or instead of, Midazolam: Morphine 0.1 mg/kg IV/IO at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg at a rate of 2 mg/min to a maximum single dose of 10 mg. Titrate to abate bucking and relax ventilation while maintaining systolic BP greater than 90 mmHg. **(NEW '11)**
- (3) If significant resistance to ventilation continues, the EMT-P may administer
- (a) Vecuronium 0.05 mg/kg (2-5 mg) IVP



PRE-SEDATION MUST BE PROVIDED WHEN VECURONIUM IS ADMINISTERED TO A PATIENT WHO IS EITHER RESPONSIVE TO STIMULUS, OR WHO MAY BECOME RESPONSIVE TO STIMULUS DURING NEUROMUSCULAR BLOCKADE. USE OF VECURONIUM REQUIRES FUNCTIONING END TIDAL CO₂ MONITORING. VECURONIUM MAY ONLY BE USED IF CONTINUOUS, BREATH TO BREATH, ET_{CO}₂ MONITORING CAN BE PROVIDED.

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

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

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The pilot protocol for Combitube has been removed. Combitube is no longer an approved airway device.

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

c) Preparation

- (1) Pre-oxygenate with 90-100% oxygen.
- (2) Monitor oxygen saturation with pulse oximetry and ECG.
- (3) Ensure functioning IV and fluid therapy as per protocol.
- (4) Evaluate for difficult airway.
- (5) Perform focused RSI neurologic exam.
- (6) Prepare equipment
 - (a) Intubation kit: Recommended to carry both cuffed and uncuffed ET tubes for patients less than 8 years of age or 25 kg.
 - (b) Bag Valve Mask (BVM) with manometer. (Manometer may be part of the BVM or separate.)
 - (c) Suction
 - (d) RSI kit
 - (i) Prepare medications
 - (ii) Alternative airway device, Cricothyroidotomy equipment
 - (e) Capnograph

d) RSI Procedure

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

OR

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

e) Successful Endotracheal Tube Placement

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

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

f) Unsuccessful Endotracheal Tube Placement

- (1) Maintain cricoid pressure and resume BVM ventilation for 30 seconds.
- (2) If unable to ventilate, see “Unable to Ventilate” below.
- (3) Re-attempt oral ET intubation.
- (4) If unsuccessful, resume BVM ventilation.

g) If Unable to Ventilate

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

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

a) Indication

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

b) Contraindication

Unsecured airway

c) Procedure

- (1) Midazolam up to 0.05 mg/kg IVP over 1-2 minutes, titrated to abate bucking and relax ventilation while maintaining 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.

OR

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

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

- (2) If ventilatory difficulty is thought to be the result of pain response, Morphine may be used in addition to, or instead of,

Midazolam/Etomidate:

Morphine 0.1 mg/kg IV/IO at a rate of 2 mg/min to a maximum single dose of 20 mg. Repeat in 5-10 minutes after reassessment with 0.05 mg/kg at a rate of 2 mg/min to a maximum single dose of 10 mg. Titrate to abate bucking and relax ventilation 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.

(NEW '11)

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

- (2) Immediate notification to jurisdictional RSI supervisor for all RSI attempts
- (3) Medical Director evaluation of all RSI attempts within 12 hours
- d) Maintenance of detailed RSI database**

ETOMIDATE (AMIDATE)

- a) Pharmacology**
Hypnotic
- b) Pharmacokinetics**
A short-acting nonbarbiturate hypnotic agent without analgesic properties
- c) Indications**
Pre-sedation of responsive patients prior to administration of neuromuscular blocking agents
- d) Contraindications**
Known hypersensitivity to etomidate
- e) Adverse Effects**
 - (1) Respiratory depression, or apnea
 - (2) Hypotension (infrequent)
 - (3) Involuntary myoclonus
 - (4) Adrenal suppression (possible with repeated dosing)
- f) Precautions**
 - (1) The effects of etomidate can be accentuated by CNS depressants, such as narcotics and alcohol.
 - (2) Myoclonic movements are common and should not be confused for fasciculations due to a depolarizing neuromuscular blocking agent or seizure activity.
- g) Dosage**
 - (1) Adult:
Administer 0.3 mg/kg IVP over 30 to 60 seconds.
If the provider suspects hypovolemia, the initial dose will be 0.15 mg/kg IVP over 30-60 seconds. May repeat 10 mg for adult IVP after succinylcholine effects resolve and patient is bucking or combative. May repeat 10 mg for adult IVP every 15 minutes to a total of three doses. Additional doses require medical consultation.
 - (2) Pediatric:
Administer 0.3 mg/kg IVP over 30 to 60 seconds.
If the provider suspects hypovolemia, the initial dose will be 0.15 mg/kg IVP over 30-60 seconds. May repeat 0.15 mg/kg IVP after succinylcholine effects resolve and patient is bucking or combative. May repeat 0.15 mg/kg IVP every 15 minutes to a total of three doses. Additional doses require medical consultation.

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

MIDAZOLAM (VERSED)

a) Pharmacology

- (1) Sedative
- (2) Hypnotic

b) Pharmacokinetics

A short-acting benzodiazepine with strong hypnotic and amnestic properties

c) Indications

- (1) Pre-sedation of responsive patients prior to administration of neuromuscular blocking agents
- (2) Sedation of intubated patients with ventilatory difficulty secondary to bucking or combativeness

d) Contraindications

- (1) Hypotension
- (2) Acute narrow-angle glaucoma
- (3) Known hypersensitivity to midazolam

e) Adverse Effects

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

f) Precautions

The effects of midazolam can be accentuated by CNS depressants, such as narcotics and alcohol

g) Dosage

- (1) Adult:
Administer 0.05 mg/kg (2-5 mg) slow IVP over 1-2 minutes, while maintaining systolic BP greater than 90 mmHg. **(NEW '11)**
- (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.

**PILOT PROGRAM
EMT-B ACQUISITION OF 12-LEAD ELECTROCARDIOGRAPHY**

- (iii) Remove electrodes from a sealed package immediately before use. Using previously unpacked electrodes or electrodes with expired date codes may impair ECG signal quality.
- (iv) When placing electrodes on female patients, always place the leads V3-V6 under the breast rather than on the breast.
- (v) Acquisition of a 12-lead ECG should take no more than 5 minutes.
- (vi) Transmission of the 12-lead ECG to the receiving facility should be done en route to the receiving facility. There is no need to delay transport to transmit a 12-lead ECG.

6. INDIVIDUAL EMT-B APPROVAL FOR PARTICIPATION

- a) The EMT-B 12-Lead ECG Program is open to all Maryland EMT-Bs that have been providing direct patient care for a minimum of one year.
- b) Providers must be members of an ALS company that currently owns a local system compatible 12-lead device.

7. ONGOING DEMONSTRATION OF PROFICIENCY

After the initial training program is completed, the EMT-B will participate in an annual refresher training program.

8. REVIEW OF EACH CALL

- a) Providers will submit copies of each 12-lead ECG and EMAIS report to their jurisdictional Quality Review Committee.
- b) The Quality Review Committee will review all 12-lead transmissions on a quarterly basis and submit a report to the Jurisdictional and Regional Medical Directors.

**PILOT PROGRAM
PELVIC STABILIZATION BINDER DEVICE FOR
SUSPECTED PELVIC FRACTURE PROCEDURE**

N3. PELVIC STABILIZATION BINDER DEVICE

All levels of EMS providers if appropriately trained in the device

1. INDICATIONS

All of the following blunt trauma patients with physical findings indicative of pelvic fracture should have an application of a Pelvic Stabilization Binder Device.

- a) Evidence of pelvic instability on examination of the pelvis
- b) Patients complaining of pelvic pain on examination of the pelvis
- c) Pain on iliac compression
- d) Pain on compression of the pubic symphysis
- e) Blood at the urethral meatus
- f) Vaginal bleeding
- g) Perineal or scrotal hematoma
- h) All blunt trauma patients with an unreliable physical exam and significant mechanism of injury may be considered for application of a Pelvic Stabilization Binder Device.



PREGNANCY IS NOT A CONTRAINDICATION TO THE APPLICATION OF THE PELVIC STABILIZATION BINDER DEVICE WHEN INDICATED.

2. CONTRAINDICATIONS

Children who have not reached their 15th birthday

3. PROCEDURE

- a) Assess for pelvic instability.
In order to not increase bleeding, only one exam should be performed to evaluate for pelvic fracture. Multiple exams will disrupt clot formation.
- b) Identify the greater trochanter of each femur.
The greater trochanter is the bony prominence of the lateral upper thigh.
- c) The patient should be placed in a supine position prior to application of the pelvic stabilization binder device.
- d) Place pelvic binder around the patient, centered at the level of the greater trochanter.
- e) It may be advisable to place the binder on the backboard prior to placing the patient onto the backboard so that it is already prepared for placement.
- f) Ensure patient has been undressed and provides adequate exposure.
- g) Tighten the binder as directed by the manufacturer's instructions for the specific stabilization binder.
- h) Once pelvic stabilization binder device is applied, do not remove until directed to do so by physician.

**PILOT PROGRAM
AIRWAY MANAGEMENT: VIDEO LARYNGOSCOPE/GLIDESCOPE
RANGER FOR OROTRACHEAL INTUBATION**

**N5. AIRWAY MANAGEMENT: VIDEO LARYNGOSCOPY/GLIDESCOPE
RANGER FOR OROTRACHEAL INTUBATION**

1. PURPOSE

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

2. INDICATION

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

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

3. CONTRAINDICATIONS

Patients less than 18 years of age.

4. POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

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

5. PRECAUTIONS

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

PILOT/RESEARCH PROTOCOL
RAMPART: The Rapid Anticonvulsant Medication
Prior to Arrival Trial

**N6. RAMPART: THE RAPID ANTICONVULSANT MEDICATION
PRIOR TO ARRIVAL TRIAL**

PROTOCOL

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

1. INDICATIONS

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

2. PATIENT INCLUSION CRITERIA

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

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

OR

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

- c) Patient is still seizing on paramedic or CRT-I arrival.

OR

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

3. PATIENT EXCLUSION CRITERIA

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

4. PROCEDURE: INITIAL INCLUSION

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

PILOT/RESEARCH PROTOCOL
RAMPART: The Rapid Anticonvulsant Medication
Prior to Arrival Trial

5. PROCEDURE: ASSESSMENT FOR EXCLUSION FROM STUDY

- a) **Check pulse.** Pulse must be palpable with rate equal to or greater than 40 beats per minute. Exclude patients in whom seizure is the presenting symptom of cardiac arrest or hemodynamic collapse.
- b) **RAPID ASSESSMENT:**
 - (i) Patient is wearing medical alert ID for allergy or sensitivity to midazolam or lorazepam or the statement “RAMPART” declined, do not enroll in this study.
 - (ii) Patient is a female of child-bearing-age; look at abdomen (rise in umbilicus = 20 weeks) to assess for possible pregnancy. Ask family if present. Do not enroll if this patient is suspected or known to be pregnant.
 - (iii) Check glucose level; if glucose is below 60, treat per protocol. Do not enroll in this study.

6. STUDY STEPS

- a) Open RAMPART study box; say out loud for the voice recorder, **“patient is seizing and all study criteria are met.”**
- b) Give IM medication; say out loud **“IM med given”** and state time.
- c) Start IV; say out loud **“IV access obtained.”**
- d) Administer IV med; say out loud **“IV med given”** and state time.
- e) Say out loud **“patient no longer seizing”** if patient stops convulsing.
- f) Continue standard of care with monitoring and charting of vital signs every 5 minutes or per local protocol – include pulse, BP, respiratory rate, cardiac rhythm, pulse oximetry, and airway management (nasal/oral airway, O₂, ET, etc.) if needed.
- g) If patient is still seizing 10 minutes after last dose, refer to your local protocol for use of additional “rescue medication.”
If rescue medication is given, say out loud **“rescue medication given.”**
- h) When you arrive at the ED, say out loud “arrival at ED” and say out loud whether “patient is seizing” or **“patient is not seizing.”**

7. UPON ARRIVAL AT ED

- a) Contact on-call study personnel.
- b) Initiate RAMPART case replacement.

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OPTIONAL SUPPLEMENTAL PROGRAM
GLYCOPROTEIN IIb/IIIa ANTAGONIST INFUSIONS FOR INTER-FACILITY TRANSPORTS
EMT-Paramedic only



P. GLYCOPROTEIN IIB/IIIA ANTAGONIST INFUSIONS
(EMT-Paramedic only)

1. PURPOSE

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

2. INDICATIONS

The Glycoprotein IIb/IIIa infusion must have been started by the hospital staff prior to an inter-hospital transfer. IV Glycoprotein IIb/IIIa transports may NOT be started by the prehospital provider in the prehospital setting.

3. CONTRAINDICATIONS

- a) Patients who are clinically unstable, including but not limited to unstable vital signs and blood pressure, or current arrhythmia.
- b) Pediatric patients

4. PROCEDURE

- a) Maintain the infusion as directed by the sending physician.
- b) The sending physician must document the infusion to be administered on the patient's transport record or transport note. This includes the concentration of the medication and the infusion rate.
- c) The infusion must be maintained on an infusion pump designed for transport. The provider must be trained in the appropriate use of the specific make and model infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
- d) The total volume of Glycoprotein IIb/IIIa infused must be recorded on the patient care report.
- e) The patient must be on a cardiac monitor and vital signs should be documented on the patient care report at least every 15 minutes.
- f) When in doubt, contact the sending physician for medical direction.

5. SPECIAL CONSIDERATIONS

The ALS service or jurisdiction must provide and document training of the ALS providers on the operation of the infusion pump(s) being used. They must also have a quality improvement (QI) program monitoring the appropriateness and quality of care provided. The QI program should be directed or coordinated by, at minimum, a Paramedic.

**OPTIONAL SUPPLEMENTAL PROGRAM
GLYCOPROTEIN IIb/IIIa ANTAGONIST INFUSIONS FOR INTER-FACILITY TRANSPORTS
EMT-Paramedic only**



GLYCOPROTEIN IIb/IIIa ANTAGONIST
(EMT-Paramedic only)

1. Pharmacology

Platelet glycoprotein antagonist. This agent reversibly prevents fibrinogen, von Willenbrand's factor, from binding to the Glycoprotein IIb/IIIa receptor, inhibiting platelet aggregation.

2. Pharmacokinetics

Glycoprotein IIb/IIIa has a half-life of 2.5 hours. Metabolism of this drug is limited and is excreted via the kidneys.

3. Indications

Patients with acute coronary syndrome including those with PCI (percutaneous coronary intervention).

4. Contraindications

- a) Hypersensitivity, active internal bleeding, history of bleeding, stroke within one month, major surgery with severe trauma, severe hypotension, history of intracranial bleeding, intracranial neoplasm, arteriovenous malformation/aneurysm, aortic dissection, or dependence on renal dialysis
- b) Pediatric patients

5. Side Effects/Adverse Reactions

- a) Cardiovascular: Stroke, hypotension
- b) Systemic: Bleeding, anaphylaxis
- c) Other: Hematuria, Thrombocytopenia

6. Precautions

Glycoprotein IIb/IIIa is a medication designed to inhibit the clotting factor in blood. Patients on this medication should be protected from further injuries which may cause bleeding. Attempts to start IVs should not be made without a doctor's orders.

7.  Dosage

- a) INITIAL BOLUS: Given at sending facility and should be documented.
- b) MAINTENANCE IV DRIP: Follow Standard Dosing. Maintain drip based on patient weight and sending physician's orders.



IF CHEST PAIN OR HYPOTENSION DEVELOPS DURING TRANSPORT THE PARAMEDIC MUST CONSULT WITH EITHER THE SENDING OR RECEIVING PHYSICIAN FOR FURTHER INSTRUCTIONS.

**OPTIONAL SUPPLEMENTAL PROGRAM
AIRWAY MANAGEMENT
EMT-PARAMEDIC ONLY**



**Q3. AIRWAY MANAGEMENT: BI-LEVEL POSITIVE AIRWAY PRESSURE (BiPAP)
(NEW '11)**

1. INDICATIONS

- a) Inter-facility transfer of a patient with established/chronic respiratory distress or failure, due to cardiogenic pulmonary edema or COPD/Asthma in which the patient demonstrates spontaneous respirations and a patent, self-maintained airway.
- b) No increase in pressure settings or oxygen requirement of the current BiPAP device within 48 hours of the transfer. Otherwise, the patient shall be transferred by a SCT team.
- c) Patients who are 15 years of age or older.

2. CONTRAINDICATIONS

- a) Circumstances in which endotracheal intubation or a surgical airway is preferred or necessary to secure a patent airway.
- b) Circumstances in which the patient is being transferred for treatment of acute respiratory distress.

3. PROCEDURE

- a) Assure patent airway.
- b) Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter (SpO₂) reading, and cardiac rhythm.
- c) Apply BiPAP device per manufacturer's instructions.
- d) Program the device to match the settings of the BiPAP machine that the patient is currently using.
- e) Assess the patient after placing the BiPAP device selected for transfer. In the event that respiratory distress occurs, the patient should be supported with a BVM while therapy is reestablished, by facility personnel, on the original BiPAP device.
- f) Continuously reassess the patient.
- g) Monitor continuous pulse oximetry.
- h) Monitor continuous ETCO₂ monitoring with nasal prongs.
- i) Follow the appropriate set of standing orders for continued treatment.
- j) Confirm the availability of a BiPAP device at the destination facility.



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

BIPAP MAY BE CONSIDERED FOR NON-CARDIOGENIC PULMONARY EDEMA.

**OPTIONAL SUPPLEMENTAL PROGRAM
AIRWAY MANAGEMENT
EMT-PARAMEDIC ONLY**

4. JUSTIFICATION

- a) The use of BiPAP has long been recognized as an effective treatment for patients suffering from exacerbation of congestive heart failure and COPD.
- b) The use of BiPAP for the treatment of patients who might otherwise receive endotracheal intubation holds several benefits:
 - (1) BiPAP is a less invasive procedure with a lesser risk of infection.
 - (2) BiPAP eliminates the necessity of weaning a patient off an ET tube and ventilator.
 - (3) BiPAP eliminates the necessity of sedating or paralyzing an alert patient by ALS or the emergency department staff in order to perform laryngoscopy.
 - (4) BiPAP allows the alert patient to have a continued dialogue with his/her caregivers. This allows for the exchange of additional medical history. It also allows for the patient to be involved in the decision-making process for his/her care.

3. SPECIFIC METHODS

Maryland will be using a full facemask, with the approval of the Jurisdictional Medical Director. BiPAP will be initiated for the transfer of patients who are currently being treated with BiPAP for the purpose of transfer to alternative care settings such as home care, hospice, and post-acute care facilities.

OPTIONAL SUPPLEMENTAL PROGRAM
TACTICAL EMERGENCY
MEDICAL SERVICES

**Powdered Hemostatic Agent or Impregnated Dressing
(Quik-Clot / equivalent)**

AVAILABILITY.....Single use packets
ACTION.....Blood clotting aid
INDICATIONS.....Hemorrhage
CONTRAINDICATIONS.....Known hypersensitivity
PRECAUTIONS.....Standard / Universal precautions for wound care
OPERATIONAL STATUS?.....NON-OPERATIONAL
SIDE EFFECTS.....N/A
INTERACTIONS.....N/A
DOSAGE.....Single or multiple packet(s) applied to bleeding
wound

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

U. Transport of ACUTE Ventilated Inter-Facility Patients

1. PURPOSE

To define the indications for use of a mechanical ventilator by a Paramedic for the acute ventilated patient

- a) The level of care required for the inter-facility transport of the "**acute ventilated inter-facility patient**" is beyond the routine training curriculum for a paramedic; this type of patient must be transported by a higher level health care provider who is credentialed, educated, and competent in dealing with the ventilator and the ventilated patient. **or**
- b) When a critical interfacility transfer is needed and a credentialed, educated, and competent higher level health care provider is **genuinely unavailable**, a credentialed, educated, and competent paramedic (through a MIEMSS approved training program) may attend the ventilator and the ventilated patient with the addition of a second ALS provider or advanced airway trained health care provider when determined appropriate by the sending/referring physician.

2. INDICATIONS

ACUTE VENTILATED PATIENTS for the interfacility transport are defined as:

- a) Intubated **or**
- b) Tracheostomy patient when the reason for transport is:
 - (1) For increased level of care from a hospital, **or**
 - (2) To continue the same level of care in an acute care setting,
or
 - (3) The new tracheostomy patient within the last 4 days (**NEW '11**)

3. VENTILATOR STANDARDS

a) ACUTE VENTILATOR DEVICE STANDARDS

- (1) The ventilator that the service is to use for the acute ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
 - (a) Set rate of ventilations
 - (b) Adjust delivered Tidal Volume
 - (c) Adjustable Pressure Support Settings (**NEW '11**)
 - (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
 - (e) Positive End-Expiratory Pressure (PEEP)
 - (f) Peak airway pressure gauge
 - (g) Continuous Expiratory Volume measurement (Required)
 - (h) Modes
 - (i) Assist Control (AC)
 - (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
 - (iii) Controlled Mechanical Ventilation (CMV)

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

4. POTENTIAL ADVERSE EFFECTS

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

5. PRECAUTIONS

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

6. OPTIONAL PROGRAM REQUIREMENTS

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

OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT OF VENTILATED PATIENTS
EMT-Paramedic Only

V. Optional Program Transport of CHRONIC and SCENE Ventilated Patients

1. PURPOSE

To define the indications for use of a mechanical ventilator:

a) Chronic ventilated patient

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

b) Patient ventilated at the scene of an emergency

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

2. INDICATIONS

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

(1) Have an established tracheostomy and ventilator settings that have no changes or changes reflecting improvement in the patient **and**

(NEW '11)

(2) Point of origin or destination is:

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

(3) Reason for transport is:

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

(4) Ventilator settings are:

- (a) Positive End-Expiratory Pressure (PEEP) less than 10 **(NEW '11)**,
- (b) Peak pressures less than 30, and
- (c) No changes in the ventilator settings are required during the transport.

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

- (1) Point of origin is at the scene of an out-of-hospital emergency
- (2) A EMT-P may utilize mechanical ventilation once the patient is intubated.
- (3) Reason for mechanical ventilation is respiratory arrest or when the patient is intubated and not bucking the ventilator
- (4) Once the patient is on a ventilator, a second provider (EMT-B or higher) is required to assist with patient care.
- (5) Destination – closest appropriate hospital
- (6) Contraindicated in children 8 years of age or less.

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

3. VENTILATOR STANDARDS

a) CHRONIC VENTILATOR DEVICE STANDARDS

- (1) The ventilator that the service is to use for the acute or chronically ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
 - (a) Set rate of ventilations
 - (b) Adjust delivered Tidal Volume
 - (c) Adjustable Pressure Support Settings (**NEW '11**)
 - (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
 - (e) Positive End-Expiratory Pressure (PEEP)
 - (f) Peak airway pressure gauge
 - (g) Modes
 - (i) Assist Control (AC)
 - (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
 - (iii) Controlled Mechanical Ventilation (CMV)
 - (h) Alarms
 - (i) Peak airway pressure
 - (ii) Disconnect
- (2) Strongly recommended options are:
 - (a) Continuous Expiratory volume measurement
 - (b) Blend percentage oxygen
- (3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) CHRONIC VENTILATOR USAGE

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

**OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT OF VENTILATED PATIENTS
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c) SCENE OF AN EMERGENCY VENTILATOR DEVICE STANDARDS

Mechanical ventilator used must:

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

4. POTENTIAL ADVERSE EFFECTS

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

5. PRECAUTIONS

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

**OPTIONAL SUPPLEMENTAL PROGRAM
TRANSPORT TO FREESTANDING MEDICAL FACILITY**

W. TRANSPORT TO FREESTANDING MEDICAL FACILITY

1. PURPOSE

The purpose of this protocol is to define the type of patient an EMS service may transport to a MIEMSS-designated freestanding medical facility.

2. INDICATIONS

A jurisdiction may allow transport of a patient meeting one or more of the following indications to a freestanding medical facility.

- a) A stable priority 3 or 4 patient as outlined in the *Maryland Medical Protocols for EMS Providers* who does not need a time-critical intervention.
- b) A priority 1 patient with an unsecured airway or *in extremis* that requires stabilization beyond the capability of the EMS crew (eg, cardiac or respiratory arrest).

3. CONTRAINDICATIONS

Except as provided in #2, the following patients shall not be transported to a freestanding medical facility.

- a) Any patient meeting the criteria for transport to a trauma center or specialty referral center as defined in the *Maryland Medical Protocols for EMS Providers*.
- b) A pregnant patient complaining of abdominal pain or a patient who is in active labor.
- c) Any patient in need of time-critical intervention that can be provided only at a hospital-based Emergency Department.

4. PROCEDURE

The EMS provider when unclear of appropriate destination should consult with a Base Station and the freestanding medical facility prior to arrival. The Base Station shall direct the provider to the appropriate destination for the patient.

5. SPECIAL CONSIDERATIONS

None

**OPTIONAL SUPPLEMENTAL PROGRAM
WILDERNESS EMERGENCY MEDICAL
SERVICES PROTOCOLS**

X. WILDERNESS EMERGENCY MEDICAL SERVICES PROTOCOLS

A. INTRODUCTION

1. Scope & Applicability
 - a) These protocols shall be followed whenever the patient is in a remote, nontraditional EMS environment; when implementation is approved by an online Wilderness Command Physician; or when extended evacuation will be detrimental to the patient.
 - b) These protocols are meant to augment the most current version of the Maryland Medical Protocols for Emergency Medical Services Providers. When treating any patient in the Wilderness EMS setting, the provider shall follow the Maryland Medical Protocols for EMS Providers for their level of training prior to any treatment modalities outlined in the Wilderness EMS (WEMS) protocols. The providers shall take into account equipment and medication necessary and available to care for the patient.
 - c) WEMS protocols are complementary to local EMS protocols in a wilderness setting.
 - (1) Once the patient is transferred to a ground or air ambulance, the responsibility of WEMS personnel comes to an end, and the local EMS agency protocols are implemented.
 - (2) An exception may be made when WEMS personnel's specialized training is needed to manage a specific illness/injury.
 - (a) If the WEMS provider's specialized training is needed to manage the patient's illness/injury, then the highest-trained WEMS medical person shall ride to the hospital with the patient.
 - (b) If, during transport, WEMS personnel encounter a significant conflict between their protocols and those of the transporting EMS agency, they should attempt to contact their own Wilderness Command Physician and ask the Wilderness Command Physician to speak to the local Base Station Physician.
 - (c) If they cannot reach a Wilderness Command Physician, they should contact the local EMS Base Station for on-line medical consultation.
2. Definition of Wilderness Setting

As defined by the Wilderness EMS Institute, the definition of a wilderness environment shall include:

 - a) a tract or region uncultivated and not inhabited by human beings,
 - b) an uninhabitable region left in its natural condition,
 - c) something likened to a wild region in its bewildering vastness, perilousness, or unchecked profusion.
3. Demonstration of Need
 - a) Jurisdictions that seek approval for WEMS programs shall submit a demonstration of need letter outlining the necessity for the program.
 - b) The letter shall be submitted to the Executive Director of the Maryland Institute for Emergency Medical Services Systems for approval.