

FAST FACTS AND CONCEPTS #229
SEIZURE MANAGEMENT IN THE DYING PATIENT
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Background Seizure management in the dying patient without intravenous (IV) access, such as is in the home environment, is challenging. In this population they can be due to primary or metastatic brain cancers, strokes, toxic/metabolic causes like hypoglycemia, or pre-existing epilepsy. The incidence of seizures in dying patients is unknown, and while likely uncommon, they can cause tremendous distress to patients and families. This *Fast Fact* reviews management strategies for seizures near the end of life.

Seizure Prophylaxis Up to 40% of patients with brain tumors have a seizure at the time of diagnosis and another 20% eventually develop seizures. Although antiepileptic drugs (AEDs) are commonly started as prophylaxis at the time of brain tumor diagnosis, they have not been found to prevent seizures and the American Academy of Neurology Clinical Practice Guidelines do not support this practice (1). Thus, prophylactic AEDs can be safely discontinued in patients with brain tumors who have never had a seizure. For brain tumor patients with a seizure history (especially those with a history of status epilepticus), AEDs should be continued when possible. In one study, tapering AEDs in the last week of life was associated with seizures in 35% of patients with high-grade gliomas. For patients who lose an enteric route and have no intravenous access, rectal administration of prophylactic AEDs is possible. Clinical judgment should be used as to whether to continue AEDs in this setting as it can be appropriate to simply stop them, particularly if the patient's prognosis is very short. Phenobarbital, pentobarbital, carbamazepine, valproic acid, and lamotrigine can all be given rectally. Rectal absorption of other prophylactic AEDs is undefined and they should not be administered. No AEDs need dose adjustments for rectal administration. Carbamazepine should be divided into small doses administered 6-8 times a day. Lamotrigine is administered rectally by crushing and suspending the chewable tablets in 10 mL of water. When clinically indicated, drug levels of lamotrigine should be monitored as rectal absorption is erratic. There is no data for the use of rectal levetiracetam in humans.

Seizure Management

- Single self-limited seizure: Check for treatable causes such as hypoglycemia. If no reversible cause is identified, initiation of maintenance AED therapy should be considered, particularly if the patient is expected to survive more than a few weeks.
- Acute seizure or status epilepticus:
 - Non-IV routes: Studies, mainly in the pediatric population, have shown intranasal (IN) midazolam at a dose of 0.2 mg/kg to be an effective and convenient agent to abort an acute seizure. It has a quick onset of action of only 4-8 minutes and a time to maximal concentration of 15-30 minutes. Rectal diazepam (0.3 mg/kg) used to be the drug of choice for this indication and can be considered, but it has a longer onset of action, is more expensive, and appears to be less preferred by patients compared with IN midazolam. Once the initial seizure is controlled, diazepam 20 mg PR nightly should be considered to reduce the occurrence of further seizure events. Other rectal benzodiazepines are available (clonazepam, lorazepam, and midazolam), but take longer to reach peak serum levels. Sublingual lorazepam is also available, but is not well-studied.
 - IV routes: When available, IV or subcutaneous (SC) benzodiazepines should be used to stop a seizure in progress; IV lorazepam is preferred due to its onset of action and half-life. SC dosing is equivalent to IV for lorazepam, midazolam, and clonazepam. If seizure activity persists, additional anti-epileptic medication should be provided using a loading and then maintenance dose. Patients with refractory seizures who have short prognoses and comfort-oriented goals of care should be considered for an anti-epileptic sedative such as a continuous midazolam or barbiturate infusion with the goal of deep sedation (see *Fast Facts* #106,107).

Parenteral AED Dosing and Routes.

Drug	Status loading dose	Maintenance dose
Diazepam	0.2 mg/kg or 10-20 mg PR	20 mg PR nightly
Lorazepam	0.1 mg/kg IV, IM, or SC	
Midazolam	0.1-0.3 mg/kg IV or SC	Titrate to control refractory seizures if needed

Clonazepam	1 mg IV or SC	
Phenytoin	20 mg/kg IV	4-5 mg/kg/day IV divided TID
Fosphenytoin	20 mg/kg IV or IM	4-5 mg/kg/day IV or IM divided TID
Phenobarbital	10-15 mg/kg	1-3 mg/kg/day IV or IM 1200 mg/day SC (2)

* **Levetiracetam: Doses up to 2,500 mg IV have been used successfully and safely when added to standard status epilepticus regimens. A typical maintenance dose is 500-1500 mg PO or IV BID.**

Family Education Family members should be counseled that all medications used to manage seizures can cause sedation and cardiopulmonary depression. Family members who have witnessed prior seizures often have great fear about seizure recurrence. Many hospice agencies have established seizure protocols and medication kits which can be stored at home, and will collaborate with physicians and families on establishing a 'seizure plan' for acute seizures. Review seizure safety with families, including not putting anything in the patient's mouth and making sure the patient is in a safe environment.

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