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TO: EMS Providers
Highest EMS Officials
Medical Directors

FROM: Richard Alcorta, M.D. 
State EMS Medical Director

DATE: June 14, 2016

RE: MIEMSS Clarification Documentation for 2016 Maryland Medical Protocols for EMS Providers

MIEMSS has received several requests for clarification regarding the 2016 *Maryland Medical Protocols for Emergency Medical Services Providers*, as there have been significant revisions in this year's protocols. MIEMSS and the Office of the EMS Medical Director are very thankful for the thoughtful and constructive comments and clarification requests and have been diligently reviewing the protocols to address these issues.

In order to update the protocol in a timely fashion, the following revisions and clarifications will apply to the *Maryland Medical Protocols for Emergency Medical Services Providers* that are effective on July 1, 2016.

Please note that changes and additions are identified with ***bold-italic*** font and removals are established with a ~~strike through~~. References to the applicable page(s) in the Full Version (including spiral-bound edition) and the Pocket Protocol are also noted.

- ◆ 4. Circulation (p. 30 Full Version, p. 8 Pocket Protocol): An age was changed.
 - (2) Patients ~~12~~ ***13*** years of age or older:
 - (a) If pulse is absent, use AED/manual defibrillator or begin CPR.
 - (b) If pulse is present, continue assessment.

- ◆ G. Communications (p.36 Full Version, p. 12 Pocket Protocol): The following ALERT and entry were omitted but are still in effect.

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

5. If medical consultation is genuinely unavailable, or if the time necessary to initiate

consultation significantly compromises patient care, the provider shall proceed with additional protocol directed care, so long as transport will not be significantly delayed. "Exceptional Call" must be indicated on the Patient Care Report (PCR).

- ◆ K. Documentation (P.39 Full Version, P.12 Pocket Protocol): This edit will align current protocol with the applicable section of COMAR.
A Patient Care Report (PCR) will be completed and delivered to the receiving facility as soon as possible, ideally upon transfer of care. If this is not immediately possible, providers must provide documentation of the patient's prehospital care on a template and in a format provided or approved by MIEMSS for inclusion in the patient care record before leaving the receiving facility, then deliver the completed PCR within 24 hours ~~after transfer of care~~ ***dispatch***, in compliance with COMAR 30.03.04.04
- ◆ Altered Mental Status: Seizures (p.45 Full Version, p.19 Pocket Protocol): The following guidance was added.
m) If patient is pregnant, actively seizing, consider magnesium sulfate 4 grams IV/IO over 10 minutes.
[The paragraph level lettering for "m, n, and o" will become "n, o, and p."]
- ◆ Altered Mental Status: Unresponsive Person (p. 47 Full Version, p. 20 Pocket Protocol): An age was changed.
m) If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose, Administer naloxone
28 days to 4 years (NEW '16): Administer naloxone 0.8–1 mg intranasal atomizer (Divide administration of the dose equally between the nares to a maximum of 1mL per nare.)
& 5 years to adult (NEW '16): Administer naloxone 2 mg intranasal atomizer (Divide administration of the dose equally between the nares to a maximum of 1 mL per nare.)
- ◆ Pediatric Tachycardia Algorithm (p. 62 Full Version, p. 33 Pocket Protocol): A footnote was added.
(g) If Torsades de Pointes, administer magnesium sulfate (25 mg/kg IV/IO to a maximum of 2 grams over 2 minutes).
- ◆ Pediatric Cardiac Arrest Algorithm (p. 65 Full Version, p. 36 Pocket Protocol): A footnote was added.
(f) If Torsades de Pointes, administer magnesium sulfate (25 mg/kg IV/IO to a maximum of 2 grams over two minutes before amiodarone).
- ◆ OO. Respiratory Distress: Anaphylaxis (p. 137-138 Full Version, p. 82 Pocket Protocol): Remove all references to "EpiPen" and "EpiPen Jr" and replace with "***Epinephrine auto-injector.***"

- ◆ OO. Respiratory Distress: Anaphylaxis (p. 137-138 Full Version, p. 82 Pocket Protocol): “auto-injector or manual” language added.

3. Treatment

a) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient’s prescribed

or

EMS service’s epinephrine **auto-injector or manual** (1:1,000) 0.5 mg in 0.5 mL IM or patient’s prescribed fast-acting bronchodilator.

b) Consider additional doses of epinephrine (1:1,000) 0.5 mg in 0.5 mL IM.

- ◆ PP. Respiratory Distress: ASTHMA/COPD (p. 139-140 Full Version, p. 84-85 Pocket Protocol): Multiple changes were made; see below.

3. Treatment

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

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

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

j) Consider the administration of epinephrine 1:1,000.

~~0.01 mg/kg IM~~

~~Maximum single dose 0.5 mg~~

0.3 mg IM in the lateral thigh via epinephrine auto-injector or 0.5 mg in 0.5 mL IM

May repeat every 5 minutes for a total of 3 doses for severe reactions.

m) (MC) For moderate to severe exacerbations, consider the administration of magnesium

sulfate 1–2 grams in 50–100 mL Lactated Ringer’s or **D5W** IV/IO over 10–20 minutes.²

u) Administer epinephrine 1:1,000.

~~0.01 mg/kg IM~~

~~Maximum single dose 0.5 mg~~

Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.5 mL IM

5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM

May repeat every 5 minutes for a total of 3 doses for severe reactions.

¹ (MC) denotes that a medical consultation symbol appears in the protocol at this point.

² JUSTIFICATION NOTE: Due to reduced cost, increased availability, and frequently used dilution solution, D5W has been added as an alternative dilution solution.

- ◆ PP. Respiratory Distress: ASTHMA/COPD (p. 140 Full Version, p. 85 Pocket Protocol): The following ALERT was added between letters v and w.

**MAGNESIUM ADMINISTRATION OFTEN CAUSES HYPOTENSION IN CHILDREN.
CONSIDER ADMINISTERING BOLUS 20 ML/KG OF LACTATED RINGER'S WITH THE
ADMINISTRATION OF MAGNESIUM.**
- ◆ 6. Epinephrine Auto-Injector (BLS) (p. 192 Full Version, p. 115 Pocket Protocol): Changes were made to the dosage regime (letter "f.")
 - (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~~

(1) Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.15 mL IM
(2) 5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
- ◆ 11. Dextrose (p. 213 Full Version. Entry is correct in Pocket Protocol): Correction to age and language added.
 - (b) ~~Patients 28 months~~ **days** or greater up to the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4mL/kg of 25% dextrose IV/IO **to a maximum of 25 grams**. D25W is prepared by mixing one part of D50W with an equal volume of LR.
- ◆ 16. EPINEPHRINE 1:10,000/1:1,000 (p. 222 Full Version, p. 118 Pocket Protocol): Dosage regime amended.
 - (3) Allergic Reaction/Anaphylaxis/Asthma
 - (a) FOR ANAPHYLAXIS (ADULT ONLY)

For patients who are in extremis with severe hypotension or impending respiratory failure, consider initiating an epinephrine drip after having administered 3 doses of IM epinephrine.

 - i) Mix 1 mg of epinephrine (either 1:1,000 or 1:10,000) in a 1 liter bag of LR IV/IO. Initiate an infusion with a wide open macro drip titrating to a systolic pressure of greater than 90 mmHg. When drip administered, this will be reported as an exceptional call.
 - (b) ~~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~~

(d)

- (i) Less than 5 years of age: 0.15 mg IM in the lateral thigh via **epinephrine auto-injector EpiPen[®]** or manual administration 0.15 mg in **0.15 mL IM**
- (ii) 5 years and greater: administer 0.3 mg IM in the lateral thigh via **epinephrine auto-injector EpiPen[®]** or manual administration 0.5 mg in **0.5 mL IM**

- ◆ 19. Haloperidol (p. 226 Full Version, p. 119 Pocket Protocol): An age was changed.

d) Contraindications

- (1) Children under ~~6~~ 5 years of age
- (2) Parkinson's disease
- (3) CNS depression
- (4) Acute CNS injury

- ◆ 22. Magnesium Sulfate (p. 231-232 Full Version, p. 120 Pocket Protocol): Multiple changes were made; see below.

g) Dosage

(1) Adult:

- (a) Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of LR **or D5W**)
- (b) Refractory VT/VF: 1–2 grams IV/IO over 2 minutes
- (c) Moderate to severe asthma/bronchospasm exacerbation: 1–2 grams IV/IO over 10–20 minutes (mixed in 50–100 mL of LR **or D5W**)
- (d) Torsades de Pointes: 1–2 grams IV/IO over 2 minutes

(2) Pediatric (under 18 years old):

- (a) Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of LR **or D5W**)
- (b) Moderate to severe asthma/bronchospasm exacerbation: consider magnesium over 10–20 minutes

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

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

- ◆ 20. Glucometer Protocol (p. 279 Full Version)

(2) PEDIATRIC (NEW '16)

(a) Patient less than 28 days – if blood glucose is less than 40 mg/dL administer 2 mL/kg of 10% dextrose IV/IO.

D10W is prepared by mixing one part of D50W with four parts LR.

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

(b) Patient ~~greater than 1 month~~ **28 days or greater** until the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 25% dextrose IV/IO. D25W is prepared by mixing one part of D50W with an equal volume of LR **to a maximum of 25 grams.**

Recheck glucose after first dose. If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D25W.

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

If you have any questions regarding this memo, please contact the Office of the Medical Director at 410-706-0880.

4. Circulation



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

PERFORM CPR WHILE PREPARING FOR RHYTHM ANALYSIS AND DEFIBRILLATION.



- a) Assess pulse.
 - (1) Patients from one hour after birth (newly born) up to those who have not reached their 13th birthday (**NEW '16**):
 - (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 13 years 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) Spinal protection
 - (1) The provider shall determine the appropriate method to use in spinal protection of the patient. Infant or child car seats may NOT be used as a spinal immobilization device for the pediatric patient.
 - (2) Patients who have a blunt trauma with a high-energy mechanism of injury that has potential to cause spinal cord injury or vertebral instability **and** one or more the following should receive spinal protection.
 - (a) Midline spinal pain, tenderness, or deformity
 - (b) Signs and symptoms of new paraplegia or quadriplegia
 - (c) Focal neurological deficit
 - (d) Altered mental status or disorientation
 - (e) Distracting injury



In addition to the above indicators for adults, the below apply to children who have not yet reached their 15th birthday.

- (f) Neck pain or torticollis
- (g) High impact diving incident or high risk motor vehicle crash (head on collision, rollover, ejected from the vehicle, death in the same crash, or speed greater than 55 mph)
- (h) Substantial torso injury
- (i) Conditions predisposing to spine injury
- (3) If NO to all of the above, transport as appropriate.



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

G. COMMUNICATIONS (NEW '16)

1. Communications with and through EMRC/SYSCOM are recorded. In addition, as part of the quality assurance and quality improvement process, communications with hospitals are frequently recorded. Therefore, you should assume that all your communications among EMS providers, hospitals, public safety communications centers, and EMRC/SYSCOM are being recorded.
2. All Priority 1 patients require on-line medical consultation through EMRC on a recorded line (radio or phone).



ANY PATIENT WHOM THE PROVIDER IDENTIFIES AS MEETING ANY "SPECIALTY" ALERT (E.G., TRAUMA, STEMI ALERT, STROKE ALERT, SEPSIS ALERT) REQUIRES AN ON-LINE MEDICAL CONSULTATION THROUGH EMRC ON A RECORDED LINE (RADIO OR PHONE).

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



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

5. If medical consultation is genuinely unavailable, or if the time necessary to initiate consultation significantly compromises patient care, the provider shall proceed with additional protocol directed care, so long as transport will not be significantly delayed. "Exceptional Call" must be indicated on the Patient Care Report (PCR).
6. Core essentials for communications:
 - a) Assigned patient priority (1 to 4)
 - b) Age
 - c) Chief complaint
 - d) Provider impression
 - e) Pertinent patient signs and symptoms (e.g., HR, RR, BP, Pulse Ox, and GCS) (be specific—do not use within normal limits or stable in description)
 - f) Pertinent physician findings
 - g) ETA

In addition, for specialty center patients:

Trauma

- h) Patient Trauma Decision Tree Category (Alpha, Bravo, Charlie, Delta)
- i) Number of victims if more than one
- j) Describe mechanism

Stroke

- k) Last known well time
- l) Specific neurological findings (sensory, motor, cognitive)
- m) Upon positive assessment using the Cincinnati Stroke Scale, a STROKE alert shall be made and the LAMS score will be included in the consult.

STEMI

- n) 12-Lead interpretation
- o) Duration of symptoms



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

7. Mass Casualty Incident (MCI) Communications
 - a) When a local jurisdiction declares an MCI, it is extremely important to maximize patient care resources and reserve EMS communications for emergent situations. Except for extraordinary care interventions, EMS providers may perform all skills and administer medications within protocol during a declared MCI. When the MCI condition is instituted, the Exceptional Call box must be checked on the PCR.
 - b) During an MCI, the EMS Officer-in-Charge (OIC) shall designate an EMS Communicator who shall establish appropriate communications.
 - c) Reference the Multiple Casualty Incident/Unusual Incident Protocol.

H. REASSESSMENT

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

I. DISPOSITION

1. Destination
 - a) Priority 1 patients shall be triaged according to Maryland Medical Protocols to the closest appropriate hospital-based emergency department, designated trauma, or designated specialty referral center. Critically unstable patients in need of immediate life-saving interventions that cannot be provided in the field shall, with the approval of EMS system medical consultation, be diverted to the closest facility (including freestanding medical facility) capable of immediately providing those interventions.
 - b) Priority 2 patients shall be triaged according to the Maryland Medical Protocols to the closest appropriate hospital-based emergency department, designated trauma or designated specialty referral center unless otherwise directed by EMS system medical consultation.
 - c) Stable Priority 3 or 4 patients who do not need a time-critical intervention may also be transported to the local emergency department or freestanding medical facility.
 - d) Patients Under Investigation (PUI) for an Emerging Infectious Disease (EID) at a residence should be transported directly to an Assessment Hospital unless total transport time is no longer than 45 minutes greater than transport to the nearest Frontline Hospital ED. If transport time is longer than 45 minutes greater than transport to the nearest Frontline Hospital ED, the patient must be transported to the closest appropriate Frontline hospital. Priority 1 and Priority 2 patients with unresolved symptoms that cannot be managed outside the hospital should be taken to the closest Frontline Hospital. Receiving hospital notification of all suspected PUI patients should be done as early as possible to allow for hospital staff to prepare. Helicopter transport is NOT indicated for the PUI patient. **(NEW '16)**
 - e) For Priority 2 and Priority 3 patients not meeting a specialty center destination care protocol, the EMS provider should ask if the patient has had a hospital admission (inpatient service) within the last 30 days. If the answer is yes, the EMS provider should transport (repatriate) the patient to that hospital as long as that hospital is not more than 15 additional minutes further than nearest hospital (or greater if allowed for by the EMS Operational Program). **(NEW '16)**

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

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

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

* Based on the medication or procedure as listed in the protocol pages 182–185

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

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

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

K. DOCUMENTATION

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

Only the unit that pronounces death will select the "Dead on Scene" option in the PCR (eMEDS®) and thus all other units will report "Operational Support Only." If no interventions are performed, the highest level EMS provider on scene will pronounce death and document "Dead on Scene." If BLS care was rendered by a BLS unit and then termination of resuscitation and pronouncement of death occurred, the BLS unit will select "Dead at Scene with BLS Intervention" option on the eMEDS® PCR. If ALS care was rendered by an ALS unit and then termination of resuscitation and pronouncement of death occurred, the ALS unit will select "Dead at Scene with ALS Intervention" option on the eMEDS® PCR.

L. CONFIDENTIALITY

Patient confidentiality must be maintained at all times.

M. PROFESSIONAL CONDUCT

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

B. ALTERED MENTAL STATUS: SEIZURES (Continued)

- l) Consider midazolam for seizures lasting greater than 10 minutes. **(NEW '16)**

If patient has no IV or IO in place:

Administer midazolam 0.2 mg/kg IN or IM. Maximum total dose 5 mg.

If IV or IO is already in place:

Administer midazolam 0.1 mg/kg in 2 mg increments SLOW IVP over 1–2 minutes. Maximum total dose 5 mg.

- m) If patient is pregnant, actively seizing, consider magnesium sulfate 4 grams IV/IO over 10 minutes.
- n) Establish IV/IO access with LR.
- o) Administer fluid bolus, if appropriate
20 mL/kg of LR IV/IO.



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

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



If patient's seizures are refractory to treatment, consider IO administration of midazolam.

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

Up to 0.2 mg/kg rectal

Maximum total dose 10 mg

OR

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

Maximum total dose 5 mg

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

4. Continue General Patient Care.

C. ALTERED MENTAL STATUS: UNRESPONSIVE PERSON (Continued)




- k) Obtain pulse oximetry if available.
- l) Administer glucose paste (10–15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.
- m) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose,**
Administer naloxone
28 days to 4 years (**NEW '16**): Administer naloxone 0.8–1 mg intranasal atomizer (Divide administration of the dose equally between the nares to a maximum of 1 mL per nare.)
5 years to adult (**NEW '16**): Administer naloxone 2 mg intranasal atomizer (Divide administration of the dose equally between the nares to a maximum of 1 mL per nare.)



- n) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider suspects an opioid/narcotic overdose,**
Administer naloxone.
0.1 mg/kg IVP/IO (titrated)/IM/IN (If delivery device is available—divide administration of the dose equally between the nares to a maximum of 1 mL per nare) (**NEW '16**)
Maximum single dose 0.4–2 mg
- o) Consider repeating naloxone. (**NEW '16**)
- p) Establish IV/IO access with LR.
If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO.
If patient's condition does not improve, administer the second bolus of fluid at 20 mL/kg LR IV/IO.
OR
For volume-sensitive children administer initial fluid bolus of 10 mL/kg LR IV/IO. If patient's condition does not improve, administer the second bolus of fluid at 10 mL/kg LR IV/IO.

Volume-sensitive children include: neonates (birth to 28 days) (**NEW '16**), children with congenital heart disease, chronic lung disease, or chronic renal failure.

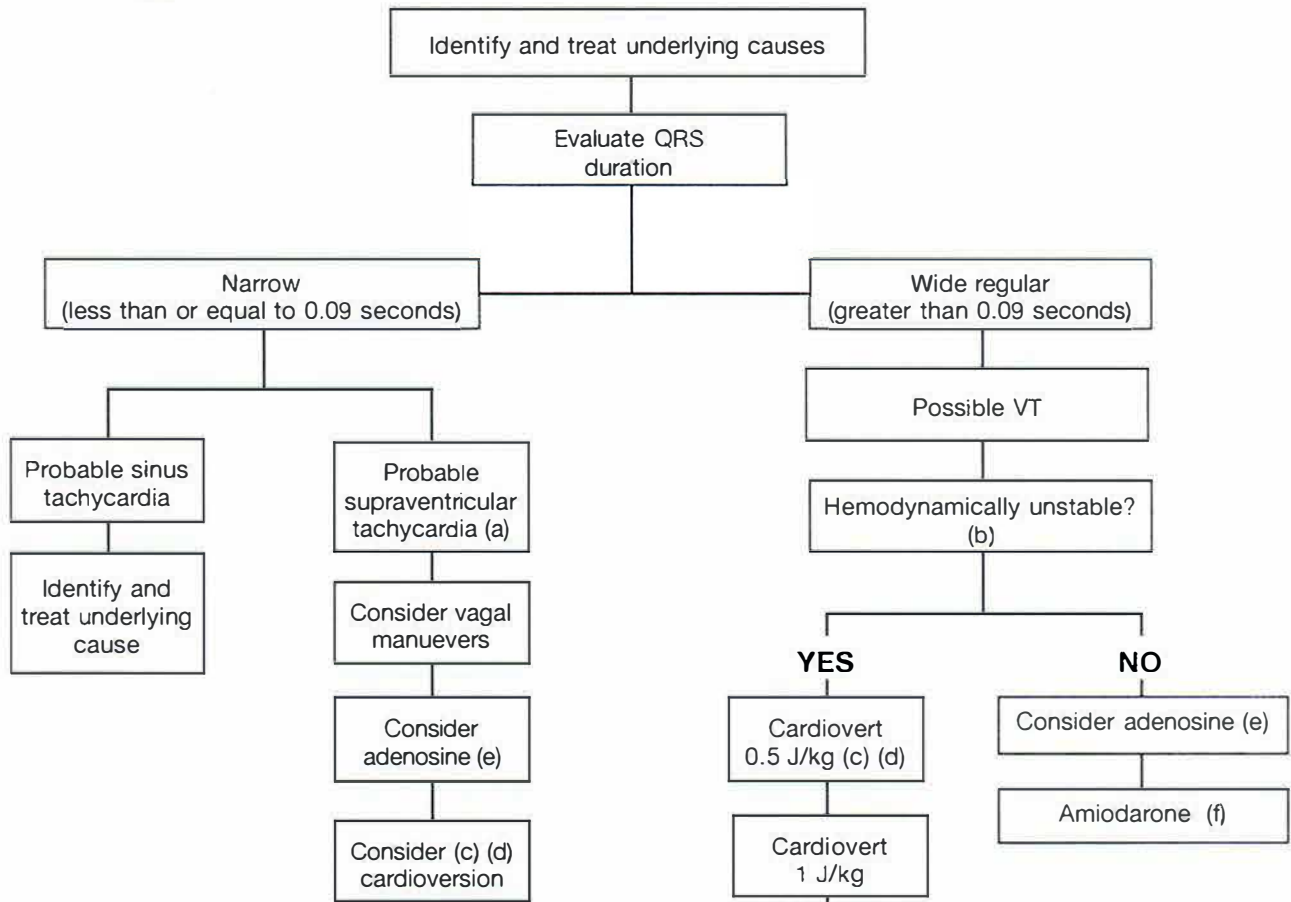
(1) Consider obtaining blood sample using closed system.
- q) Use glucometer and treat accordingly.
- r)  Third and subsequent fluid boluses at 20 mL/kg IV/IO except in volume-sensitive children, then bolus at 10 mL/kg.

4. Continue General Patient Care.



6. PEDIATRIC TACHYCARDIA ALGORITHM

(If less than 1 hour old, refer to the Newly Born Protocol) (NEW '16)



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

(b) - Hemodynamically unstable is defined as a systolic blood pressure less than 60 in neonates (patients from birth to 28 days old) (NEW '16), less than 70 in infants (patients less than 1 year of age), less than $[70 + (2 \times \text{years}) = \text{systolic BP}]$ for patients greater than 1 year of age, altered mental status with hypoperfusion evidenced by delayed capillary refill, pallor, or peripheral cyanosis.

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

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

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

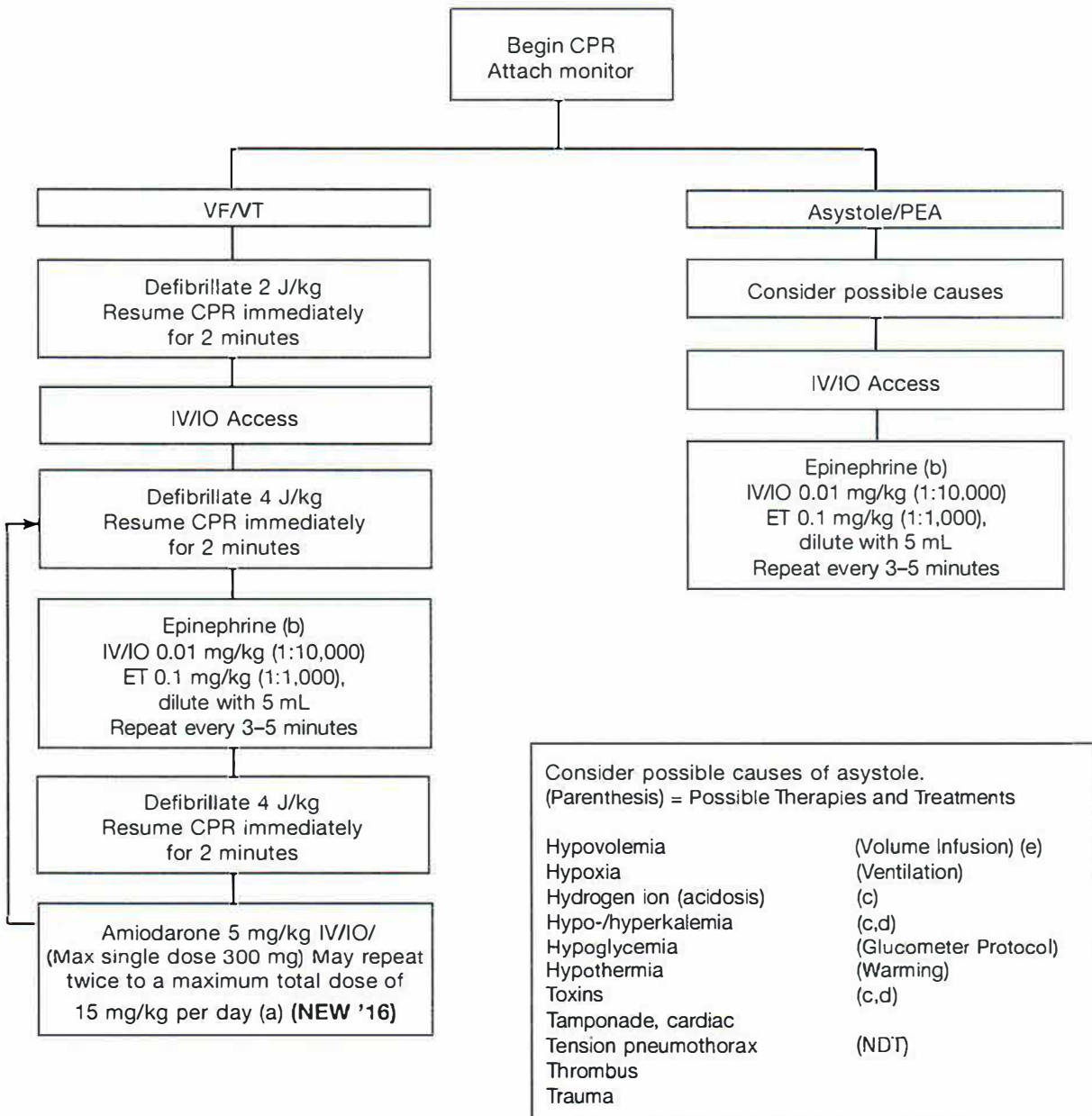
(f) - Amiodarone: 5 mg/kg IV/IO over 20 minutes. Obtain 12-lead EKG prior to administration of amiodarone. (NEW '16)



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



5.

PEDIATRIC CARDIAC ARREST ALGORITHM (If less than 1 hour old, refer to the Newly Born Protocol) (NEW '16)




- (a) - Continue cycle of epinephrine, defibrillation (at 4 J/kg), then amiodarone (NEW '16). Defibrillate at increasing dosage: 6 J/kg, 8 J/kg, 10 J/kg.
- (b) - Neonates (0-28 days), epinephrine ET 0.03 mg/kg (1:10,000) dilute with 1 mL.
- (c) -  Sodium bicarbonate, 1 mEq/kg, with medical consultation. See sodium bicarbonate.
- (d) -  Calcium chloride, 20 mg/kg (0.2 mL/kg) SLOW IVP/IO (50 mg/min). Max dose 1 gram.
- (e) - Volume infusion for neonates and volume-sensitive children, 10 mL/kg; for infant and child 20 mL/kg.
- (f) If Torsades de Pointes, administer magnesium sulfate (25 mg/kg IV/IO to a maximum of 2 grams over two minutes before amiodarone).

OO. RESPIRATORY DISTRESS: ANAPHYLAXIS (NEW '16)

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



3. Treatment

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




- d) Administer epinephrine
 - (1) 0.3 mg IM in the lateral thigh via epinephrine auto-injector or epinephrine (1:1,000) 0.5 mg in 0.5 mL IM
 - (2) May repeat every 5 minutes for a total of 3 doses for severe reactions.
 - (3) For patients who are in extremis with severe hypotension or impending respiratory failure, consider initiating an epinephrine drip after having administered 3 doses of IM epinephrine.
 - (a) Mix 1 mg of epinephrine (either 1:1,000 or 1:10,000) in a 1 liter bag of LR IV/IO. Initiate an infusion with a wide open macro drip titrating to a systolic pressure of greater than 90 mmHg. When drip administered, this will be reported as an exceptional call.

00. RESPIRATORY DISTRESS: ANAPHYLAXIS (Continued)

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



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



- (5) Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.5 mL IM
- (6) 5 and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
- (7) May repeat every 5 minutes for a total of 3 doses for severe reactions.

- g) Additional treatments to consider AFTER administration of epinephrine
 - (1) Albuterol/atrovent via nebulizer
 - (a) For an infant less than 1 year of age, administer albuterol 1.25 mg via nebulizer; Atrovent is contraindicated.
 - (b) For a child 1 year of age or greater, but less than 2 years of age, administer albuterol 1.25 mg and Atrovent 250 mcg.
 - (c) For a child 2 years of age or greater, administer albuterol 2.5 mg and Atrovent 500 mcg.
 - (d) If further respiratory treatments are needed, an additional albuterol-only nebulizer may be given.
 - (2) Diphenhydramine 1 mg/kg SLOW IVP or IM
 - (3) Establish IV access with LR
 - (4) Administer 20 mL/kg bolus for hypotension
 - (5) Dexamethasone 0.5 mg/kg to a maximum 10 mg IV/IO

4. Continue General Patient Care.

PP. RESPIRATORY DISTRESS: ASTHMA/COPD

1. Initiate General Patient Care.

2. Presentation



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



3. Treatment





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

- a) Assist patient experiencing moderate to severe symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed fast-acting bronchodilator or prescribed epinephrine auto-injector.
- b)  Use of the EMS service's manual epinephrine (1:1,000) 0.5 mg in 0.5 mL or 0.3 mg via epinephrine auto-injector IM requires medical consultation.
- c) Albuterol inhaler (2 puffs) may be repeated once within 30 minutes.
- d)  Consider additional doses of patient's prescribed fast-acting bronchodilator or manual epinephrine (1:1,000) 0.5 mg in 0.5 mL or 0.3 mg via epinephrine auto-injector IM.



- e) Establish IV access with LR on all Priority 1 or 2 patients and all patients with a history of cardiac disease.
- f) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, continuous positive airway pressure (CPAP), or BVM while receiving medication via nebulizer.
- g) Administer a combination of albuterol/Atrovent via nebulizer.
Albuterol 2.5 mg and Atrovent 500 mcg
- h) If further treatments are indicated, an additional albuterol-only nebulizer may be given.
- i) Consider CPAP if patient continues to deteriorate in spite of above nebulized treatments. Continue inline nebulizations.
- j) Consider the administration of epinephrine 1:1,000.
0.3 mg IM in the lateral thigh via epinephrine auto-injector or
0.5 mg in 0.5 mL IM
May repeat every 5 minutes for a total of 3 doses for severe reactions.
OR
- k) Consider the administration of terbutaline.
0.25 mg IM
- l) For moderate to severe exacerbations, consider the administration of dexamethasone 10 mg IV/PO.

PP. RESPIRATORY DISTRESS: ASTHMA/COPD (Continued)


- m)  For moderate to severe exacerbations, consider the administration of magnesium sulfate 1–2 grams in 50–100 mL Lacted Ringer's or D5W IV/IO over 10–20 minutes.
- n)  Consider additional doses of epinephrine, albuterol, or terbutaline.



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



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

- p) Fast-acting bronchodilator (2 puffs) may be repeated once within 30 minutes.
- q)  Consider additional doses of patient's prescribed fast-acting bronchodilator or epinephrine (1:1,000) 0.15 mg in 0.15 mL IM.




- r) Patients with moderate to severe respiratory distress may require high flow oxygen via non-rebreather mask, CPAP, or BVM while receiving medication via nebulizer.
- s) Administer a combination of albuterol/Atrovent via nebulizer:
 - (1) **For an infant less than 1 year of age**, administer albuterol 1.25 mg via nebulizer; Atrovent is contraindicated.
 - (2) **For a child 1 year of age or greater, but less than 2 years of age**, administer albuterol 1.25 mg and Atrovent 250 mcg.
 - (3) **For a patient 2 years of age or greater**, administer albuterol 2.5 mg and Atrovent 500 mcg.
- t) If further treatments are indicated, an additional albuterol-only nebulizer may be given.

AND/OR




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

- u) Administer epinephrine 1:1,000.
Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.5 mL IM
5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
May repeat every 5 minutes for a total of 3 doses for severe reactions.
- v)  Consider magnesium sulfate 50 mg/kg IV/IO to a max of 2 grams given over 10–20 minutes.



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

- w) For moderate to severe exacerbations, consider the administration of dexamethasone 0.5 mg/kg PO/IV up to a maximum dose of 10 mg.
- x)  Consider additional doses of albuterol or epinephrine.
- y) Establish IV/IO access with LR in a clean area, if appropriate.

4. Continue General Patient Care.



6. 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 supplied)
- (1) Adult: 0.3 mg
 - (2) Pediatric: 0.15 mg



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

f) Dosage

- (1) Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.15 mL IM
- (2) 5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
- (3) Additional doses may be administered with medical consultation.



11. DEXTROSE (NEW '16)

a) Pharmacology

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

b) Pharmacokinetics

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

c) Indications

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

d) Contraindications

Known hyperglycemia

e) Adverse Effects

May worsen hyperglycemia (high blood sugar)

f) Precautions

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

g) Dosage

(1) Adult:

- (a) If blood glucose is less than 70 mg/dL, administer 10% dextrose in 50 mL (5 grams) boluses, one minute apart, to a maximum of 250 mL OR 25 grams of 50% dextrose IVP, until:
 - (i) the patient has a return to normal mental status, and
 - (ii) the patient's blood glucose is at least 90 mg/dL.
 - (iii) If, following 250 mL of 10% dextrose or 25 grams of 50% dextrose, patient has persistently altered mental status and blood glucose less than 90 mg/dL, repeat dosing regimen in (a).

(2) Pediatric (NEW '16):

- (a) **Patient less than 28 days** - if blood glucose is less than 40 mg/dL administer 2 mL/kg of 10% dextrose IV/IO.

D10W is prepared by mixing one part of D50W with four parts LR.

Recheck glucose after first dose. If blood glucose is less than 40 mg/dL,



obtain medical consultation to administer second dose of D10W.

- (b) **Patients 28 days or greater up to the 18th birthday** - if blood glucose is less than 70 mg/dL, administer 2–4mL/kg of 25% dextrose IV/IO to a maximum of 25 grams.

D25W is prepared by mixing one part of D50W with an equal volume of LR.

Recheck glucose after first dose. If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D25W

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




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

- (3) Allergic Reaction/Anaphylaxis/Asthma
 - (a) FOR ANAPHYLAXIS (ADULT ONLY)

For patients who are in extremis with severe hypotension or impending respiratory failure, consider initiating an epinephrine drip after having administered 3 doses of IM epinephrine.

 - (i) Mix 1 mg of epinephrine (either 1:1,000 or 1:10,000) in a 1 liter bag of LR IV/IO. Initiate an infusion with a wide open macro drip titrating to a systolic pressure of greater than 90 mmHg. When drip administered, this will be reported as an exceptional call.
 - (b) Epinephrine: 1:1,000
 - (i) Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.15 mL IM
 - (ii) 5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM

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



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



19. HALOPERIDOL (HALDOL)

a) Pharmacology

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

b) Pharmacokinetics

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


c) Indications

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

d) Contraindications


- (1) Children under 5 years of age
- (2) Parkinson's disease
- (3) CNS depression
- (4) Acute CNS injury

e) Adverse Effects


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

g) Dosage

(1) Adult:

- (a) Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of LR or D5W)
- (b) Refractory VT/VF: 1–2 grams IV/IO over 2 minutes
- (c)  Moderate to severe asthma/bronchospasm exacerbation: 1–2 grams IV/IO over 10–20 minutes (mixed in 50–100 mL of LR or D5W)
- (d) Torsades de Pointes: 1–2 grams IV/IO over 2 minutes

(2) Pediatric (under 18 years old):

- (a) Seizure activity associated with pregnancy: 4 grams IV/IO over 10 minutes (mixed in 50–100 mL of LR or D5W)
- (b)  Moderate to severe asthma/bronchospasm exacerbation: consider magnesium sulfate 50 mg/kg IV/IO to max of 2 grams given over 10–20 minutes



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

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

h) Interfacility Transport

- (1) A paramedic may administer continuous infusion established by a sending facility, not to exceed the ordered total dose, and monitoring the patient for signs and symptoms of magnesium toxicity.
- (2) Magnesium sulfate used for tocolytic control is a RN level indication.



(2) PEDIATRIC (NEW '16)

- (a) **Patient less than 28 days** - if blood glucose is less than 40 mg/dL administer 2 mL/kg of 10% dextrose IV/IO.

D10W is prepared by mixing one part of D50W with four parts LR.

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

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

D25W is prepared by mixing one part of D50W with an equal volume of LR.

Recheck glucose after first dose. If blood glucose is less than 70 mg/dL,



obtain medical consultation to administer second dose of D25W.

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