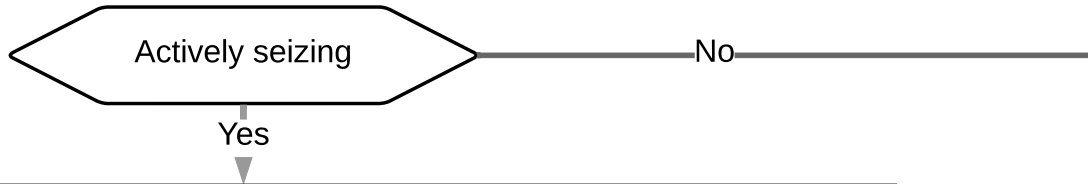




History <ul style="list-style-type: none"> Hx of seizure disorder Seizure medications Alcohol withdrawal Hx Trauma Hx Diabetes Hx Pregnancy Overdose History of Isoniazid use 	Signs and Symptoms <ul style="list-style-type: none"> Decreased mental status compared to baseline Signs of trauma Witnessed seizure activity Urinary incontinence 	Differential <ul style="list-style-type: none"> Trauma Alcohol withdrawal Metabolic/electrolyte abnormality (i.e. renal failure) Stroke Hypoglycemia Infection/Fever
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Consider **OB/GYN AG** if gestational age >20 weeks or up to 6 weeks postpartum

Administer **midazolam** intramuscularly. Do not delay administration to attempt IV access. Do not check FSBG prior to treatment.

Age	IM Midazolam Dose	Midazolam Volume
17 months - 5 years	2.5 mg	0.5 mL
6-11 years	5 mg	1 mL
> =12-13 years	10 mg	2 mL

AGE <17 months
Midazolam **0.2 mg/kg IM**
Max 2.5 mg

Obtain FSBG - treat FSBG per Hypo/Hyperglycemia AG

Obtain IV access to facilitate ongoing care
Place patient on supplemental O₂, cardiac monitor and EtCO₂

ALS/BLS General AG

Consider **Altered/Neuro/Overdose AG** if indicated

Repeat IM midazolam dose after 5 min for continued seizure

Max total dose for patients under 14 yrs is 10 mg (must call for additional orders)

Max total adult dose is 20 mg
Administer slowly over 2 minutes

Reassess and monitor VS



Education/Pearls

Seizures occur due to abnormal electrical activity in the brain. Standard of treatment consists of prevention of seizures with anti-epileptics, stabilizing patients when seizures do occur, and treatment of the consequences of seizures. Glucose should be rapidly checked, as hypoglycemia may cause seizures and is treated with glucose administration.

- Types of seizures:
 - **Status epilepticus:** Status epilepticus occurs when a seizure lasts longer than 5 minutes or when seizures occur close together without a patient regaining normal mental status between seizures.
 - **Generalized:** This seizure affects the whole brain at once. They begin with stiffening of the limbs (the tonic phase), followed by rhythmic jerking of the limbs and face (the clonic phase). A generalized seizure is the type most likely to be encountered by EMS responders. A generalized tonic-clonic seizure can also be caused by head trauma, poisoning, brain tumors, metabolic disorders or other acute conditions affecting the brain.
 - **Focal:** Seizure activity is limited to a part of one brain hemisphere. There is a site, or a focus, in the brain where the seizure begins. Patients may or may not be aware of their surroundings depending on the type of focal seizure. Symptoms may be confined to one extremity or portion of a patient's body.
 - **Febrile:** Febrile seizures occur in children from 6 months to 5 years of age. A febrile seizure must be a generalized seizure in the setting of fever, lasting less than 5 minutes, and with return to normal neurologic baseline. Treat the seizure if lasting > 5 minutes.
 - **Eclamptic:** Eclampsia is an obstetric emergency. It is considered a complication of severe preeclampsia, and is commonly defined as new onset of generalized seizure activity during pregnancy or the immediate postpartum period in a woman with signs or symptoms of preeclampsia. Eclampsia typically occurs during or after the 20th week of gestation or in the postpartum period.
- Treatment of seizures:
 - IM midazolam is the preferred treatment in patients without IV access. Do not delay administration of Midazolam for placement of IV/IO.
 - Hypoglycemia is a common cause of seizures. Obtain fingerstick glucose rapidly, and treat any hypoglycemia encountered.
 - Midazolam and Lorazepam are well absorbed when administered IM.
- Many overdoses may cause seizures and warrant hospital evaluation; medications that cause seizures include anti-depressants (e.g. escitalopram, citalopram, bupropion), anti-cholinergics (e.g. diphenhydramine), illicit drugs (e.g. cocaine), and antibiotics (e.g. Isoniazid).
- Prolonged postictal periods - Within 20 minutes, most patients have regained full alertness and orientation. If after 20 minutes the person remains confused, the person should be transported to an appropriate medical facility for evaluation.
- Be prepared for airway problems and continued seizures. Be prepared to assist ventilations, especially if midazolam is used.
- Assess the possibility of occult trauma and substance abuse.
- In an infant, a seizure may be the only evidence of a closed head injury or hypoglycemia.
- For any seizure in a pregnant patient, follow the **OB Emergencies AG**.
- Refusals: Patients with first time or new-onset seizures, history of trauma, history of alcohol abuse, or other medical comorbidities should be strongly encouraged to accept transport to the ED since there are multiple life-threatening conditions that may be present. If refusing transport, these patients should be made aware of the potential for underlying medical conditions.
 - Refer to **Refusal AG**.