



Seizure

History

- Reported / witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy
- Time of seizure onset
- Document number of seizures
- Alcohol use, abuse or abrupt cessation
- Fever

Signs and Symptoms

- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

Differential

- CNS (Head) trauma
- Tumor
- Metabolic, Hepatic, or Renal failure
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications, Non-compliance
- Infection / Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia

Age Appropriate Airway Protocol(s) AR 1, 2, 3, 5, 6 as indicated
Altered Mental Status Protocol UP 4 if indicated
Childbirth/ Labor Protocol AO 1 Obstetrical Emergency Protocol AO 3 if indicated
Behavioral Protocol UP 17, 18, 19 if indicated
Loosen any constrictive clothing Protect patient

Active Seizure Activity

NO

IV / IO Access

NO

P	≥ 49 kg Midazolam 5 - 10 mg IM / IN May repeat in 5 minutes if needed Maximum 20 mg
	< 49 kg Midazolam 0.2 mg/kg IM / IN Maximum single dose 5 mg May repeat in 5 minutes if needed Maximum 10 mg

P	Midazolam 2 – 2.5 mg IV / IO May repeat every 3 to 5 minutes as needed Maximum 10 mg
	Peds: Midazolam 0.2 mg/kg IV / IO Maximum single dose 2.5 mg May repeat every 3 to 5 minutes as needed Maximum 10 mg
P	For seizures refractory to Benzo's: Minimum: Two Benzo Doses Ketamine 1mg/kg IV/IO x 1 Or Levetiracetam (Keppra) 1 gram IV/IO x 1 Peds: 15 mg/kg of mixture over 5 minutes Max 1 gram ** If refractory after 5 minutes give both **

	Blood Glucose Analysis Procedure
	IV or IO Access Protocol UP 6 if indicated
P	Cardiac Monitor if indicated
	Monitor and Reassess

Notify Destination or Contact Medical Control



Seizure

Alternative Seizure Medications

- Lorazepam 1-2 mg IV only (due to long onset)
- May repeat in 3-5 minutes Max Dose 4mg total
- Diazepam 5mg IV / IO Adults, Peds 0.1 - 0.3 mg/kg, Ped Rectal 0.5 mg/kg
- Ketamine 1mg/kg IV / IO x 1 -- use only if allergic to Benzodiazepines OR active seizures greater than 5 minutes refractory to Benzodiazepines – two doses
- Keppra is produced in 100mg/ml vials or several premixed forms – Keppra is safe for rapid infusion over 5 minutes maximum. Rapid infusion is safe and preferred in status epilepticus.

Active seizure in known or suspected pregnancy greater than 20 weeks, administer Magnesium Sulfate 2g IV/IO over 2-3 minutes, may repeat dose x1.

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care.**
- **Brief seizure-like activity can be seen following ventricular fibrillation or ventricular tachycardia associated cardiac arrest.**
- **Status epilepticus is defined by seizure activity lasting > 5 minutes or multiple seizures without return to baseline.**
- **Most seizure activity is brief, lasting only 1 – 2 minutes, and is associated with transient hypoventilation.**
- **Be prepared for airway problems and continued seizures.**
- **Seizure activity may be a marker of closed head injury, especially in the very young, examine for trauma.**
- **Adult:**
 - **Midazolam 10 mg IM is effective in termination of seizures.**
 - **Do not delay IM administration with difficult IV or IO access. IM Preferred over IO.**
- **Pediatrics:**
 - **Midazolam 0.2 mg/kg (Maximum 5 mg) IM is effective in termination of seizures.**
 - **Do not delay IM administration with difficult IV or IO access. IM Preferred over IO.**
- **Do not delay administration of anti-epileptic drugs to check for blood glucose.**
- **Grand mal seizures (generalized)** are associated with loss of consciousness, incontinence, and tongue trauma.
- **Focal seizures** affect only a part of the body and are not usually associated with a loss of consciousness, but can propagate to generalized seizures with loss of consciousness.
- **Be prepared to assist ventilations especially if diazepam or midazolam is used.**
- **For any seizure in a pregnant patient, follow the AO 3 Obstetrical Emergencies Protocol.**
- **Midazolam (Versed) is shown to be as effective with IM route as Lorazepam (Ativan) is via the IV or IO route.**
- **Lorazepam (Ativan) is not as effective when administered IM. IV or IO route is preferred.**
- **Diazepam (Valium) is not effective when administered IM. Give IV or Rectally.**
- **Optimal conditions for patients refusing transport following a seizure:**

Known history of seizures/epilepsy	Seizure not associated with drugs or alcohol
Full recovery to baseline mental status	Only 1 seizure episode in the past hour
No injuries requiring treatment or evaluation	Seizure not associated with pregnancy
Adequate supervision	