



State of Maryland  
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TO: Maryland EMS Providers

FROM: Richard Alcorta, MD, FACEP *Richard Alcorta M.D.*

DATE: May 18, 2012

RE: Emergent Addition of Diazepam for Active Seizure Management

As the shortage of Midazolam goes on and EMS Operational Programs (EMSOPs) continue to have trouble stocking the medication, MIEMSS has inserted Diazepam into the ALS provider's armamentarium for the management of active seizures.

You may recall that, before being replaced by Midazolam in 2009, Diazepam was the medication used by Maryland ALS providers to treat patients with active seizures. Effective immediately, ALS providers are authorized to administer Diazepam to active seizure patients as written in the attached protocol, if Midazolam is not available.

This change in protocol does not absolve the EMSOP's responsibility to restock Midazolam when it becomes available; Midazolam is still the preferred medication for active seizure management. This change in protocol does empower ALS providers to provide ALS care to active seizure patients when the first-line medication is not available.

Please contact the Office of the Medical Director at 410-706-0880 or [ralcorta@miemss.org/jkelly@miemss.org](mailto:ralcorta@miemss.org/jkelly@miemss.org) with any questions.

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

1. Initiate General Patient Care.

2. Presentation

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



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

3. Treatment



a) If the patient is still seizing:

- (1) DO NOT RESTRAIN.
- (2) Protect patient from further injury.
- (3) Consider cause of seizure activity.

b) When seizure activity has stopped


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



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c) Initiate IV LR KVO.

d) Use glucometer and treat accordingly.

e)  Consider midazolam (Paramedic may perform without consult for patients with active seizures).  
0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg  
(Reduce by 50% for patients 69 years or older)  
If IV unavailable, 5 mg IM may be administered  
Additional doses up to a maximum total dose 10 mg require medical consultation for all providers  
If patient is in status, consider IO administration of midazolam  
If midazolam is not available, consider diazepam (Paramedic may perform without consult for patients with active seizures.)  
2.5 mg increments slow IVP/IM (IM requires all providers to obtain medical consultation.)

## ALTERED MENTAL STATUS: SEIZURES (Continued)

Maximum dose 10 mg

If patient is status, consider IO administration of diazepam.

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



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



f) If the patient is still seizing:

(1) DO NOT RESTRAIN

(2) Protect from further injury.

(3) Consider underlying cause of seizure.

g) When seizure activity has stopped:

(1) Identify and treat any injuries.

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



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h) Initiate IV/IO.

i) Use glucometer and treat accordingly.

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



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

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



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

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

## ALTERED MENTAL STATUS: SEIZURES (Continued)

If IV unavailable, administer 0.2 mg/kg IM

Maximum single dose 5 mg

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



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

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

Up to 0.2 mg/kg rectal

Maximum total dose 10 mg

**OR**

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

Maximum total dose 5 mg

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

4. Continue General Patient Care.

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## 11. DIAZEPAM (VALIUM) (NEW MAY 2012)

### 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

### d) Contraindications

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

### e) Adverse Effects

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

### f) Precautions

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

### g) Dosage (Paramedic may perform without consult for patients with active seizures if midazolam is not available.)

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

Severe Nerve Agent Exposure (providers may administer without consult):

- (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.