The Maryland
Medical Protocols
for Emergency Medical Services Providers

Effective July 1, 2012

Maryland Institute for
Emergency Medical Services Systems

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

To All Health Care Providers in the State of Maryland:

Re: 2012 revisions, updates, and additions to *The Maryland Medical Protocols for EMS Providers*

EMS providers will be able to download the replacement pages from the MIEMSS website at www.miemss.org and will be receiving a single copy of the 2012 pocket protocols. The EMS Board has approved these protocols for implementation on July 1, 2012. Prior to July 1, all EMS providers must complete a protocol rollout session (visit the Online Training Center) that will highlight the new material. Some major protocol additions, deletions, and changes are listed below, but this list is not comprehensive.

Protocol Changes

- Cardiac Emergencies protocols updated to reflect 2010 AHA guidelines
- New contraindication for nitroglycerin: any patient taking medication for Pulmonary Artery Hypertension (such as AdcircaTM and RevatioTM) within the past 48 hours
- For EMT, addition of aspirin for chest pain with suspected MI
- Change in croup protocol
  - Removal of nebulized saline from formulary
  - Dexamethasone 0.5 mg/kg up to 10 mg PO/IV/IM for all croup patients
  - Nebulized epinephrine 2.5 mL 1:1000 for moderate and severe croup
  - Epinephrine 0.01 mg/kg IM 1:1000 (max single dose 0.5 mg) for severe croup
- Change in age definition (not reached 18 years birthday) for pediatric patient for inclusion of stroke, ICD, chest pain, STEMI, and contraindication for neuroprotective hypothermia
- Change in CHF protocol
  - Removal of furosemide and captopril from formulary
  - Updated nitroglycerin dosing
  - Emphasis on early application of CPAP
- For paramedics, removal of requirement to consult for morphine for abdominal pain patients
- Patient-initiated refusal protocol required by all EMS Operational programs and as standing order
- Neuroprotective hypothermia as a standing order for cardiac arrest patients with ROSC
- Cardiac arrest patients with ROSC primary destination is
  - Adults: nearest Cardiac Interventional Center
  - Pediatric: preferably taken to the Johns Hopkins Children's Center or Children's National Medical Center
- Optional Protocols
  - Maximum dose of heparin increased to 2000 units per hour
  - Updated wilderness protocol (available online)

Remember: it is the responsibility of each provider to review the 2012 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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- 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

Specialty Referral Centers

Perinatal Referral Centers

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

Primary Stroke

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

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
- Washington Adventist Hospital, Takoma Park
- Western Maryland Regional Medical Center, Cumberland

Cardiac Intervention

- Anne Arundel Medical Center, Annapolis
- Baltimore Washington Medical Center, Glen Burnie
- Bayhealth Medical Center-Kent General Hospital, Dover, DE
- Carroll Hospital Center, Westminster
- Christiana Hospital, Newark, DE
- Franklin Square Hospital Center, Baltimore
- Frederick Memorial Hospital. Frederick
- Holy Cross Hospital, Silver Spring
- Howard County General Hospital, Columbia
- Johns Hopkins Bayview Medical Center, Baltimore
- Johns Hopkins Hospital, Baltimore
- Meritus Medical Center, Hagerstown
- Peninsula Regional Medical Center, Salisbury
- Prince George's Hospital Center, Cheverly
- Shady Grove Adventist Hospital, Gaithersburg
- Sinai Hospital of Baltimore
- Southern Maryland Hospital, Clinton
- St. Agnes Hospital, Baltimore
- St. Joseph Medical Center, Baltimore
- Suburban Hospital, Bethesda
- Union Memorial Hospital, Baltimore
- University of Maryland Medical Center, Baltimore
- Upper Chesapeake Medical Center, Bel Air
- Washington Adventist Hospital, Takoma Park
- Washington Hospital Center, Washington, DC
- Western Maryland Regional Medical Center, Cumberland

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I. PHYSICIAN ORDERS FOR EXTRAORDINARY CARE NOT COVERED BY MARYLAND PROTOCOL: Rarely, a physician providing on-line medical consultation may direct a prehospital provider to render care that is truly life-saving and is not explicitly listed within the protocols

1. ALL of the following criteria MUST be present for prehospital providers to proceed with an order under this section:

a) During the consultation, both the consulting physician and the provider must acknowledge and agree that the patient's condition and extraordinary care are not addressed elsewhere within these medical protocols, and that the order is absolutely necessary to maintain the life of the patient.

b) The provider must feel capable of correctly performing the care directed by the consulting physician, based on the instructions given by the consulting physician, of correctly performing the care directed by the consulting physician.

c) When such an order is carried out, the consulting physician and the provider must immediately notify the State EMS Medical Director (via SYSCOM, 800-648-3001) of the extraordinary care situation. In addition, the provider must fax documentation of the rationale for extraordinary care within **24 hours** to the State EMS Medical Director at (410) 706-0853. Attendance at a subsequent review meeting shall be required.

d) The prehospital provider must inform the consulting physician of the effect of the treatment, and notify the receiving physician of the treatment upon arrival at the hospital (if the receiving physician is different than the consulting physician). The prehospital provider must also notify his/her BLS/ALS program medical director within **24 hours.**

e) The public service local EMS jurisdiction and the Program Medical Director must then submit written notification of the incident to the Regional Medical Director with a copy to the State EMS Medical Director within **5 days** of the incident.

f) The commercial ambulance company and the Program Medical Director must submit written notification of the incident to the Director of the State Office of Commercial Ambulance Licensing and Regulation and the State EMS Medical Director within **5 days** of the incident.

g) The State EMS Medical Director shall conduct a review conference to include when appropriate: the prehospital provider, the on-line physician who provided the medical consultation, the appropriate local jurisdictional official(s), the Program Medical Director, and the Regional Medical Director.
h) Reports of incidents shall be submitted by the State EMS Medical Director to the Incident Review Committee and, when appropriate, to the Board of Physician Quality Assurance.

2. If a prehospital provider receives an order for care that is not covered by Maryland protocols, but does not feel comfortable with it or does not agree that it is absolutely necessary to maintain the life of the patient, he/she shall proceed with the "Inability to Carry Out a Physician's Order" section.

3. Protocols provide a safe basis for prehospital intervention and transport, and provide both prehospital providers and on-line physicians with parameters for this care. Extraordinary care situations not within the protocols may occur a handful of times over a span of years. The extraordinary care protocol is intended to address the potential moral/ethical dilemma which may arise in unanticipated or unforeseen situations not specifically addressed within protocols. The extraordinary care protocol is neither a "carte blanche" for any and all actions nor a device to avoid or circumvent protocols. In all situations, emergency health care providers, both prehospital providers and on-line physicians providing medical direction, are accountable for their actions in discharging their patient care responsibilities.

EXTRAORDINARY CARE CHECKLIST

- Identify the need for extraordinary care with physician consult and EMS provider acceptance
  - Care is not covered elsewhere in the protocols
  - Care is absolutely necessary to maintain the life of the patient
- Immediately upon delivery of patient, EMS provider must notify the receiving physician and the State EMS Medical Director via SYSCOM
- Fax (410-706-0853) the rationale to the State EMS Medical Director within 24 hours
- Notify the Program Medical Director within 24 hours
- Submit written notification of event to Regional Medical Director or SOCALR and the State EMS Medical Director within 5 days

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.

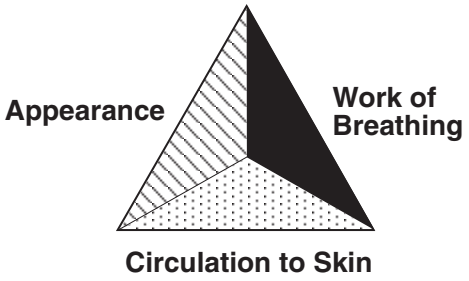
C. PATIENT APPROACH

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

ALERT 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.

ALERT 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.)
         (i) Adult 12-20 breaths per minute **(NEW '12)**
         (ii) Child 12-20 breaths per minute
         (iii) Infant 20-30 breaths per minute
      (2) Consider pulse oximetry (required for all transport units by 2012).

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 if necessary
$\leq$ 85%	Severe Hypoxia	Give 100% Oxygen Assist Ventilations If indicated, Intubate
False SPO_2 readings may occur in the following patients: Hypothermic, Hypoperfusion (Shock), Carbon Monoxide Poisoning, Hemoglobin Abnormality, Anemic, and Vasoconstriction.		

      (3) Consider end-tidal CO_2 waveform monitoring (required on all ALS transport units for advanced airway management by 2015).
      (4) Consider CO-oximetry, if available. **(NEW '12)**
   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

ONCE CONFIRMED PULSELESS, INITIATE COMPRESSIONS, THEN MANAGE AIRWAY AND BREATHING. THE RATIO FOR COMPRESSIONS TO VENTILATIONS IS 30:2 (15:2 FOR PEDIATRIC PATIENTS WITH TWO PROVIDERS) UNTIL AN ADVANCED AIRWAY IS IN PLACE. THEN, PERFORM HIGH-QUALITIY CONTINUOUS CPR. **(NEW '12)**

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

b) Assess for and manage profuse bleeding.

c) Assess skin color, temperature, and capillary refill.

5. Disability
    a) Perform Mini-Neurologic Assessment (Pulse/Motor/Sensory).
    b) Cervical Spine Immobilization
        (1) The provider shall determine the appropriate device for use in spinal immobilization of the patient. Infant or child car seats may NOT be used as a spinal immobilization device for the pediatric patient.
        (2) If patient presents with 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 level of consciousness?
            (c) Suspected use of Drugs or Alcohol?
            (d) Midline Cervical Tenderness or Pain?
            (e) Focal Neurologic Deficit?
            (f) Has a painful distracting injury that could mask cervical pain or injury?
            (g) Child less than 8 years of age
        (3) If NO to all of the above, transport as appropriate.

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

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.

C. ALTERED MENTAL STATUS: UNRESPONSIVE PERSON

1. Initiate General Patient Care.

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

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


3. Treatment
   a) Obtain pulse oximetry, if available.

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

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

   d) Consider obtaining blood sample using closed system.

   e) **If patient has constricted pupils, respiratory depression, is unresponsive, and the provider strongly suspects a narcotic overdose, (NEW '12)**
   Administer naloxone
   0.4 - 2 mg SLOW IVP/IO/IM/Intranasal (If delivery device is available)
   Titrate to adequate respiratory effort.

   f) Use glucometer and treat accordingly.

   g)  Consider an additional dose of naloxone.

   h)  Consider additional fluid administration

Maximum 2,000 mL without medical consultation.

ALTERED MENTAL STATUS: UNRESPONSIVE PERSON (Continued)

i) Obtain pulse oximetry if available.

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

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

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

   (2) Consider obtaining blood sample using closed system.

l) Use glucometer and treat accordingly.

m) **If patient has constricted pupils, respiratory depression, is unresponsive, and the provider strongly suspects a narcotic overdose, (NEW '12)**
   Administer naloxone
   0.1 mg/kg SLOW IVP/IO/IM/Intranasal (If delivery device is available)
   Maximum dose 0.4-2 mg

n)  Consider repeating naloxone.

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

4. Continue General Patient Care.

d) Initiate IV LR KVO, if appropriate.
e) Consider Chemical Restraint.

4. Continue General Patient Care.

F. CARDIAC EMERGENCIES: CARDIAC GUIDELINES

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

    a) When the patient's condition changes, indicating the transition to a new treatment algorithm, the new treatment shall take into account prior therapy (e.g., previously administered medications).
    b) As BLS/ALS guidelines indicate, definitive airway control is preferable, and if this can be achieved, along with other initial interventions, then the earlier the better. However, defibrillation is more important initially if the patient can be ventilated without intubation.
    c) Cardiac Arrest: **(NEW '12)**
    Immediately start CPR and apply AED or manual defibrillator as soon as possible; shock if indicated.
    The goal is to defibrillate as soon after stopping CPR as possible (ideally for manual defibrillator in less than 5 seconds).
    After single shock, immediately restart CPR (do not perform pulse or ECG rhythm check) for 2 minutes, then assess for pulse and rhythm and apply single shock if indicated. Repeat this sequence of single shocks and 2 minutes of CPR.

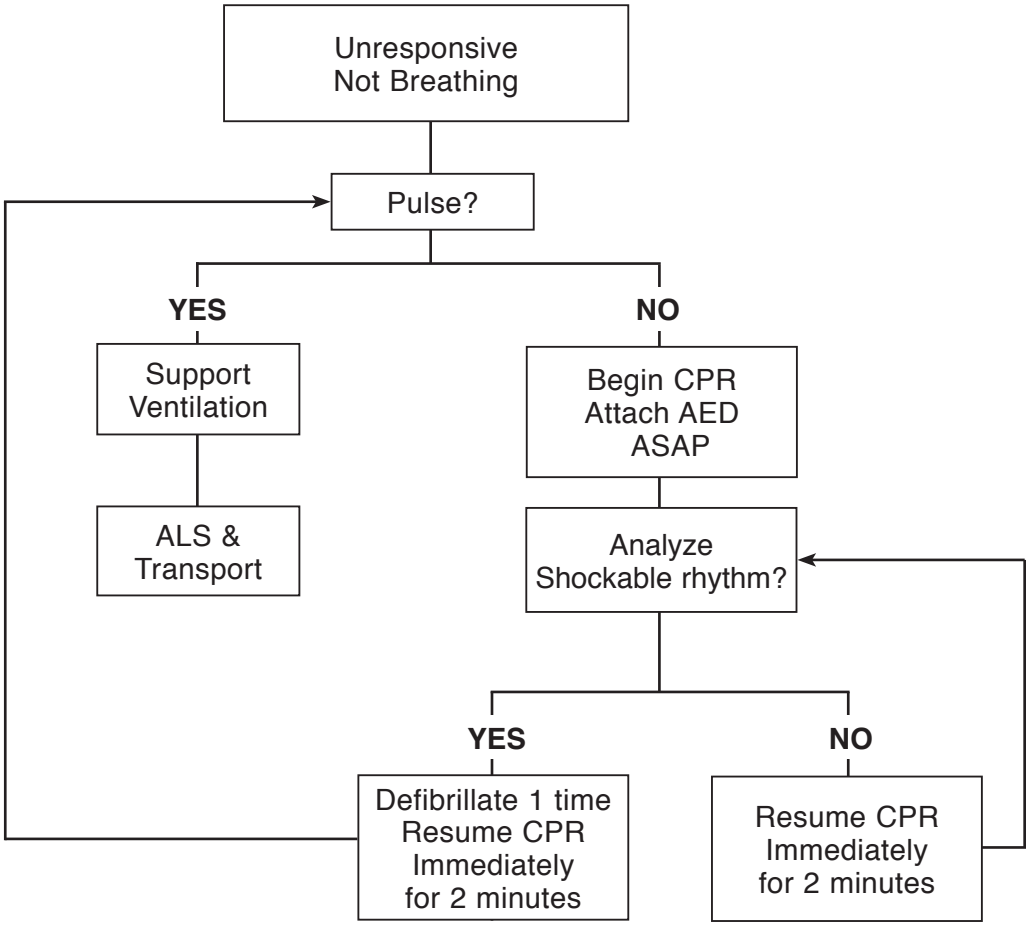
ALERT

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

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

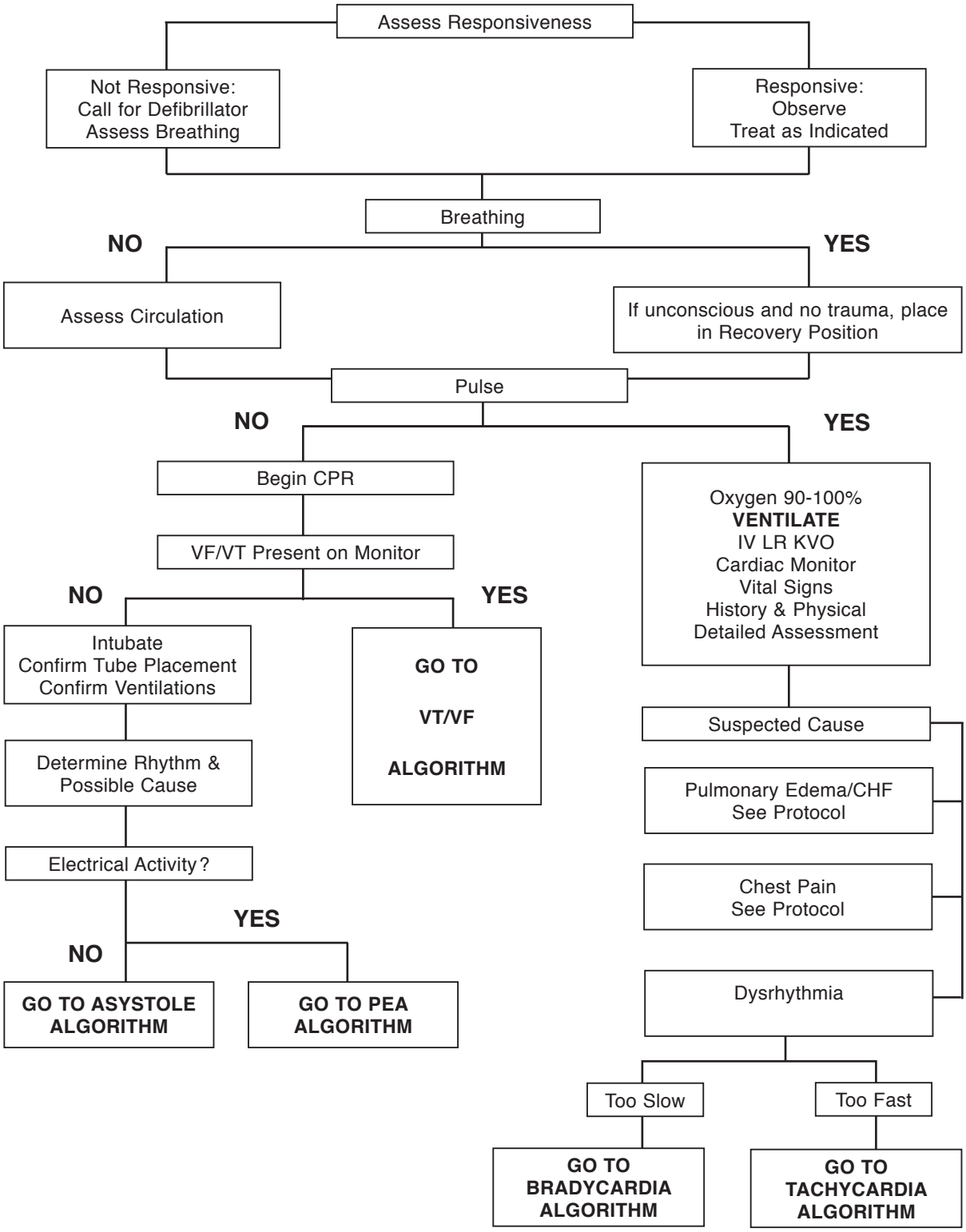
2.

UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE FOR BLS (NEW '12)

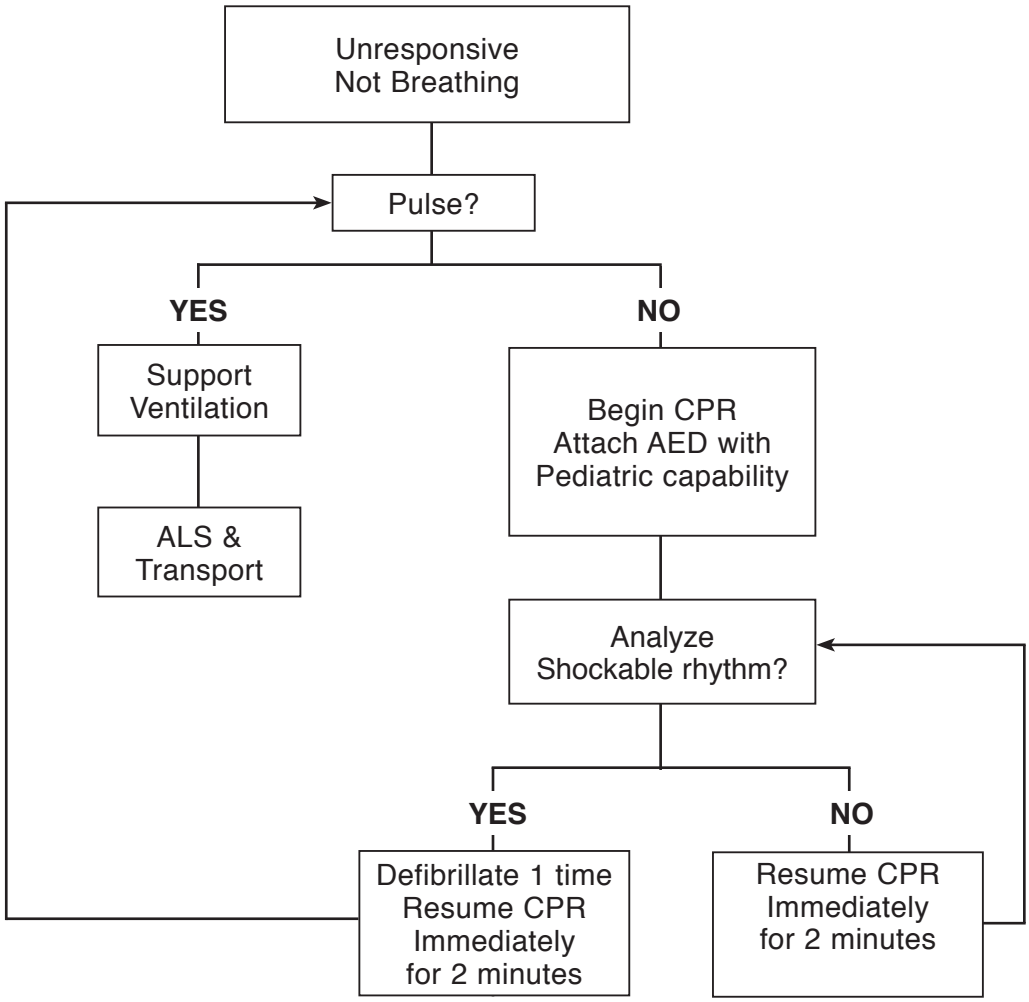


3.

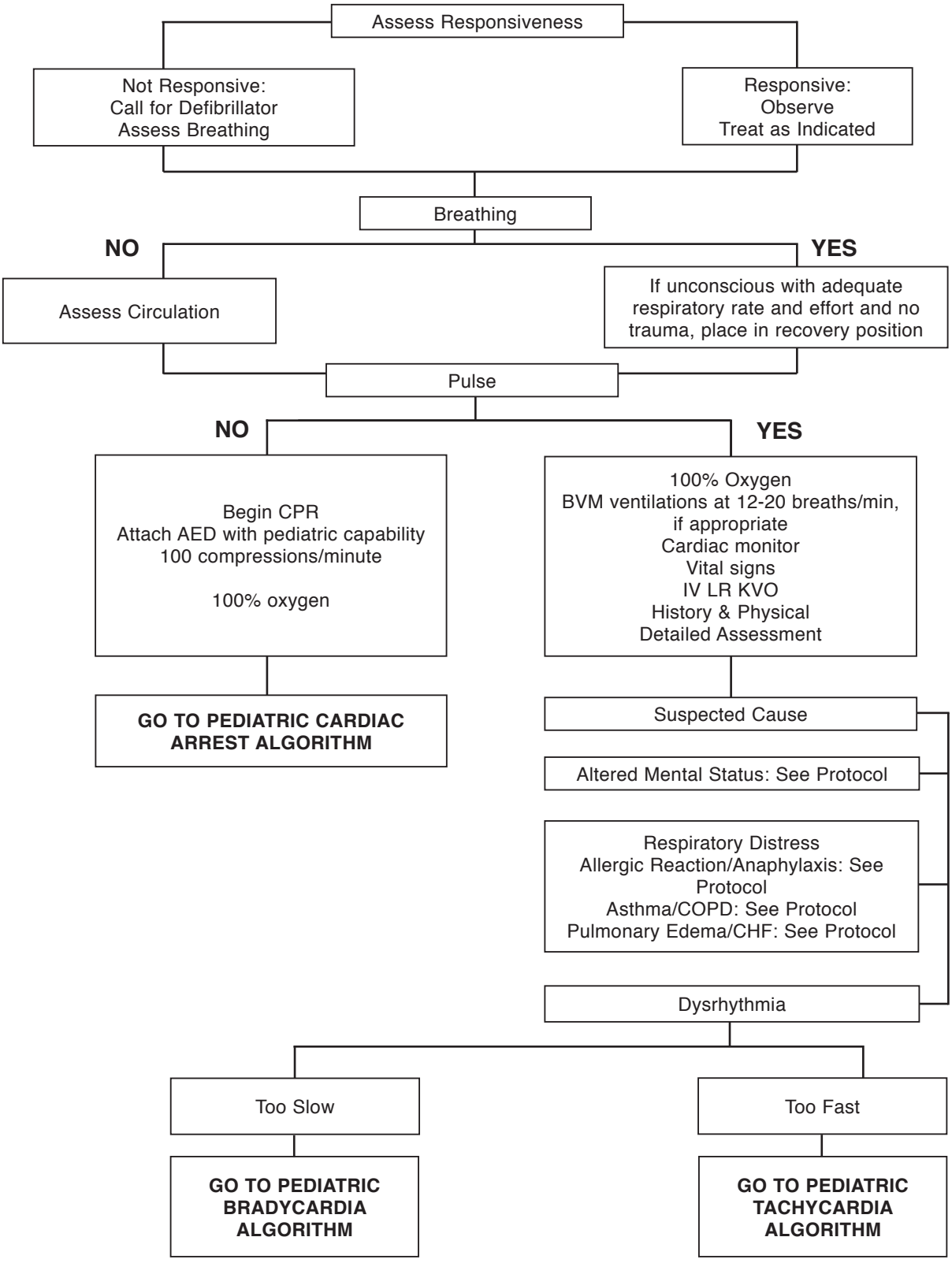
UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE FOR ALS (NEW '12)



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

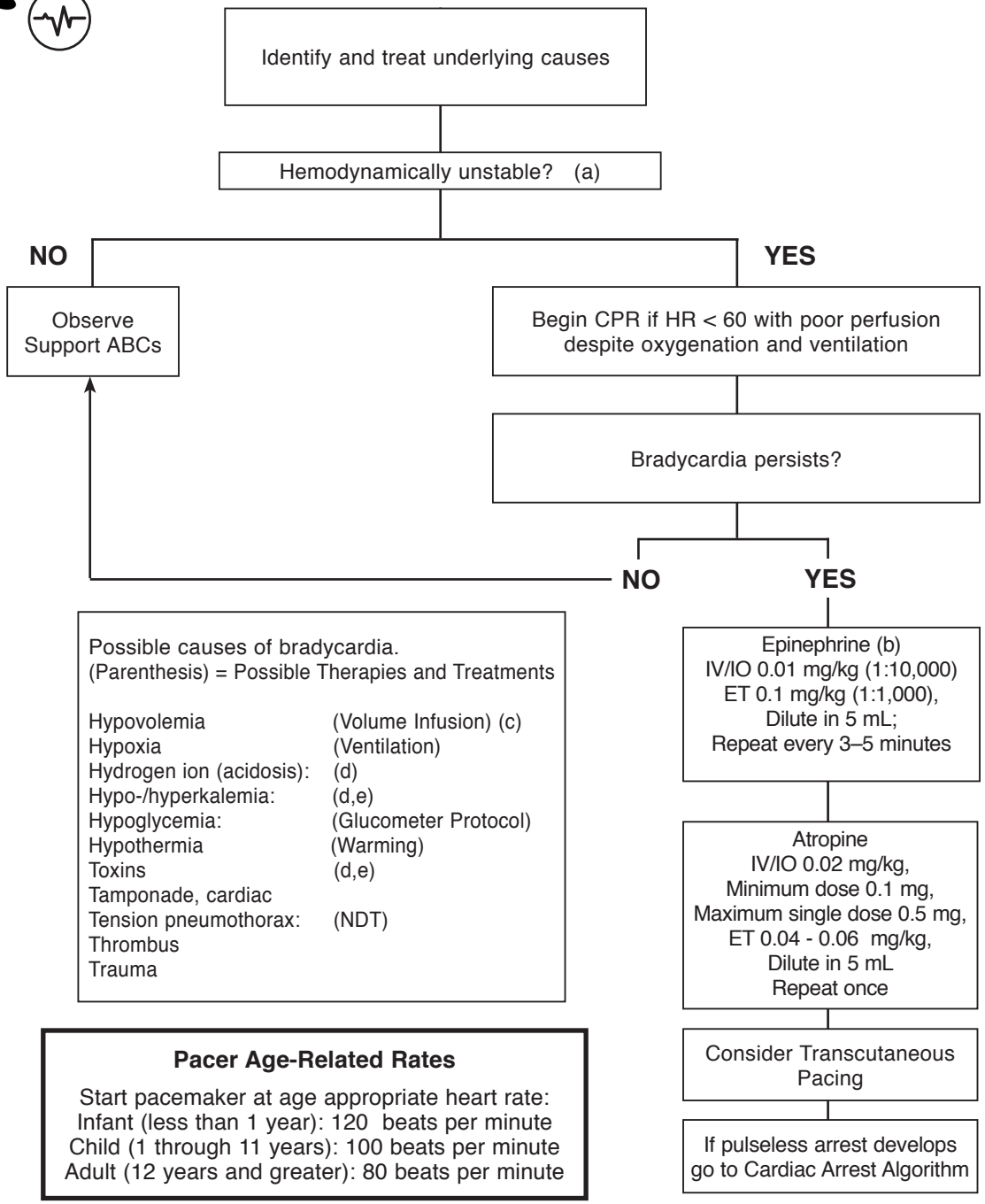


5. UNIVERSAL ALGORITHM FOR PEDIATRIC (LESS THAN 12 YEARS OF AGE) EMERGENCY CARDIAC CARE FOR ALS (If newborn, refer to Newly Born Protocol) (NEW '12)



5.

PEDIATRIC BRADYCARDIA ALGORITHM (NEW '12)



(a) - Hemodynamically unstable is defined as a systolic blood pressure less than 60 in neonates (patients less than 28 days old), less than 70 in infants (patients less than 1 year of age), and less than [70 + (2 x years) = systolic BP] for patients greater than 1 year of age.
(b) - Neonates (0-28 days), Epinephrine ET 0.03 mg/kg (1:10,000) dilute with 1 mL.
(c) - Volume infusion for neonates and volume sensitive children 10 mL/kg; for infant and child 20 mL/kg.
(d) - Sodium Bicarbonate, 1mEq/kg with medical consultation. See Sodium Bicarbonate.
(e) - Calcium Chloride, 20 mg/kg (0.2 mL/kg) slow IVP/IO (50 mg/min). Max dose 1 gram.

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.

HIGH-QUALITY CONTINUOUS CPR WITH FREQUENT PROVIDER ROTATION IS AN ESSENTIAL COMPONENT IN THE SUCCESSFUL RESUSCITATION OF THE ARRESTED PATIENT. CONTINUOUS MANUAL COMPRESSIONS ARE EQUAL TO OR SUPERIOR TO THE USE OF MECHANICAL CPR DEVICES.

   b) Utilize AED as appropriate.
   c) Transport **(NEW '12)**
      (1) If no shock indicated, transport immediately.
      (2) If shock indicated, defibrillate and transport ASAP.
      (3) If ROSC, transport to a cardiac intervention center via air or ground.
      (4) If no ROSC, transport to the closest appropriate facility.

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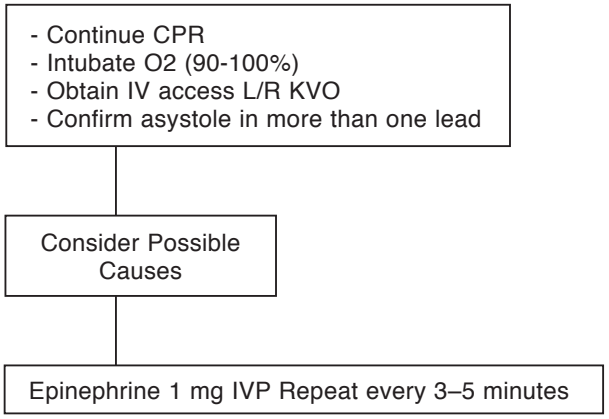
   d) Identify rhythm and treat according to appropriate algorithm.
   e) If no ROSC, transport to the closest appropriate facility.
   f) If ROSC, initiate neuroprotective hypothermia. Transport the patient to the nearest Cardiac Intervention Center by ground as long as the transport time is not more than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

For patients who have not reached their 18th birthday:
   h) Identify rhythm and treat according to appropriate algorithm.
   i) If no ROSC, transport to the closest appropriate facility.
   j) If ROSC, transport the patient to Children's National Medical Center or Johns Hopkins Children's Center by ground or medevac. If arrival time is greater than 30 minutes to either of these destinations, transport to the closest appropriate ED **(NEW '12)**.

4.

ADULT ASYSTOLE ALGORITHM (NEW '12)



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

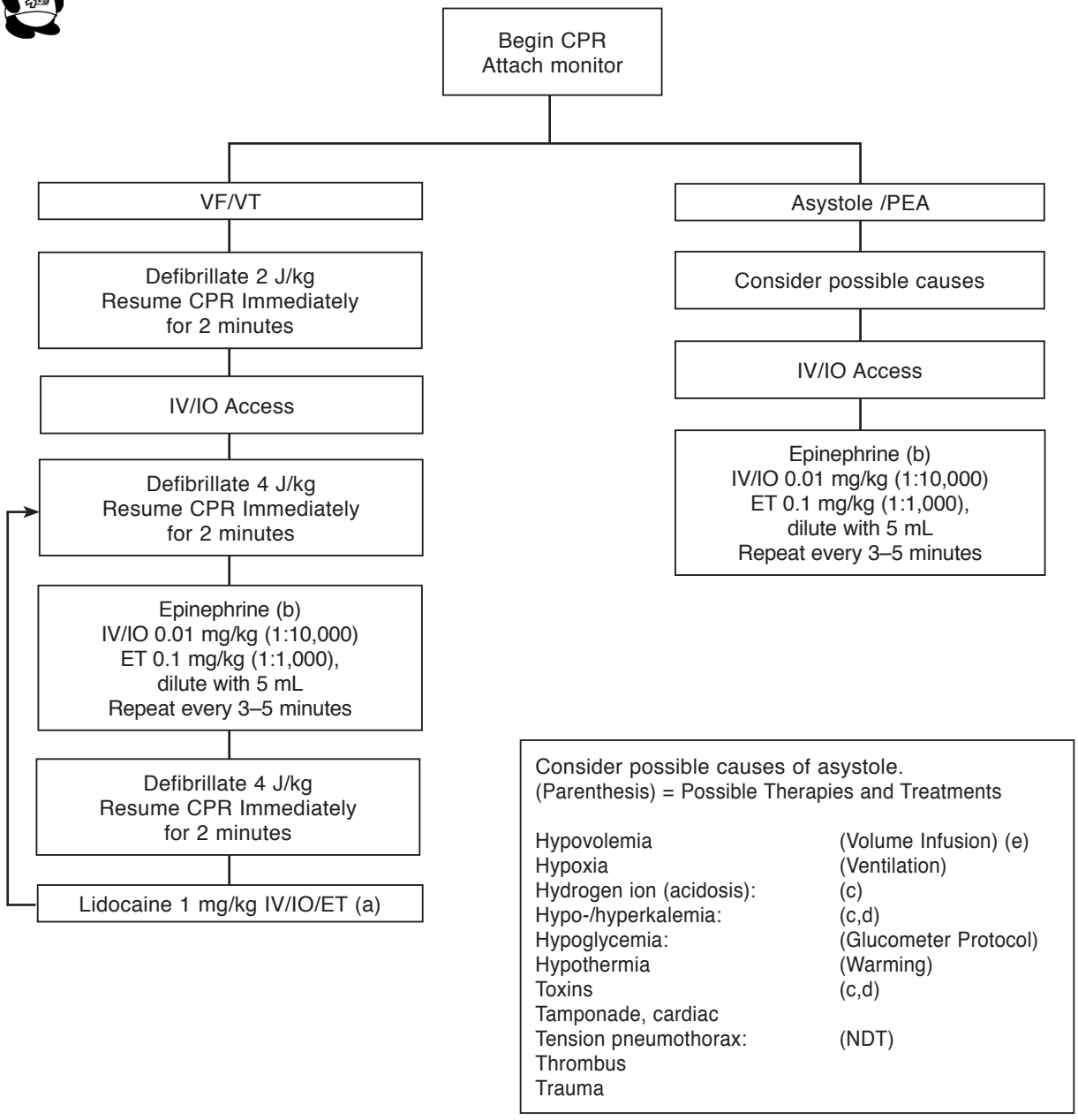
Hypovolemia	(Volume Infusion) (c)
Cardiac Tamponade	(Volume Infusion) (c)
Tension Pneumothorax	(Needle Decompression Thorocostomy–NDT)
Massive Pulmonary Embolism	
Massive AMI	
Drug Overdose	(a,b)
Hypoxia	(Ventilation)
Hypothermia	(Warming)
Acidosis	(a)
Hyperkalemia	(a,b)

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

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

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

5. PEDIATRIC CARDIAC ARREST ALGORITHM (NEW '12)



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

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

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

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

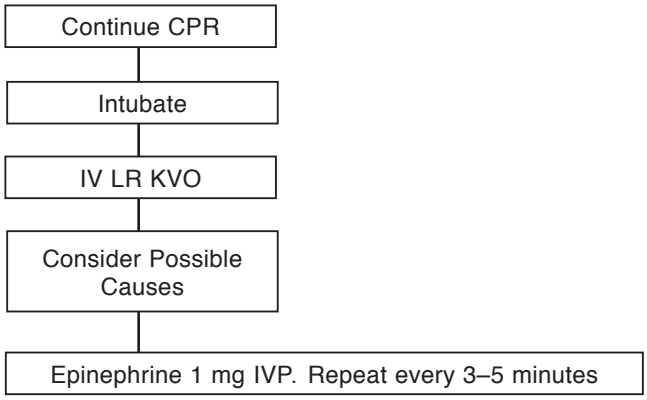
(e) - Volume infusion for neonates and volume sensitive children, 10 mL/kg; for infant and child 20 mL/kg.

6.

PULSELESS ELECTRICAL ACTIVITY (PEA) ALGORITHM (NEW '12)

Includes:

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



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

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

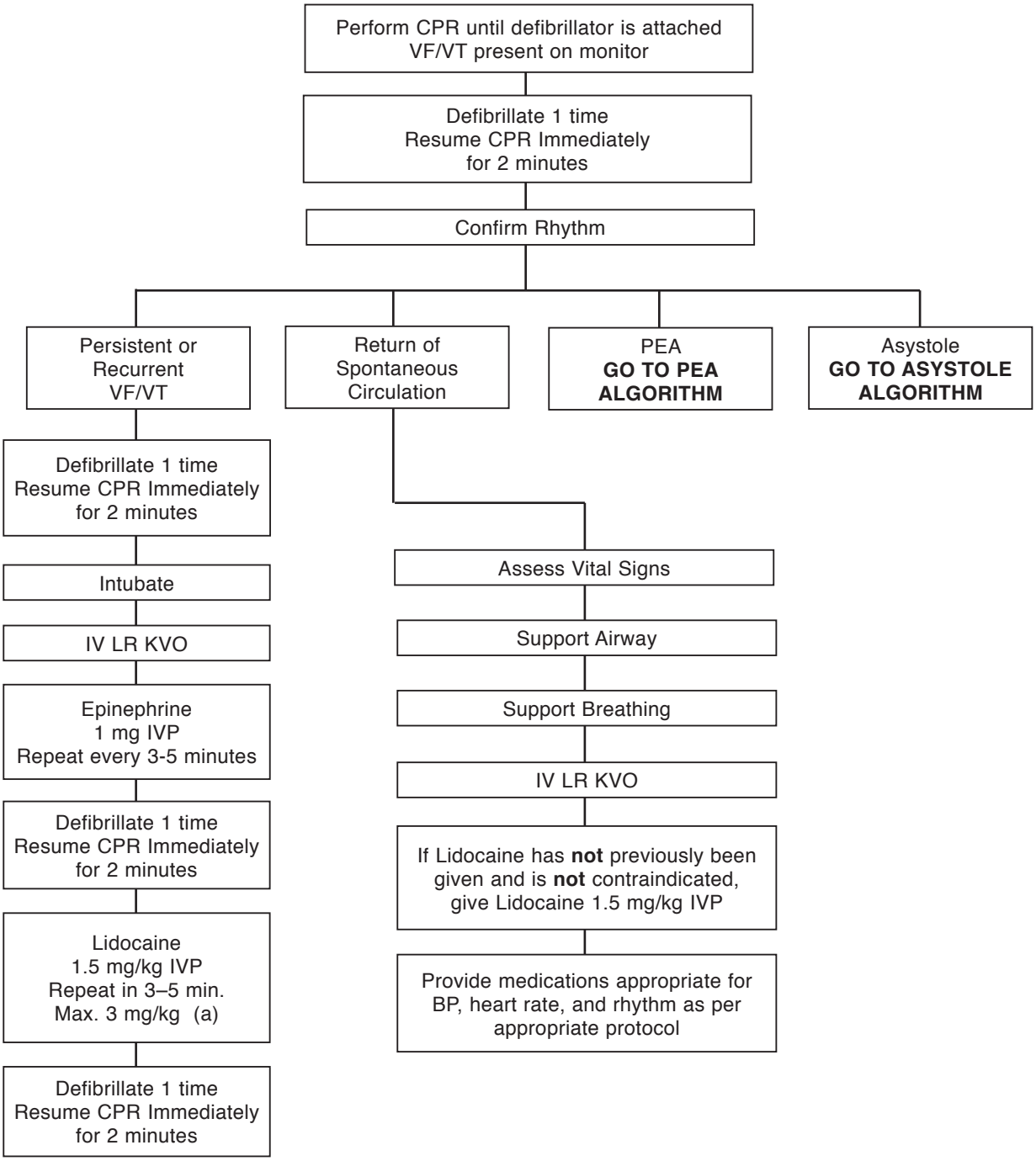
(a) - Sodium bicarbonate 1 mEq/kg, with medical consultation. See sodium bicarbonate.

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

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

7.

VENTRICULAR FIBRILLATION
PULSELESS VENTRICULAR TACHYCARDIA



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

H1. CARDIAC EMERGENCIES: TACHYCARDIA

1. Initiate General Patient Care.

2. Presentation

   Patient may present with chest pain, shortness of breath, decreased level of consciousness, low blood pressure, 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) Verify presence of pulse.

   f) If no pulse present, treat as pulseless VF/VT

   g) If patient is hemodynamically unstable with a ventricular rate greater than 150, prepare for immediate cardioversion.

   h) If patient is hemodynamically stable, identify rhythm and proceed to appropriate algorithm.

   i) Place patient in position of comfort.

   j) Assess and treat for shock, if indicated.

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

---

   l) Initiate IV LR KVO.

   m) Verify presence of pulse.

   n) If no pulse present, treat as pulseless VF/VT.

CARDIAC EMERGENCIES: TACHYCARDIA (Continued)

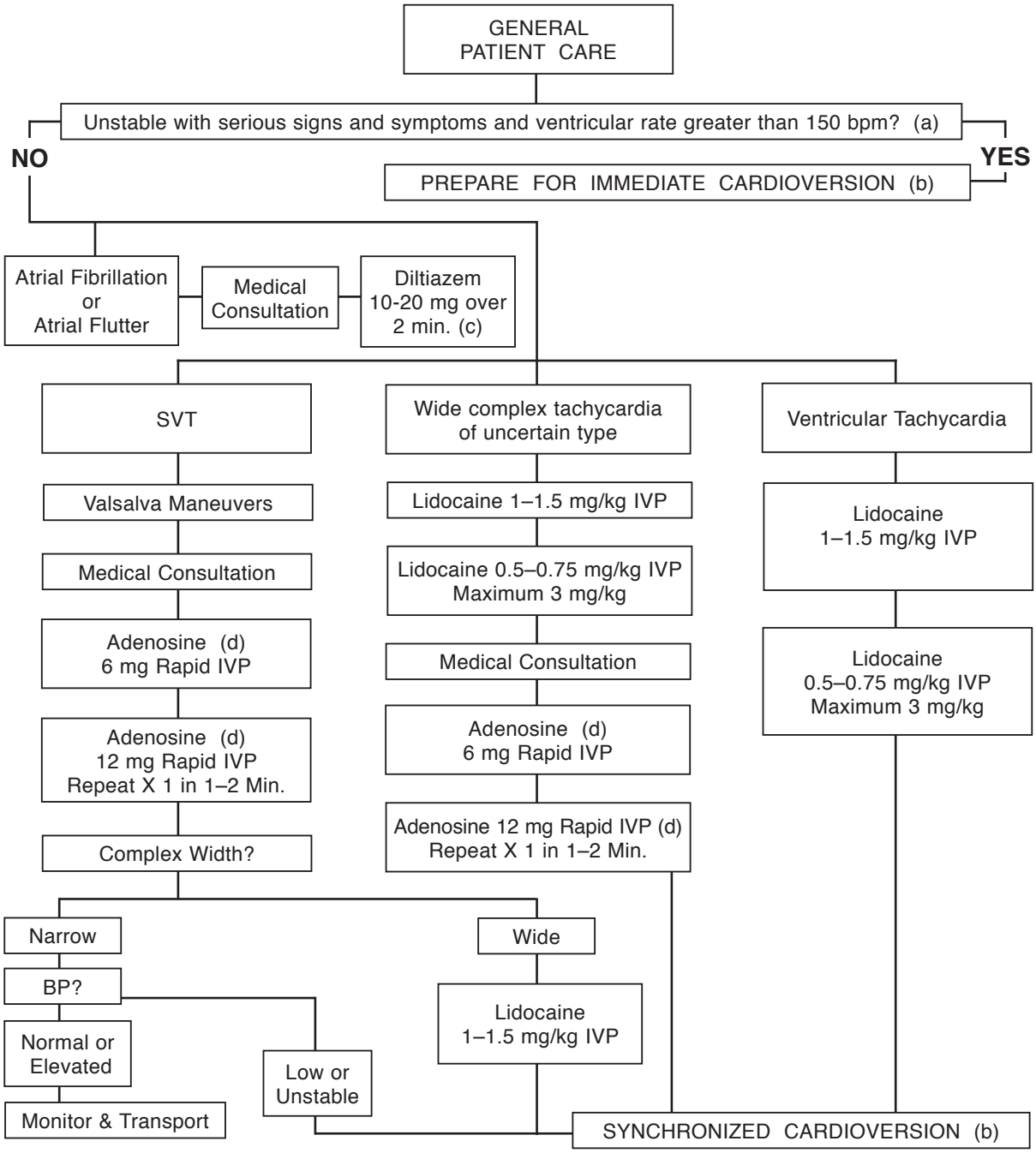
o) If patient is hemodynamically unstable with a ventricular rate greater than 220 for an infant or 180 for a child, prepare for immediate cardioversion.

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.

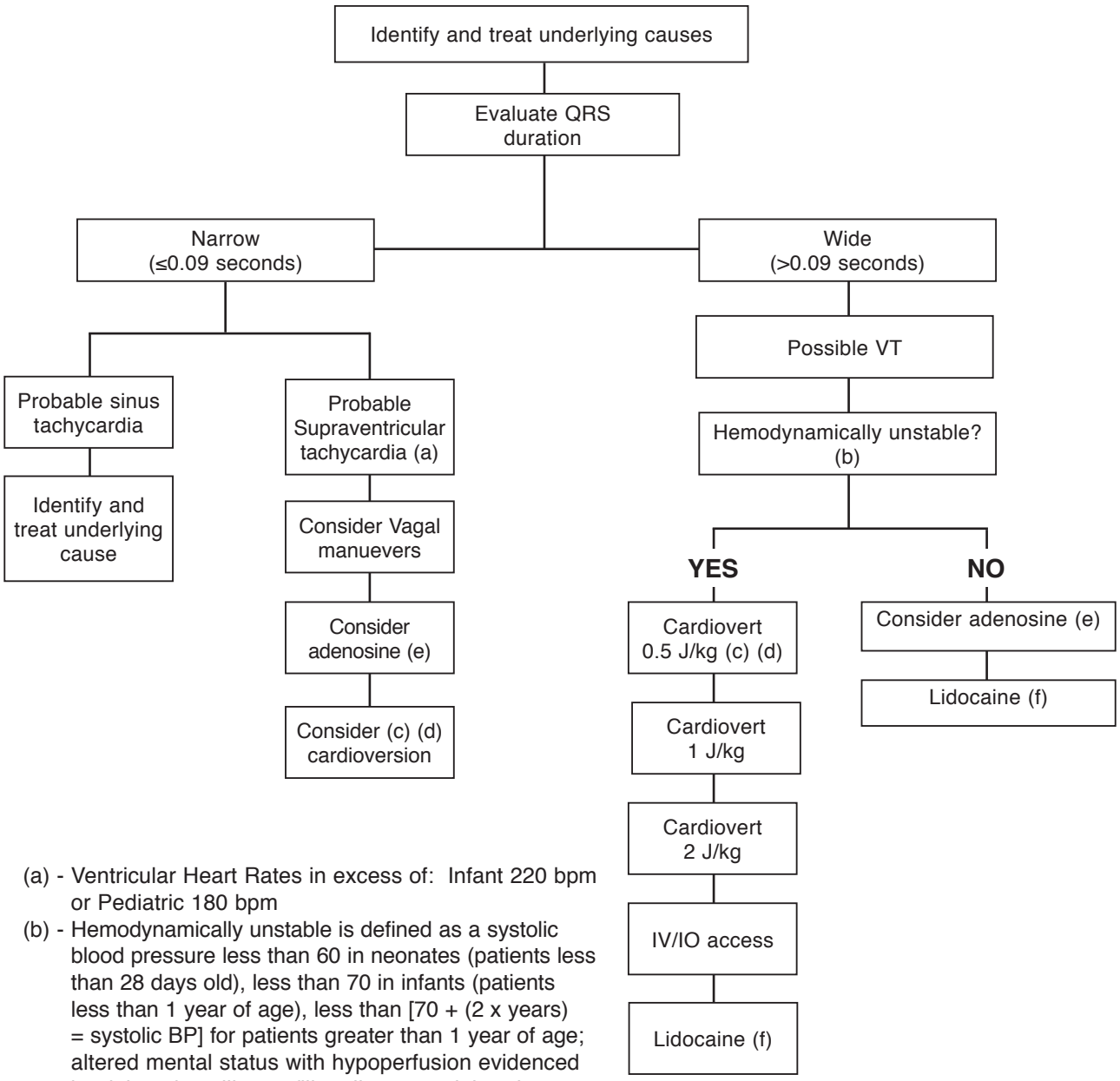
(b) - Consider sedation (midazolam with medical consultation). However, overall patient status, including BP, may affect ability to administer sedative.

(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 TACHYCARDIA ALGORITHM (NEW '12)



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

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

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

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

(e) - Adenosine: 0.1 mg/kg rapid IV/IO, maximum 6 mg. Second and third doses 0.2 mg/kg rapid IV/IO, maximum single dose 12 mg. Be prepared for up to 40 seconds of asystole. (Paramedic may administer without consult.) (Contraindicated in polymorphic or irregular wide complex tachycardia) **(NEW '12)**

(f) - Lidocaine: With medical consult, 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.

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.

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

3. Treatment

   a) Place patient in position of comfort.

   b) Assist patient with administration of patient's own prescribed nitroglycerin. May be repeated in 3-5 minutes if chest pain persists, blood pressure is greater than 90 mm Hg, and pulse is greater than 60 bpm. Maximum three doses total (patient and EMT assisted).

   c) Assess and treat for shock if indicated.

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

   e) Consider aspirin 324 mg or 325 mg chewed, if acute myocardial infarction is suspected.

ALERT NITROGLYCERIN IS CONTRAINDICATED FOR ANY PATIENT HAVING TAKEN MEDICATION FOR PULMONARY ARTERY HYPERTENSION (EG. ADCIRCA™ OR REVATIO™) **(NEW '12)** OR ERECTILE DYSFUNCTION (EG. VIAGRA™, LEVITRA™, OR CIALIS™) WITHIN THE PAST 48 HOURS. MEDICAL CONSULTATION IS REQUIRED TO OVERRIDE THIS CONTRAINDICATION.

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

   f) Additional doses of nitroglycerin require medical consultation.

---

   g) Initiate IV LR KVO.

   h) Shall perform a 12 lead ECG for patients with ACS.
   (If trained, providers may perform a 15 lead ECG.)

   i) If patient has a prescription or previous history of nitroglycerin use, administer nitroglycerin: 0.4 mg SL. May be repeated if symptoms persist, and BP is greater than 90 mm Hg, and pulse is greater than 60 bpm, to a maximum dose of 1.2 mg.

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

j) If patient does **not** have a prescription or previous history of nitroglycerin use, an IV must be established prior to administration; then administer nitroglycerin as above.

k) If IV cannot be established, nitroglycerin may be administered with medical consultation.

l) Identify rhythm and treat according to appropriate algorithm.

m) Administer additional doses of nitroglycerin.

n) Administer 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.

CONSULT A PEDIATRIC BASE STATION FOR CHILDREN (WHO HAVE NOT REACHED THEIR 18TH BIRTHDAY) **(NEW '12)** 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.

ALERT

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).

ALERT

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.)
   OR
   (2) Midazolam 0.1 mg/kg (2-5 mg) slow IVP/IM/IO (Paramedic may perform without consult.)
   IM administration requires all providers to obtain consultation.

j) Transport to the closest appropriate facility.
k) Continue general patient care.

Consult a pediatric base station for children (who have not reached their 18th birthday) (**NEW '12)** 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.
   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.

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L. CARDIAC EMERGENCIES: PREMATURE VENTRICULAR CONTRACTIONS (PVCs)

1. Initiate General Patient Care.

2. Presentation
   Irregular heart beat of ventricular origin.

3. Treatment indications:
   a) PVCs in the presence of cardiac symptoms that are:
      (1) Near the "T" wave
      (2) Multifocal (different shape)
      (3) Sequential or closely coupled or

   b) Runs of Ventricular Tachycardia (5 or more consecutive beats) or ventricular tachycardia with a pulse or

   c) Once successful electrical conversion from ventricular tachycardia or ventricular fibrillation to a supraventricular rhythm

   d) Place patient in position of comfort.

   e) Assess and treat for shock, if indicated.

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

   g) Initiate IV LR KVO.

   h) Patients meeting the above criteria:
      (1) Initial Dose: lidocaine 1-1.5 mg/kg IVP
      (2) Follow-up Doses: lidocaine 0.5-0.75 mg/kg IVP every 5-10 minutes
      (3) Maximum dose: 3 mg/kg IVP

MAY BE MODIFIED BY MEDICAL CONSULTATION.

   i)  Medical consultation must be obtained for treatment of asymptomatic patients.

4. Continue General Patient Care.

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

1. Initiate General Patient Care.

2. Presentation

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

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

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

OR

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

OR

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

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

3. Treatment

a) Follow Chest Pain Protocol for nitrate, aspirin, and pain management.
b) If patient meets above STEMI criteria, this patient is a priority 1 patient and requires a medical consult.
c) If a patient meets one of the above condition sets for STEMI inclusion criteria, the patient shall be transported to the closest Cardiac Intervention Center by ground as long as the transport time is not more than 30 minutes greater than transport to the nearest ED.
d) When indicated and based on the EMS provider's report, the Base Station physician at the receiving Cardiac Intervention Center will activate its Cardiac Intervention Team.

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

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

CONSULT A PEDIATRIC BASE STATION FOR CHILDREN WHO HAVE **NOT** REACHED THEIR 18TH BIRTHDAY WITH ST ELEVATIONS. **(NEW '12)**

N. SUDDEN INFANT DEATH SYNDROME (SIDS)

1. Initiate General Patient Care.

2. Presentation

   The unexpected arrest of an apparently healthy infant in which resuscitation is unsuccessful and there is no attributable cause of death.

   The infant is often discovered by a caretaker in the early morning hours after having been uneventfully laid down to sleep the night before.

3. Treatment

   a) Perform an initial patient assessment, assign a treatment priority, and perform CPR, if indicated.

RIGOR MORTIS MAY BE PRESENT (SEE PRESUMED DEAD ON ARRIVAL PROTOCOL).

   b) Move patient to the transport unit.

   c) Establish communications and obtain medical direction.

   d) If physician consultation is genuinely unavailable, monitor cardiac rhythm and treat according to the appropriate algorithm(s).
   e) Transport quickly to the closest appropriate facility.

SIDS IS ONE OF THE LEADING CAUSES OF DEATH IN THE 1-12 MONTH AGE GROUP AND SEEMS TO PEAK AT 2 TO 4 MONTHS OF AGE.

HOW YOU INTERACT WITH THE FAMILY MAY HAVE A SIGNIFICANT IMPACT ON HOW THEY DEAL WITH THE LOSS OF THE INFANT. BE CAUTIOUS OF STATEMENTS OR ACTIONS THAT MAY BE JUDGMENTAL.

SPECIAL ATTENTION SHOULD BE PAID TO THE CONDITION OF THE INFANT, INCLUDING THE PRESENCE OF ANY MARKS OR BRUISES, AND TO PRESERVATION OF THE ENVIRONMENT, INCLUDING ANY BED CLOTHING AND THE CONDITION OF THE ROOM. RIGOR MORTIS MAY BE PRESENT (SEE PRESUMED DEAD ON ARRIVAL PROTOCOL).

4. Continue General Patient Care.

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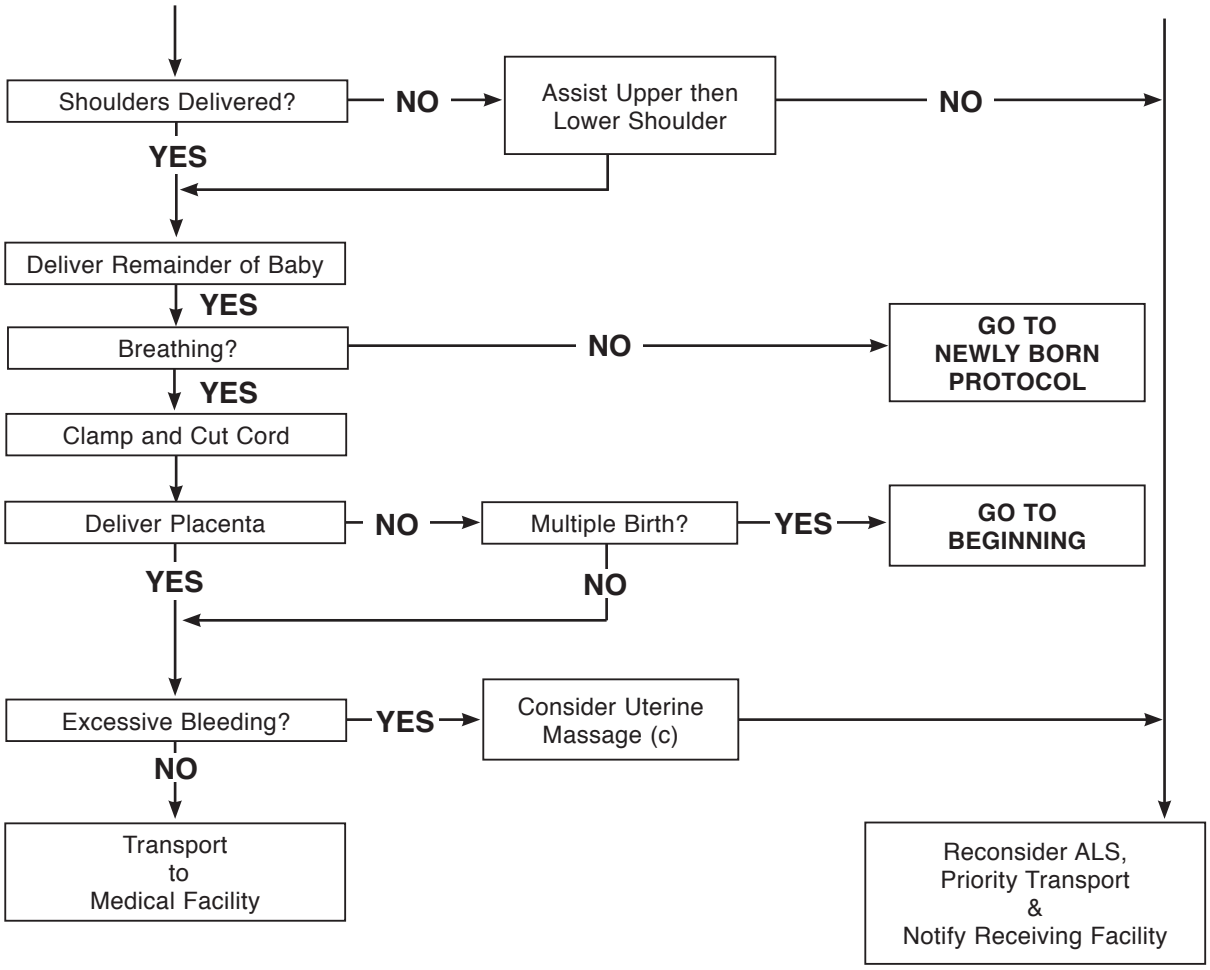
OBSTETRICAL/GYNECOLOGICAL EMERGENCIES (Continued)



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

(b) - Position of mother: 

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

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

4. Continue General Patient Care.

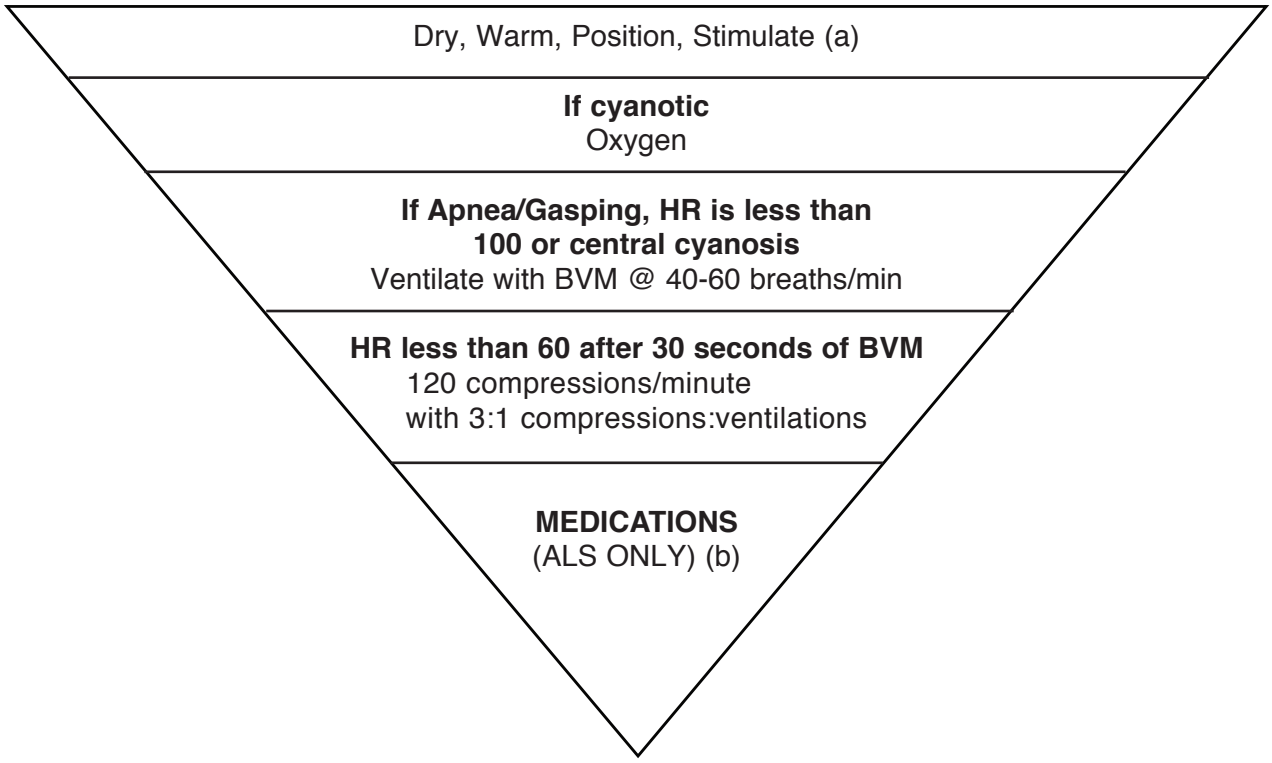
AA. NEWLY BORN PROTOCOL (NEW '12)

1. Initiate General Patient Care.

2. Presentation

   This protocol applies to the infant who has just been delivered.

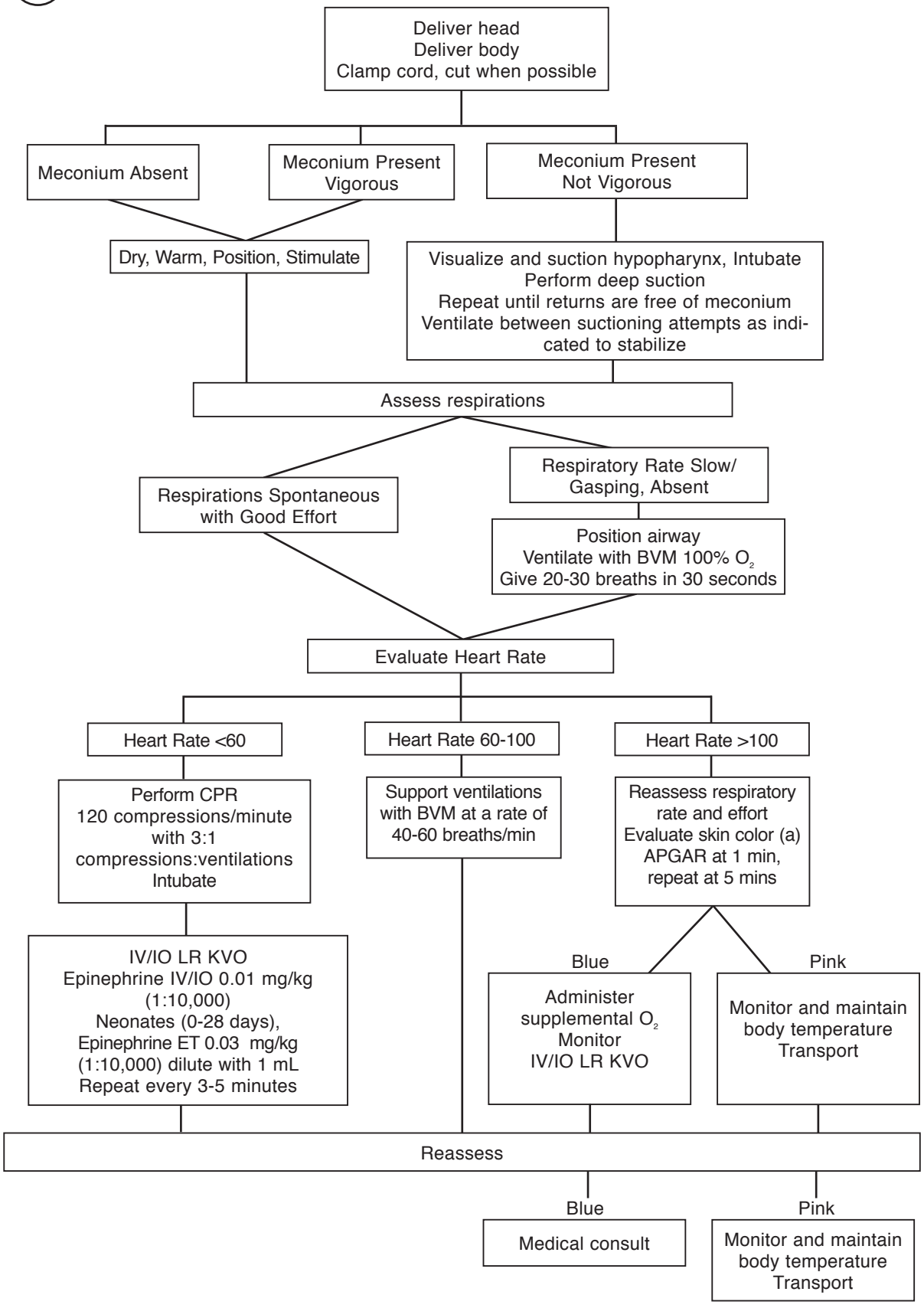
UNIVERSAL ALGORITHM FOR THE NEWLY BORN FOR BLS



(a) - Suction only if the newly born infant has an obvious obstruction.

(b) - Identify rhythm and treat according to appropriate algorithm.

3. UNIVERSAL ALGORITHM FOR NEWLY BORN FOR ALS (NEW '12)



NEWLY BORN PROTOCOL (Continued)

Consider possible causes of depressed newborn. (Parenthesis) = Possible Therapies and Treatments	
Respiratory depression	(b,c)
Hypoglycemia	(d)
Hypothermia	(Warming)
Hypovolemia	Volume Infusion (e)

(a) - Just prior to birth, oxygen saturation is approximately 60%. At 10 minutes postpartum, saturation should be between 85-95%.

(b) - Premature infants less than 32 weeks gestation will likely require ongoing BVM ventilations due to immature lungs.

(c) - Naloxone 0.1 mg/kg ET/IV/IO.

(d) - D10W 5 -10 mL/kg IV/IO (D10W is prepared by mixing one part of D50W with four parts LR).

(e) - Volume infusion is 10 mL/kg.

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

ALERT DO NOT GIVE ANYTHING BY MOUTH WITHOUT MEDICAL CONSULTATION!

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

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

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

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

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

OVERDOSE/POISONING: INGESTION (Continued)

g) If **organophosphate poisoning**, consider atropine
2-4 mg IVP or IM every 5-10 minutes

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

i) Consider antidote to specific agent if available.

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

k) Identify substance and amount ingested.

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

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

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

o) 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

p) 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)

q)  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

r)  If **tricyclic** overdose, consider sodium bicarbonate
1 mEq/kg diluted 1:1 slow IVP/IO

s)  Consider antidote to specific agent if available.

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

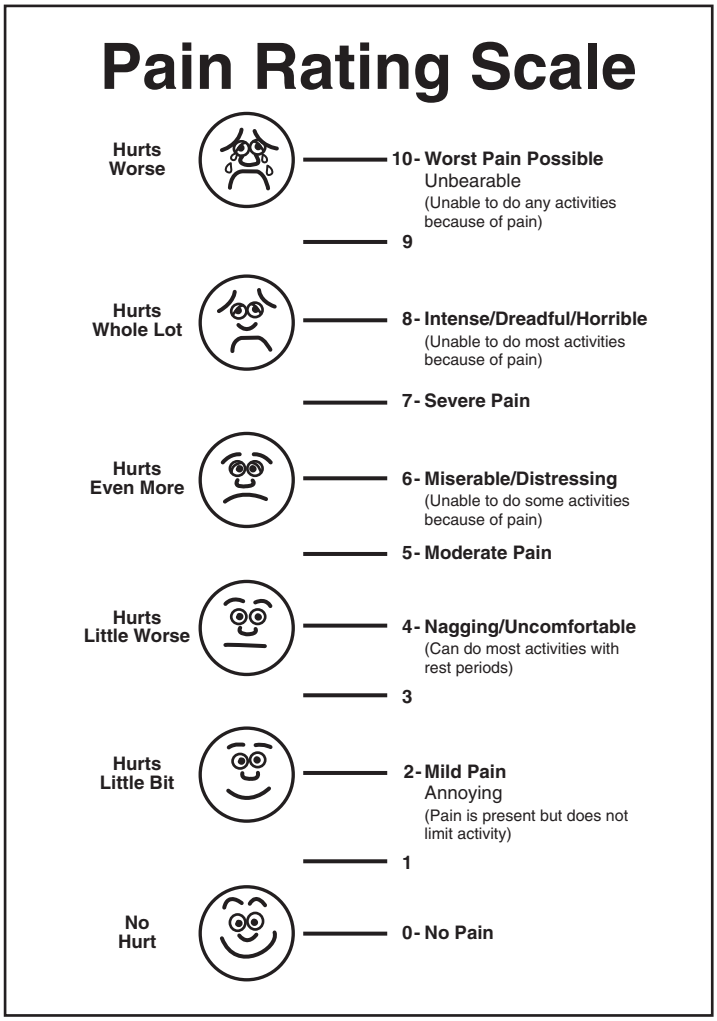
4. Continue General Patient Care.

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.



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

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

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

e) Moderate to severe pain
(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 **(NEW '12)**
  (f) EMS/DNR A, A (DNI), or B Protocol

RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)

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

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

n) Assist patient(s) experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's Epinephrine auto-injector or patient's prescribed albuterol.

ALERT MEDICAL CONSULTATION IS REQUIRED IF THE PATIENTS 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.

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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

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

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

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

v) Consider additional doses of albuterol or epinephrine.

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

4. Continue General Patient Care.

JJ. RESPIRATORY DISTRESS: CROUP (NEW '12)

1. Initiate General Patient Care.

2. Presentation
   Forms of Croup:
   Mild - Barky cough exhibited without stridor at rest (Priority 2)
   Moderate - Barky cough with stridor at rest without agitation, may exhibit mild respiratory distress (Priority 2)
   Severe - Stridor at rest, signs of severe respiratory distress that is associated with agitation or decresed level of consciousness. (Priority 1).

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

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

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

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

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

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

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

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

4. Continue General Patient Care.

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KK. RESPIRATORY DISTRESS: PULMONARY EDEMA /CONGESTIVE HEART FAILURE

1. Initiate General Patient Care.

2. Presentation

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

   CHF/APE is difficult to distinguish, at times, from other respiratory causes. Factors most associated with a short-of-breath patient having CHF include: **a history of CHF**, exam features **of jugular venous distension and ECG evidence of Atrial Fibrillation**. CHF patients are commonly on anti-hypertensive and cardiac medicines. **Orthopnea** (use of additional pillows to prop the head up during sleep), **Dyspnea on Exertion** and **Paroxysmal Nocturnal Dyspnea** (PND) are symptoms associated with CHF/APE. Blood pressure is frequently elevated, usually greater than 160/100 but not uncommonly greater than 180/120.

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

GERIATRIC PATIENTS DEMONSTRATING MARKED HYPERTENSION IN ASSOCIATION WITH SHORTNESS OF BREATH/RESPIRATORY DISTRESS AND WHEEZING (IN THE ABSENCE OF ASTHMA OR INFECTION) STRONGLY SUGGESTS CHF/APE.

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

(1) Asymptomatic – dyspnea on exertion but no symptoms at rest.
(2) Mild – mild dyspnea at rest, despite O_2 treatment. Able to speak in full sentences.
(3) Moderate – moderate dyspnea. O_2 saturation less than 93% on oxygen. Systolic BP usually greater than 150. Unable to speak in full sentences. Normal mental status.
(4) Severe – severe dyspnea, respiratory failure, hypoxia (O_2 saturation less than 90% on oxygen), diaphoresis, Systolic BP commonly greater than 180. One word sentences, altered consciousness.

The goals of treatment are to reduce the pressure of blood returning to the heart (preload) and the resistance that the left ventricle must pump against (afterload). The most effective and safe medication for these goals is nitroglycerin (NTG).

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

3. Treatment
   a) Position patient in high Fowler's position.

   b) Rate the patient's difficulty breathing on a scale where 0 is "no trouble breathing" and 10 is "the worst trouble breathing."

---

   c) Continuous positive airway pressure (CPAP) should be considered for moderate dyspnea and must be implemented in severe dyspnea. (Use early; attempt to administer 3 doses of NTG while setting up, acclimatizing the patient, and applying CPAP).

ALERT PERFORM 12-LEAD ECG (IF AVAILABLE) AND IN THE FACE OF INFERIOR WALL WITH POSTERIOR WALL EXTENSION MI, WITHOLD NTG. CONSULT FOR FURTHER ADMINISTRATION.

   d) Initiate IV LR KVO.

   e) Identify rhythm and treat according to appropriate algorithm.

   f) For patients with hypertension and moderate to severe symptoms, administer NTG (does not require IV before administration). If SBP drops below 90 mmHg, treat with medical fluid bolus - initial bolus 250 - 500 mL, may repeat once.
      (i) Asymptomatic - apply oxygen per GPC to maintain O_2 saturation greater than 93%.
      (ii) Mild - administer low dose NTG 0.4 mg SL at 3 – 5 minute intervals to a maximum dose of 1.2 mg.
      (iii) Moderate and severe - CPAP is preferred therapy. Until CPAP is applied, administer high dose NTG. Assess BP before each administration.

ALERT CPAP IS THE PREFERRED THERAPY. DO NOT REMOVE CPAP TO CONTINUE ADMINISTERING NTG.

      High Dose NTG until CPAP is applied or if CPAP is not tolerated. (Dose at 3-5 minute intervals.)
      (i) Administer 1 dose of 0.4 mg NTG and apply 1 inch of NTG paste.
      (ii) Administer 1 dose of 0.8 mg NTG.
      (iii) Continue 0.8 mg NTG dosing to achieve a 20% reduction in SBP.

ALERT IF BLOOD PRESSURE IS LOW, CONSIDER MEDICAL FLUID BOLUS(ES) FOLLOWED BY DOPAMINE.

   g) Consider dopamine 2-20 mcg/kg/min. Titrate to SBP 100 mmHg or medical-consultation-directed BP. IV infusion pump preferred.

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

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

h) Position patient in semi-Fowler's position.

i) Initiate IV LR KVO.

j) Identify rhythm and treat according to appropriate algorithm.

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

l) Consider albuterol:
For children less than 2 years, albuterol 1.25 mg
For children greater than or equal to 2 years, albuterol 2.5 mg

m) Consider morphine:
0.1 mg/kg slow IVP/IO/IM (1-2 mg/min)
Maximum dose 5 mg

n) Consider dopamine:
2-20 mcg/kg/min
Titrate to pediatric medical consultation directed BP.
IV infusion pump preferred.

4. Continue General Patient Care.

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

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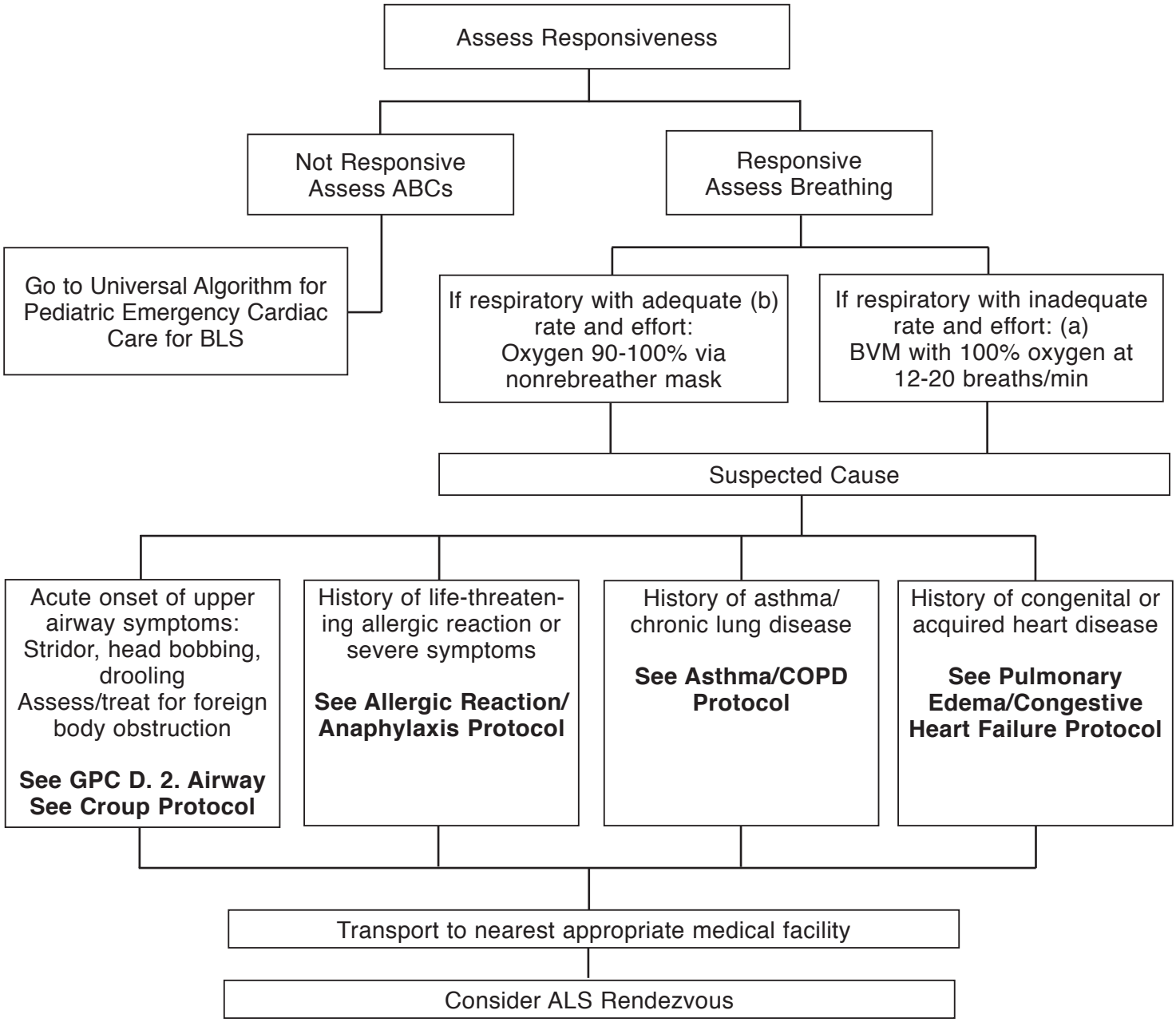
6. UNIVERSAL ALGORITHM FOR PEDIATRIC RESPIRATORY DISTRESS FOR BLS

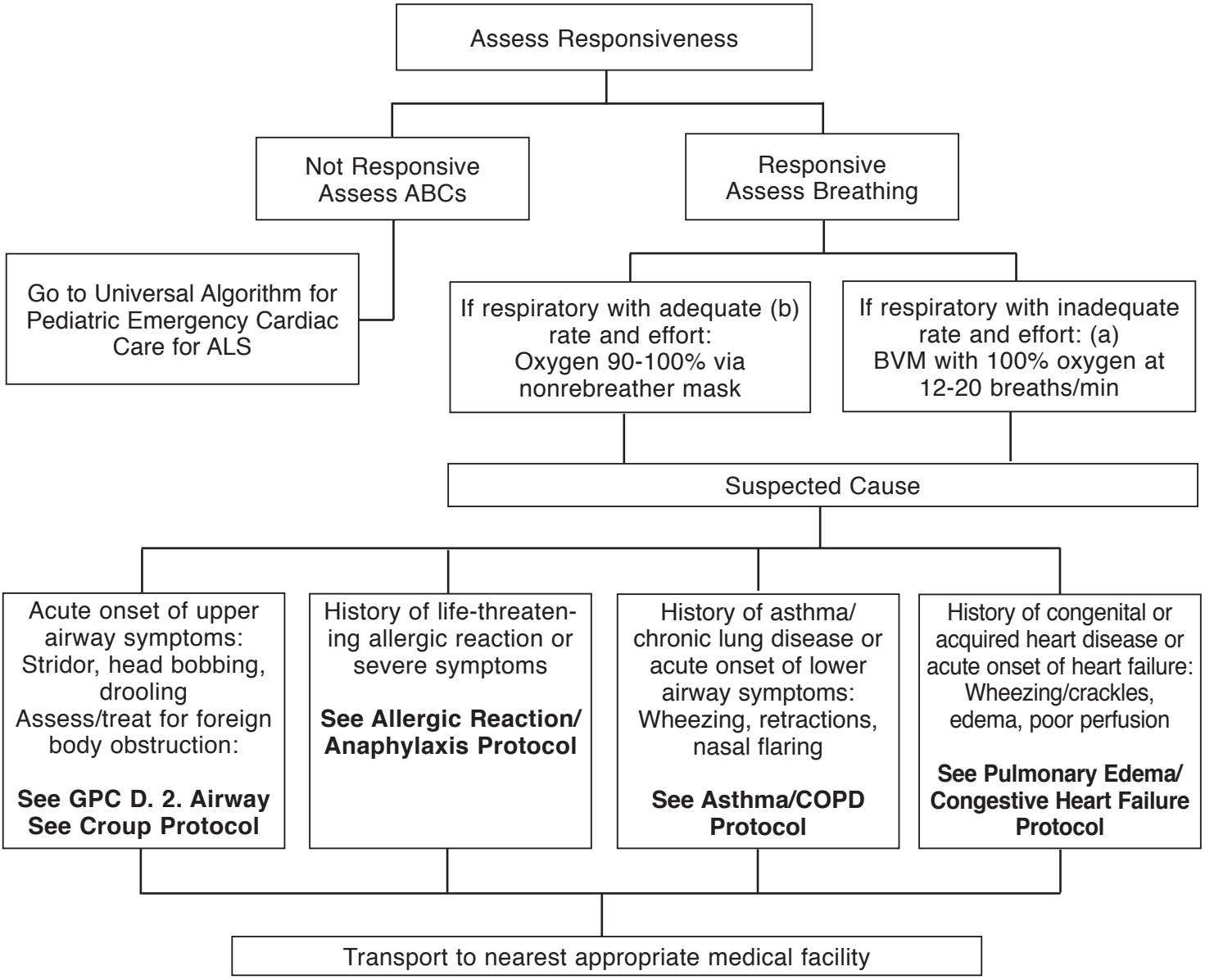


(a) Inadequate RR: Infant less than 20, Child less than 16, Adolescent less than 12.
Inadequate effort: Poor chest rise, shallow respirations/poor air movement, cyanosis, severe retractions, paradoxical breathing.

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

7.

UNIVERSAL ALGORITHM FOR PEDIATRIC RESPIRATORY DISTRESS FOR ALS



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

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

LL. STROKE: NEUROLOGICAL EMERGENCIES

1. Initiate General Patient Care.

2. Presentation

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

The Cincinnati Prehospital Stroke Scale

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

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

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

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

3. Treatment
   a) Administer oxygen at 2-6 liters via nasal cannula (unless hypoxic or in respiratory distress).
   b) Position patient lying flat or slightly elevated.
   c) Complete the Fibrinolytic Therapy Checklist for Ischemic Stroke.
   d) If the patient is a candidate for fibrinolytic therapy AND can be delivered to the hospital **within 2 hours** of sign/symptom onset, transport the patient to the closest Designated Stroke Center. If there is not one within 30 minutes, then go to the nearest hospital.

CONSULT WITH NEAREST DESIGNATED STROKE CENTER AS SOON AS POSSIBLE TO ALLOW HOSPITAL PREPARATION.

STROKE TREATMENTS ARE TIME SENSITIVE.

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

   e) Use Glucometer and treat if glucose less than 70 mg/dl.
   f) Initiate an IV LR KVO.
   g) If the patient is hypotensive, obtain medical consultation.
   h) Consider obtaining blood sample using closed system.
   i) Do not treat hypertension in the field.

STROKE: NEUROLOGICAL EMERGENCIES (Continued)

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

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

j) Administer oxygen at 2-6 liters via nasal cannula (unless hypoxic or in respiratory distress).

k) Position patient lying flat or slightly elevated.

l) If a child presents with a SUSPECTED Stroke (e.g. sickle cell patient), consult with the nearest pediatric base station and local base station.

m) Use Glucometer and treat accordingly.
(See Section IV, Glucometer Protocol.)

n) Initiate an IV LR KVO.

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

p) Consider obtaining blood sample using closed system.

q) Do not treat hypertension in the field.

4. Continue General Patient Care.

Fibrinolytic Therapy Checklist for Ischemic Stroke

All of the **"YES"** boxes and all of the **"NO"** boxes must be checked before a patient should be transported to a "Designated Stroke Center".

INCLUSION CRITERIA
(**All** of the **"YES"** boxes must be checked)

YES
- ❑ 18 years of age or older
- ❑ Signs and symptoms of stroke with neurologic deficit (abnormal Cincinnati Stroke Scale)
- ❑ Patient can be delivered to a Stroke Center within 2 hours of sign/symptom onset

EXCLUSION CRITERIA
(**All** of the **"NO"** boxes must be checked)

NO
- ❑ Active internal bleeding (eg. GI or urinary bleeding within the last 21 days)
- ❑ Known bleeding disorder
- ❑ Within 3 months of intracranial surgery, serious head trauma, or previous stroke
- ❑ Within 14 days of major surgery or serious trauma
- ❑ History of intracranial hemorrhage
- ❑ Witnessed seizure at stroke onset
- ❑ History of cancer of the brain

MM. TRAUMA PROTOCOL: BURNS (NEW '12)

1. Initiate General Patient Care.
2. Presentation
   a) The primary objectives in burn care by EMS providers are to stop the burning process, establish IV access, avoid hypothermia, and transport patients quickly and safely to a burn center. While patients with large burns (>20%), facial burns, and/or significant smoke inhalation often require endotracheal intubation and mechanical ventilation during their resuscitation and care, airway compromise in the first few hours following a burn is uncommon.
      (1) In adults, prehospital tracheal intubation following acute burns is generally unnecessary unless signs of respiratory failure are present (symptomatic airway obstruction, shock, altered mental status, hypoxemia while receiving supplemental oxygen, or dyspnea, etc.).
      (2) Pediatric airways are smaller than adult airways and require frequent and thorough assessment for signs of respiratory distress. Intubate if necessary.
   b) Burns are the body's response to injuries to the skin, muscles, bone, nerves, and blood vessels caused by thermal, chemical, electrical, radiation, or light source. Patients may exhibit any of the following: reddening of the skin, deep and intense pain, blisters, mottled appearance, and/or charred black or brown areas with severe or no pain.
   c) Indications for Referral to a Burn Center
      (1) All third degree burns (full thickness)
      (2) Second degree burns (partial thickness) greater than 10% total body surface area
      (3) Burns of the face, hands, feet, major joints, genitalia, or perineum
      (4) Electrical burns, including lightning or contact with high voltage (greater than 120 volts)
      (5) Suspected inhalation injury of toxic smoke. (Monitor the patients with suspected inhalation injury for delayed airway obstruction, respiratory distress, or oxygen desaturation as the patient may need emergent airway management.)
      (6) Circumferential burns involving the extremities or torso
      (7) Chemical burns should be transported to the closest appropriate hospital for decontamination prior to referral to a burn center

PATIENTS WITH BURNS AND TRAUMA SHOULD BE REFERRED TO THE NEAREST APPROPRIATE TRAUMA CENTER, FOR INITIAL CARE.

CHILDREN WHO MEET BURN INCLUSIVE CRITERIA WHO HAVE NOT REACHED THEIR 15TH BIRTHDAY SHOULD BE TRANSPORTED TO A PEDIATRIC BURN CENTER.

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) Extract the patient from burning vehicles or buildings if safe to do so and move patient to a place of relative safety.

TRAUMA PROTOCOL: BURNS (Continued)

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

DO NOT GIVE ANYTHING BY MOUTH.

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

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

j) Initiate IV LR fluid therapy.
(1) 10 mL/kg bolus.
(2) For shock patients, administer a fluid bolus of 20 mL/kg LR followed by a second 20 mL/kg LR if needed. Titrate to a systolic pressure of 100 mm Hg.
k)  Administer 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.)

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

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

4. Continue General Patient Care.

NN. TRAUMA PROTOCOL: EYE TRAUMA

1. Initiate General Patient Care.

2. Presentation

   The patient may present with profuse bleeding, avulsions, lacerations, foreign objects, impaled objects, and/or soft tissue damage to the eye(s) and/or surrounding facial areas.

3. Treatment

NEVER APPLY PRESSURE TO THE EYEBALL OR GLOBE!

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

DO NOT USE CHEMICAL COLD PACKS ON THE FACE.

a) **Foreign objects NOT embedded in the eye(s):** Flush with copious amounts of water (preferably sterile), normal saline, or LR from the bridge of the nose outward.

b) **Injury to orbits (area around the eye):** Stabilize and immobilize the patient's head and spine.

c) **Lacerations/injuries to the eyeball or globe:** Shield affected eyeball and dress other eye to reduce movement; protect loss of fluids; immobilize the patient's head and spine and elevate the head of the backboard to decrease intraocular pressure.

d) **Impaled objects:** Stabilize object; shield affected eyeball; and dress other eye to reduce movement.

e) Initiate IV LR KVO.

f)  Administer 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.)

TRAUMA PROTOCOL: EYE TRAUMA (Continued)

g) **Foreign objects NOT embedded in the eye(s):** Flush with copious amounts of water (preferably sterile), normal saline, or LR from the bridge of the nose outward.

h) **Injury to orbits (area around the eye):** Stabilize and immobilize the patient's head and spine.

i) **Lacerations/injuries to the eyeball or globe:** Shield affected eyeball and dress other eye to reduce movement; protect loss of fluids; immobilize the patient's head and spine and elevate the head of the backboard to decrease intraocular pressure.

j) **Impaled objects:** Stabilize object; shield affected eyeball; and dress other eye to reduce movement.

k) Initiate IV/IO LR KVO.

l) Administer 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.

4. Continue General Patient Care.

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

1. Initiate General Patient Care.

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

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

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

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

(Hand Center and/or nearest appropriate trauma center)

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

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

LIFE BEFORE LIMB.

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

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

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

TRAUMA PROTOCOL: 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 (NEW '12)

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

Category Alpha

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

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

NO → Assess for other injuries.

Category Bravo

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

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

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

Category Charlie

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

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

NO → Evaluate for other considerations.

Category Delta

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

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

NO → Transport according to protocol.

IV. APPENDICES

A. GLOSSARY

AED: Automated External Defibrillation.

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

AMI: Acute Myocardial Infarction.

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

Apnea: An absence of spontaneous respirations.

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

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

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

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

BSI: Body Substance Isolation.

BVM: Bag-Valve-Mask.

Carte Blanche: Full discretionary power.

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

CISM: Critical Incident Stress Management.

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

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

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

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

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

CRT-(I): Cardiac Rescue Technician-Intermediate.

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

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

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

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

DNR: Do Not Resuscitate.

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

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

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

EMR: Emergency Medical Responder.

Emetic: Referring to a substance that causes vomiting.

EMS: Emergency Medical Services.

EMT: Emergency Medical Technician.

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.

$EtCO_2$: Non-invasive measurement (numeric and/or waveform) of carbon dioxide levels in exhaled breaths.

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 anticholenergic 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

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

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

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

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

HTN: Hypertension.

Hypoxia: Too little oxygen in the cells.

IM: Intramuscular injection.

IV: Intravenous line or administration of medication through IV.

IVP: Intravenous push.

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

JVD: Jugular vein (external) distention.

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

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

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

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.

MOLST: Medical Orders for Life-Sustaining Treatment

NDT: Needle Decompression Thoracostomy.

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

SL: Sublingual. Under the tongue.

SMOI: Significant Mechanism Of Injury.

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

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

Sublingually: Under the tongue.

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

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

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

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

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

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

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

VF: Ventricular Fibrillation.

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

VT: Ventricular Tachycardia.

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

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

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

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

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

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

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

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

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

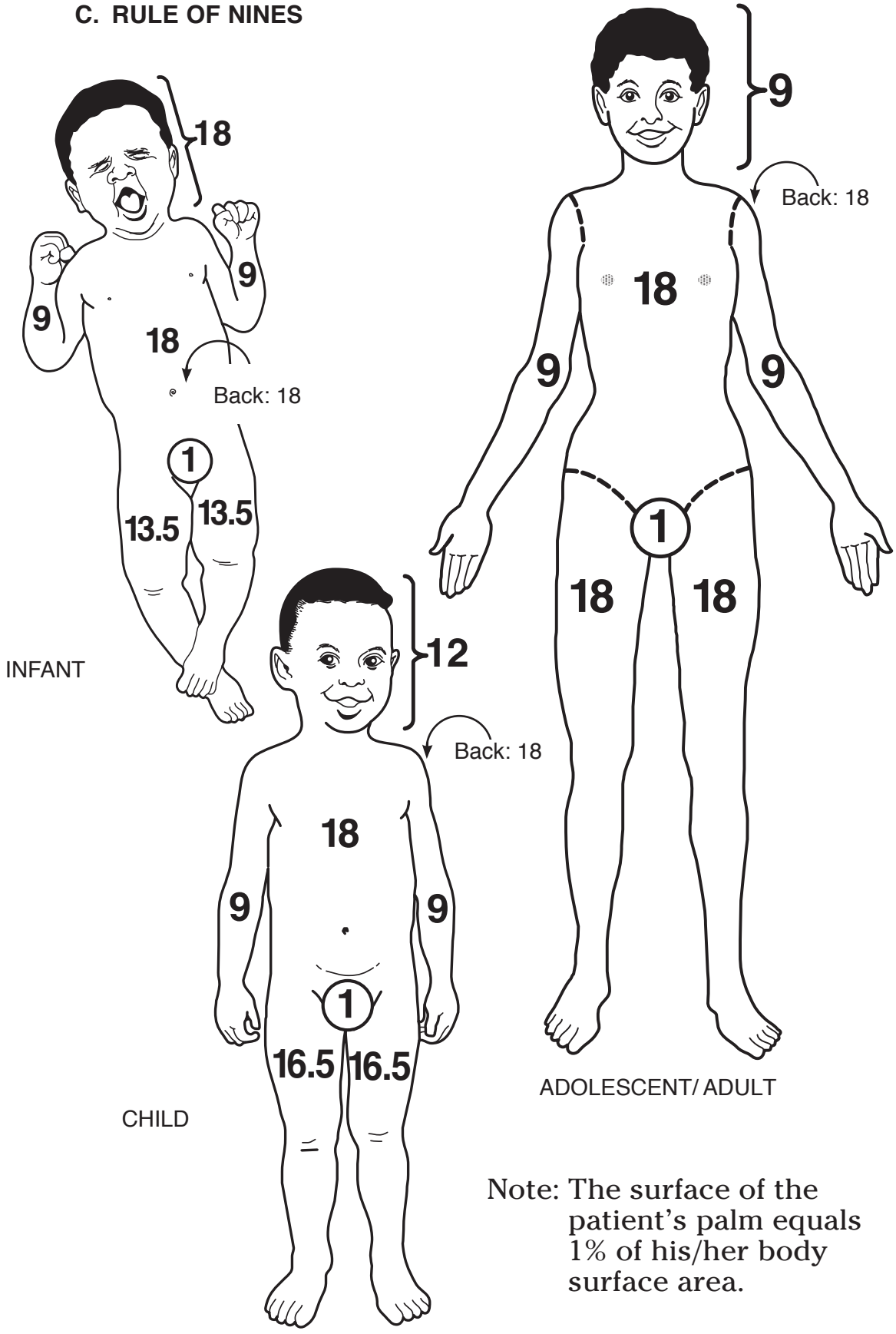
SO Standing Order
OSP Optional Supplemental Program
MC Medical Consultation Required
PP Pilot Program

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

MEDICATIONS	EMR	EMT	CRT-(I)	PM
Sodium Bicarbonate	–	–	MC	MC
Sodium Bicarbonate (Infusion)	–	–	MC	MC
Succinylcholine (Anectine)	–	–	–	PP
Terbutaline Sulfate	–	–	SO	SO
Vaccines (Hepatitis and Influenza) (Public Safety Personnel only)	–	–	–	OSP
Vecuronium (Norcuron)	–	–	–	PP

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

C. RULE OF NINES



Note: The surface of the patient's palm equals 1% of his/her body surface area.

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11. ELECTRICAL THERAPY: AUTOMATED EXTERNAL DEFIBRILLATION (AED)

a) INDICATIONS (NEW '12)

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

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

b) CONTRAINDICATIONS

Patient exhibiting signs of life.

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

c) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

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

d) PRECAUTIONS

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

e) PROCEDURE

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

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

f) SPECIFIC DOCUMENTATION (NEW ’12)

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

12. ELECTRICAL THERAPY: CARDIOVERSION

a) PURPOSE

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

b) INDICATIONS FOR TREATMENT

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

c) DOSAGE

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

(2) Pediatric
   Symptomatic tachydysrhythmias
   (a) Initial 0.5 J/kg; if the calculated joules setting is lower than the defibrillation device is able to deliver, use the lowest joules setting possible or obtain medical consultation.
   (b) Subsequent 1 J/kg; repeat at 2 J/kg, then 4 J/kg
   (c) If refractory after 4 shocks, increase dosage to 6 J/kg, 8 J/kg, then 10 J/kg. **(NEW '12)**

(3) If the patient exhibits ventricular fibrillation following emergency cardioversion, immediately turn off the synchronizer and defibrillate with appropriate delivered energy (200 to 360 J for adults and 2 to 4 J/kg for pediatric patients) and refer to defibrillation and/or other appropriate protocol.

d) CONTRAINDICATIONS

Tachydysrhythmias due to digitalis toxicity

e) POTENTIAL ADVERSE EFFECTS/ COMPLICATIONS

An unsynchronized shock can result in ventricular fibrillation.

f) PRECAUTIONS

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

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

(3) Administer midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment to a maximum total dose of 5 mg.

13. ELECTRICAL THERAPY: DEFIBRILLATION

a) PURPOSE

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

b) INDICATIONS FOR TREATMENT

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

c) DOSAGE

(1) Adult
  (a) Initial delivered energy monophasic 360 J or biphasic 120-200 J
  (b) Subsequent delivered energy monophasic 360 J or biphasic increasing joules setting if device allows
(2) Pediatric
  (a) Initial delivered energy 2 J/kg (monophasic or biphasic)
  (b) Subsequent delivered energy 4 J/kg (monophasic or biphasic)
  (c) If refractory after 4 shocks, increase dosage to 6 J/kg, 8 J/kg, then 10 J/kg. **(NEW '12)**

d) CONTRAINDICATIONS

None

e) POTENTIAL ADVERSE EFFECTS / COMPLICATIONS

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

f) PRECAUTIONS

(1) Patients who are fully digitalized may require less than the normal recommended delivered energy.
(2) If the calculated joules setting is lower than the defibrillation device is able to deliver, use the lowest joules setting possible or obtain medical consultation.

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 Paramedic 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.

(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 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).

(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) IO needle with 18 G should be used in patients less than 3 kg **(NEW '12)**

(b) 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.

(c) Patients greater than 6 years of age, use the distal tibial site: locate the medial surface of the distal tibia just proximal to the medial malleolus.

(2) Sites for mechanical placement of IO needle **(NEW '12)**:

(a) Select appropriate site:

(i) Patients 3-39 kg: use the proximal tibial site as in manual placement above.

(ii) Patients 40 kg and greater:

a. Preferred site: the proximal tibial site: 1-3 cm distal to the tibial tuberosity on the anteromedial surface of the tibia.

b. If proximal tibial site is not available, use the distal tibial site: locate the medial surface of the distal tibia just proximal to the medial malleolus.

c. If 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 the patient's forearm at the waistline with hand toward 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.

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

ALERT 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

a) Provider-controlled IV solutions

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

(a) The IV Solution **DOES NOT** contain:
  (i) **MEDICATIONS**,
  (ii) **WHOLE BLOOD**, or
  (iii) **BLOOD PRODUCTS** (such as plasma, platelets, or packed red blood cells)
(b) The IV catheter is placed in a **PERIPHERAL LIMB VEIN**, or
(c) The IV catheter is a capped (i.e., heparin-locked) peripheral or central line, and
(d) No other ALS interventions are required.

(2) IV fluids

The EMT is authorized to perform IV maintenance of **NON-MEDICATED** IV solutions that contain only:
(a) Lactated Ringer's solution
(b) 2.5%-10.0% dextrose in water
(c) 0.25%-0.9% saline solution
(d) Potassium chloride (KCL) added to the solution. The amount of KCL in solution shall not exceed 20 milli-equivilants (mEq)/liter **OR**
(e) Total Parenteral Nutrition (TPN)

ALERT

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 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.

20A. Patient Initiated Refusal of EMS (NEW '12)

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

A minor patient is defined as a patient who has not reached their 18th birthday or is not
- (1) Married,
- (2) Parent of a child,
- (3) Requesting:
  - (a) Treatment for drug abuse or for alcoholism,
  - (b) Treatment for Sexual Transmitted Infection (STI) or for contraception,
  - (c) Treatment of injuries from alleged rape or sexual offense,

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

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

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

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

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

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

Management

   (1) Patients at the scene of an emergency who meet criteria to allow self-determination shall be allowed to make decisions regarding their medical care, including refusal of evaluation, treatment, or transport. These criteria include:
      a) Medical capacity to make decisions - the ability to understand and discuss and understanding of the nature and consequences of the medical care decision.
      b) Adult
      (eighteen years of age or greater)
      c) Those patients who are under eighteen years of age and are:
         (i) Married, or
         (ii) Parent of a child, or
         (iii) Requesting:
            i) Treatment for drug abuse or for alcoholism,
            ii) Treatment for STI or for contraception,
            iii) Treatment of injuries from alleged rape or sexual offense
      d) A patient that has been evaluated by EMS providers as having 'no'

answers to questions 1, 2, 3, 4a or 4b on the Patient Initiated Refusal of EMS Form shall be considered to be medically capable to make decisions regarding his/her care.

e) Patients with 'no' answers to questions 1, 2, 3, 4a, 4b on the Patient Initiated Refusal of EMS Form but one or more 'yes' answers to questions 5-8 (medical conditions) have a higher risk of medical illness. The EMS provider should consider consulting medical direction if the patient does not wish transport. The purpose of the consultation is to obtain a 'second opinion' with the goal of helping the patient realize the seriousness of his/her condition and accept transportation.

f) If the EMS provider is unsure whether the patient has adequate ability to make medical decisions, he/she should seek medical consultation.

g) At any time the EMS provider identifies patient conditions which indicate that the patient should be transported to a hospital, and the patient is refusing transport, then the provider should consult medical direction.

(2) Any person at the scene of an emergency requesting an EMS response, or for whom an EMS response was requested, and who is evaluated to have any one of the following conditions, shall be considered incapable of making medical decisions regarding care and shall be transported, with law enforcement involvement, to the closest appropriate medical facility for further evaluation:

a) Continued altered mental status from any cause including altered vital signs, influence of drugs and/or alcohol, metabolic causes (CNS or hypoglycemia), head trauma or dementia.

b) Attempted suicide, danger to self or others or verbalizing suicidal intent.

c) Acting in an irrational manner, to the extent that a reasonable person would believe that the medical capacity to make decisions is impaired.

d) Severe illness or injury to the extent that a reasonable and medically capable person would seek further medical care.

e) On an Emergency Petition.

(3) Further care should be provided according to Maryland Medical Protocols, "III E. Behavioral Emergencies" or other protocol sections as appropriate, based on patient's condition.

e) Base Station Hospital Physician Consultation

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

(1) The provider is unsure if the patient is medically capable to refuse transport.

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

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

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

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

Section One:

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

Medical Capacity

1. Disoriented to: Person? ❑ yes ❑ no
   Place? ❑ yes ❑ no
   Time? ❑ yes ❑ no
   Situation? ❑ yes ❑ no
2. Altered level of consciousness? ❑ yes ❑ no
3. Alcohol or drug ingestion by history or exam with:
   a. Slurred speech? ❑ yes ❑ no
   b. Unsteady gait? ❑ yes ❑ no
4. Patient does not understand the nature of illness and potential for bad outcome? ❑ yes ❑ no

If yes, transport

At Risk Criteria

5. Abnormal vital signs

   For Adults

   Pulse greater than 120 or less than 60? ❑ yes ❑ no
   Systolic BP less than 90? ❑ yes ❑ no
   Respirations greater than 30 or less than 10? ❑ yes ❑ no

   For minor/pediatric patients

   Age inappropriate HR or ❑ yes ❑ no
   Age inappropriate RR or ❑ yes ❑ no
   Age inappropriate BP ❑ yes ❑ no
6. Serious chief complaint (chest pain, SOB, syncope) ❑ yes ❑ no
7. Head Injury with history of loss of consciousness? ❑ yes ❑ no
8. Significant MOI or high suspicion of injury ❑ yes ❑ no
9. For minor/pediatric patients: ALTE, significant past medical history, or suspected intentional injury ❑ yes ❑ no
10. Provider impression is that the patient requires hospital evaluation ❑ yes ❑ no

If yes, consult

Section Two:

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

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

Patient Refusal of EMS

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

❑ Examination ❑ Treatment ❑ Transport

Patient Name: _____Phone: _____
Patient Address: _____
Signature: _____Witness: _____
❑ Patient ❑ Parent ❑ Guardian ❑ Authorized Decision Maker (ADM)

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

Section Three: (CHECK ALL THAT APPLY)

Initial Disposition:

❑ Patient refused exam ❑ Patient refused treatment ❑ Patient refused transport
❑ Patient accepted exam ❑ Patient accepted treatment ❑ Patient accepted transport
❑ ADM refused exam ❑ ADM refused treatment ❑ ADM refused transport

Interventions:

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

Final Disposition:

❑ Patient refused exam ❑ Patient refused treatment ❑ Patient refused transport
❑ Patient accepted exam ❑ Patient accepted treatment ❑ Patient accepted transport
❑ ADM refused exam ❑ ADM refused treatment ❑ ADM refused transport

Section Four: (MUST COMPLETE)

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

_____
_____
_____
_____
_____
_____
_____
_____

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

(iv) Place padding under patient's head. Pad any other area needed to prevent the patient from further harming him or herself or restricting circulation.

(v) 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 **(NEW '12)**

ALERT 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

(i) 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 (Paramedic may perform without consult)

b. **Patient greater than 69 years of age:**

(i) Haloperidol 2.5 mg IM/IV **and**

(ii) Midazolam 2.5 mg IM/IV (Paramedic may perform without consult)

(ii) Repeat doses may be given with medical direction.

(c) Pediatric

(i) 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

(ii) 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.

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

a) Indications:

Increased brain temperature contributes to ischemic brain damage in patients post-cardiac arrest. Studies have shown that lowering brain temperature, even by a few degrees, decreases ischemic brain damage. In studies of out-of-hospital cardiac arrest, induced hypothermia protocols have contributed to improved neurological outcomes. The initiating of hypothermia without the ability to continue the hypothermic intervention is detrimental. If the transport time is greater than 30 additional minutes to an ED capable of maintaining hypothermia, the hypothermia protocol shall not be initiated.

b) Patient Inclusion Criteria:

(1) 18 years of age or older **(NEW '12)**
(2) Return of spontaneous circulation post-cardiac arrest
(3) Comatose (GCS less than 8) after return of spontaneous circulation
(4) Secured airway with adequate ventilation (intubation preferred; ventilate slowly at the rate of 10 to 12 per minute for target end tidal CO_2 of 40-45mm Hg)
(5) Systolic Blood Pressure (SBP) can be maintained at 90 mmHg or greater spontaneously or with fluids and/or pressors. (Target is SBP greater than 110 or Mean Arterial Pressure (MAP) equal to or greater than 80)
(6) Destination hospital must have ability to continue hypothermic intervention

c) Patient Exclusion Criteria:

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

d) Procedure: (NEW '12)

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

(3) Reduce the covering on the patient while maintaining dignity
(4) If IV fluid administration completed before arrival at hospital, continue the cooling process by applying ice/cold packs bilaterally to patient's neck, axilla, and femoral groins.
(5) If patient begins shivering, administer midazolam

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

(a) 0.1mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg.
(b) Additional doses to a maximum of 10 mg requires medical consultation for all providers.

(6) Consider turning on vehicle air conditioning to assist with cooling enroute.
(7) Document initial GCS and pupillary response.
(8) Transport to a Cardiac Intervention Center (by air or ground) that can maintain the hypothermic intervention. **(NEW '12)**
(9) Interfacility maintenance of hypothermic interventions techniques and monitoring of core temperature by Specialty Care Transport team must be maintained from the sending hospital to the destination hospital with either commercial ambulance equipment or sending hospital resources. Vital signs will be documented every 15 minutes with core temperature. Do not allow core temperature to drop below 33°C.

3. ALBUTEROL (PROVENTIL, VENTOLIN)

(Patient Prescribed, Patient Assisted)

a) Indications

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

b) Adverse Effects

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

c) Precautions

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

d) Contraindications

Inhaler not prescribed for the patient.

e) Preparations

Hand-held (unit dose) aerosol inhaler.

f) Dosage

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

3A. ASPIRIN (NEW '12)

a) Pharmacology

(1) Platelet inhibitor
(2) Anti-inflammatory

b) Pharmacokinetics

Blocks platelet aggregation

c) Indications

Chest pain when acute myocardial infarction is suspected.

d) Contraindications

Known hypersensitivity

e) Adverse Effects

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

f) Precautions

GI bleeding and upset

g) Dosage

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

4. EPINEPHRINE AUTO-INJECTOR

a) Indications

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

b) Adverse Effects

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

c) Precautions

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

d) Contraindications

None in the presence of anaphylaxis.

e) Preparations

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

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

f) Dosage

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

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

5. NITROGLYCERIN

(Patient Prescribed, Patient Assisted)

a) Indications

(1) Patient must have own prescribed sublingual nitroglycerin.
(2) Chest pain

b) Adverse Effects

(1) Hypotension
(2) Headache
(3) Dizziness
(4) Tachycardia

c) Precautions

(1) Reassess blood pressure before and after administration.

(2) If systolic blood pressure drops more than 20 mmHg, obtain medical consultation before further administration.

d) Contraindications

(1) Blood pressure below 90 mmHg systolic
(2) Heart rate less than 60
(3) Medication not prescribed for the patient
(4) Pediatric patient under age 12
(5) Any patient having taken medication for Pulmonary Artery Hypertension (eg. Adcirca™ or Revatio™) **(NEW '12)** or erectile dysfunction (eg. Viagra™, Levitra™, or Cialis™) within the past 48 hours. Medical consultation is required to override this contraindication.

e) Preparations

Spray or tablet

f) Dosage

(1) Adult: One tablet or one spray sublingually
  (a) Repeat in 3 to 5 minutes if chest pain persists
  (b) Maximum of three doses (a combination of patient-administered and EMT-administered) of nitroglycerin
(2) Pediatric: Not Indicated (nitroglycerin contraindicated for children under age 12)

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

2. ACTIVATED CHARCOAL (WITHOUT SORBITOL)

a) Pharmacology

Variable drug or toxin absorption when ingested

b) Pharmacokinetics

Adsorbs 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

ALERT

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 caution.

d) Contraindications

(1) Known hypersensitivity
(2) History of moderate to severe asthma or active bronchospasm **(NEW '12)**
(3) Polymorphic or irregular wide complex tachycardia **(NEW '12)**

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

ALERT

REDUCE DOSAGE BY HALF FOR PATIENTS WITH TRANSPLANTED HEARTS AND THOSE TAKING DIPYRIDAMOLE OR CARBAMAZEPINE. **(NEW '12)**

(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.

5. ASPIRIN

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

b) Pharmacokinetics
Blocks platelet aggregation

c) Indications
Chest pain when acute myocardial infarction is suspected.

d) Contraindications
Known hypersensitivity

e) Adverse Effects
(1) Heartburn
(2) Nausea and vomiting
(3) Wheezing

f) Precautions
GI bleeding and upset

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

6. ATROPINE SULFATE (NEW ’12)

a) Pharmacology

(1) Parasympatholytic (vagolytic action)
(2) Anticholinergic (accelerates the heart rate)
(3) May restore cardiac rhythm in asystole

b) Pharmacokinetics

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

c) Indications

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

d) Contraindications

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

e) Adverse Effects

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

f) Precautions

Not clinically significant

g) Dosage

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

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

(3) Organophosphate poisoning:
- (a) Adult: Administer 2-4 mg IVP or IM every 5-10 minutes
- (b) Pediatric: Administer 0.02 mg/kg IVP/IO or IM every 5-10 minutes

(4) Nerve agent exposure
See MARK I 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.

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9A. DEXAMETHASONE

a) Indications

(1) Moderate to severe asthma exacerbation
(2) Croup **(NEW ’12)**

b) Adverse Effects

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

c) Precautions

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

d) Contraindications

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

e) Dosage (IV solution used for PO administration)

(1) Adult: 10 mg IV (preferred, if established) or PO
(2) Pediatric:
    (a) Asthma: 0.5 mg/kg PO (preferred) or IV to a maximum of 10 mg
    (b) Croup: 0.5 mg/kg PO/IM/IV to a maximum of 10 mg **(NEW ’12)**

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

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 via auto-injector 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.

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) Pre-existing tachydysrhythmias
(2) 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

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

a) Pharmacology

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

(2) Causes bronchial dilation by smooth muscle relaxation

b) Pharmacokinetics

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

c) Indications

(1) Cardiac arrest
(2) Moderate to severe allergic reaction/anaphylaxis
(3) IV epinephrine should be reserved for cardiac arrest patients and for impending cardiac arrest due to anaphylactic shock.
(4) Bronchial asthma
(5) Respiratory Stridor (Suspected Croup)

d) Contraindications

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

e) Adverse Effects

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

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

f) Precautions

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

g) Dosage

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

(c) Neonate:
(i) Administer 0.01 mg/kg (0.1 mL/kg) of 1:10,000 IVP/IO; repeat every 3-5 minutes
(ii) ET: 0.03 mg/kg of 1:10,000, diluted with 1 mL of Lactated Ringer's

(3) Allergic Reaction/Anaphylactic Shock/Asthma
(a) FOR ANAPHYLACTIC SHOCK ONLY

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

(b) Adult Epinephrine: 1:1,000
0.01 mg/kg IM;
maximum single dose 0.5 mg
(c) Pediatric Epinephrine: 1:1,000
0.01 mg/kg IM;
maximum single dose: 0.5 mg

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

ALERT

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

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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
(2) Beta blocker overdose

d) Contraindications

Known hypersensitivity

e) Adverse Effects

Nausea and vomiting

f) Precautions

Glucagon only works if liver has significant glycogen stores.

g) Dosage

(1) For suspected hypoglycemia without IV access:
  (a) Adult: Administer 1 mg IM (Medical consult for additional dosing to a maximum of 3 mg IM)
  (b) Pediatric:
    (i) 1 mg IM (25-40 kg) (Medical consult for additional dosing to a maximum of 3 mg IM)
    (ii) 0.5 mg IM (less than 25 kg) (Medical consult for additional dosing to a maximum of 3 mg IM)

(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
    (ii) 0.5 mg IVP (less than 25 kg) every 5 minutes

18. HALOPERIDOL (HALDOL) (NEW '12)

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.

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.

f) Precautions

(1) Violent patients should be physically restrained while the medication is administered.

(2) May mask subsequent evaluation.

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

(1) Adult

(a) **Patient 15-69 years of age:**
5 mg IM or IV

(b) **Patient greater than 69 years of age:**
2.5 mg IM or IV

(2) Pediatric

(a) **Child less than 6 years of age:**
Contraindicated

(b) **Child 6-11 years of age:**
0.05 mg/kg IM or IV, max of 2.5 mg

(c) **Patient 12-14 years of age:**
2.5 - 5 mg IM or IV

19. LACTATED RINGER'S

a) Pharmacology

(1) Isotonic crystalloid solution

(2) Lactated Ringer's contains:

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

b) Pharmacokinetics

Lactated Ringer's is a water and electrolyte replacement.

c) Indications

(1) Hypovolemia

(2) Keep vein open

(3) Fluid boluses

d) Contraindications

Fluid overload states

e) Adverse Effects

Rare in therapeutic doses

f) Precautions

(1) Patients receiving lactated Ringer's should be monitored to prevent circulatory overload.

(2) Lactated Ringer's should be used with caution in patients with congestive heart failure or renal failure.

g) Dosage

(1) Maximum dose 2,000 mL without medical consultation

(2) Adult:

(a) KVO

(b) Initiate IV LR fluid therapy (20 mL/kg bolus).

(c) Titrate to a systolic pressure of 100 mm Hg.

(3) Pediatric:

(a) KVO

(b) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. Fluid boluses for neonates and volume sensitive children are 10 mL/kg

(c) If patient's condition does not improve, administer the second fluid bolus of 20 mL/kg LR IV/IO.

(d) Third and subsequent fluid boluses at 20 mL/kg LR IV/IO

f) Precautions

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

g) Dosage

(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.
    (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.)
(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.

23. NALOXONE (NARCAN)

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

To reverse respiratory depression induced by opiates

d) Contraindications

Not clinically significant

e) Adverse Effects

Opiate withdrawal

f) Precautions

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

g) Dosage

(1) Adult: Administer 0.4-2 mg IVP/IM/Intranasal (if delivery device is available); 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

24. NITROGLYCERIN

a) Pharmacology

(1) Vasodilator-effect on veins more than arteries

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

b) Pharmacokinetics

(1) Absorbed through oral mucosa

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

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

c) Indications

(1) For treatment of angina

(2) Congestive heart failure, acute pulmonary edema

d) Contraindications

(1) Known hypersensitivity

(2) Pediatric patient under the age of 12

(3) Any patient having taken medication for Pulmonary Artery Hypertension (eg. Adcirca™ or Revatio™) **(NEW '12)** or 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, hypotension, nausea, vomiting, and dizziness, decreased level of consciousness

f) Precautions

May cause hypotension

g) Dosage

(1) Adult: Chest pain

(a) If patient has a prescription or previous history of nitroglycerin use, administer nitroglycerin: 0.4 mg SL (may repeat dose 2 times at 3-5 minute intervals)

May be repeated if symptoms persist, and BP is greater than 90 mm Hg, and pulse is greater than 60 bpm, to a maximum dose of 1.2 mg

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

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

(2) Adult: Pulmonary Edema/Congestive Heart Failure **(NEW '12)**
   (a) Low dose - Administer 0.4 mg SL at 3-5 minute intervals to a maximum dose of 1.2 mg.
   (b) High dose - (until CPAP is applied or if CPAP is not tolerated)
      (i) Administer 1 dose of 0.4 mg SL and apply 1 inch of NTG paste
      (ii) Administer 1 dose of 0.8 mg SL
      (iii) Continue 0.8 mg NTG dosing to achieve a 20% reduction in systolic blood pressure

(3) Pediatric: Not indicated

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Q. HEPARIN INFUSION FOR INTER-FACILITY TRANSPORT

(Paramedic only)

1. PURPOSE

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

2. INDICATIONS

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

3. CONTRAINDICATIONS

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

4. PROCEDURE

a) Follow the appropriate ALS algorithm and maintain the infusion as directed by the sending physician.
b) The sending physician must document the infusion to be administered on the patient's record or transport note, including the concentration of the units per hour.
c) The infusion must be maintained on an infusion pump designed for transport, and the provider must be trained in the appropriate use of that specific make and model infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
d) The total volume of heparin infused must be recorded on the patient care report.
e) The patient must be on a cardiac monitor and vital signs should be documented on the patient care report every 15 minutes.
f) When in doubt, contact the sending physician for medical direction.

5. SPECIAL CONSIDERATIONS

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

HEPARIN

(Paramedic only)

1. Pharmacology

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

2. Pharmacokinetics

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

3. Indications

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

4. Contraindications

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

5. Adverse Effects

Increased potential for bleeding

6. Precautions

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

7. Dosage

a) Adult: Administer a maximum of 2000 units per hour. **(NEW '12)**
b) Pediatric: Not indicated.

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

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

FIND THE TACTICAL EMS PROTOCOL(PAGES 283-299)
ONLINE AT www.miemss.org

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 7 days **(NEW '12)**

3. VENTILATOR STANDARDS

a) ACUTE VENTILATOR DEVICE STANDARDS

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

(i) Alarms
(i) Peak airway pressure
(ii) Disconnect

(2) Strongly recommended options are:
Blend percentage oxygen

(3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) ACUTE VENTILATOR USAGE

(1) A ventilator maintained by the ambulance service or health care facility must be specifically designed for transport use and capable of providing the required settings.

(2) Continuous pulse oximeter and continuous capnography monitoring equipment must be used on all acute ventilated inter-facility patients.

(3) Tracheal suctioning kits/catheters must be available.

(4) A tracheostomy replacement tube the same size and one size smaller shall be transported with the patient ventilated through a tracheostomy. (The endotracheal tube equivalent may be substituted.)

4. POTENTIAL ADVERSE EFFECTS

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

5. PRECAUTIONS

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

6. OPTIONAL PROGRAM REQUIREMENTS

a) A special "Ventilated Patient" report form will be completed for each mechanically ventilated patient and will include vital signs, pulse oximeter readings, and lung sounds (recorded a minimum of every 5 minutes), and documentation of any of the following;
(1) cardiac arrest during transport,
(2) dislodgment of 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.

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 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**

(2) Point of origin or destination is:
- (a) Long-term care facility,
- (b) Home,
- (c) Outpatient setting,
- (d) Hospital; **and**

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

(4) Ventilator settings are:
- (a) Positive End-Expiratory Pressure (PEEP) ≤ 10 **(NEW '12)**,
- (b) Peak pressures ≤ 30, and
- (c) No changes in the ventilator settings are required during the transport.

b) SCENE OF AN EMERGENCY – Out of Hospital

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

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

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

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

(5) Destination – closest appropriate hospital

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

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 (e.g., 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

FIND THE WILDERNESS EMS PROTOCOL (PAGES 306 – 321-9)
ONLINE AT www.miemss.org

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Y. MARYLAND VACCINATION & TESTING PROGRAM

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

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

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

REQUIREMENTS:

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

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

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

PURIFIED PROTEIN DERIVATIVE (PPD) TEST

Indications:
Yearly administration for healthcare providers

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

Adverse effects:
Not clinically significant

Precautions:
Recipients must read and sign consent form.

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

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

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