Seizures

Introduction
Seizures (generalised or partial) occur most often in 10 to 15% of patients with palliative care needs due to primary or secondary brain tumours, cerebrovascular disease, epilepsy or biochemical abnormalities, for example low sodium, hypercalcaemia or uraemia. 70% of patients with brain tumours have seizures during the course of their illness. An advance care plan is particularly important for people at risk of seizures and may help to avoid unnecessary hospital admission.

Assessment
• Eliminate other causes of loss of consciousness or abnormal limb or facial movement, for example vasovagal episode, postural hypotension, arrhythmia, hypoglycaemia, extrapyramidal side effects from dopamine antagonists.
• Find out if the patient has had previous seizures or is at risk. Exclude history of epilepsy, previous secondary seizure, known cerebral disease and dementia.
• Ensure there are no problems with usual anti-epileptic drug therapy – check patient is able to take oral medication. Drug interactions are common (for example corticosteroids reduce the effect of carbamazepine and phenytoin). Please check the British National Formulary (BNF).

Management
The management advice below is intended for situations where the standard medical protocols are unavailable or not assessed to be in the patient’s best interest.

• Choice of anti-epileptic drug is guided by seizure type, potential for drug interactions and co-morbidities. Consider discussion with epilepsy specialist when identifying seizure type and management plan for patient. The adverse effects and interactions profiles of these medications should be key in deciding management of individuals. Levetiracetam is better tolerated in patients aged 60 years and over.

• Dying patients unable to take oral medication: anti-epileptic drugs have a long half-life, however ongoing management should be considered:
  - † Midazolam\(^1\) 5mg subcutaneously (SC). Buccal midazolam is another option and can be acceptable for patients.

\(^1\)† Indicates this use is off licence
- Midazolam 20mg to 30mg via continuous subcutaneous infusion (CSCI) over 24 hours can be used as maintenance therapy.
- Subcutaneous levetiracetam via CSCI over 24 hours is an option to be considered. Conversion of oral to CSCI of levetiracetam is 1:1.

Seizure management in patients unsuitable for standard medical management

<table>
<thead>
<tr>
<th>Drug</th>
<th>Experience of use in syringe pump</th>
<th>Oral to CSCI conversion</th>
<th>Starting dose for seizures (over 24 hours)</th>
<th>Sedating effect</th>
<th>Guide dose titration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>Extensive</td>
<td>NA</td>
<td>20mg to 30mg</td>
<td>Often</td>
<td>Increase by 5mg to 10mg every 24 hours</td>
</tr>
<tr>
<td>Levetiracetam*</td>
<td>Some</td>
<td>1:1</td>
<td>1g (or equivalent to current oral dose)</td>
<td>No</td>
<td>Increase by 500mg every 2 weeks (max 3g may need 2 syringe pumps)</td>
</tr>
<tr>
<td>Sodium Valproate*</td>
<td>Very limited (specialist advice)</td>
<td>1:1</td>
<td>1g</td>
<td>No</td>
<td>Increase by 200mg every 3 days (max 2.5g)</td>
</tr>
</tbody>
</table>

* Consider reversible causes of seizures and treat if appropriate i.e. Stop/reduce seizure threshold lowering medications. Treat low blood sugar. Poor nutrition or alcohol use may need B vitamin supplement.
**Phenobarbital**

* Extensive (under specialist advice only)
* Not applicable
* 200mg to 400mg (stat bolus of 100mg to 200mg IM/IV may also be needed)
* Yes
* Increase by 200mg every 24 to 48 hours

* Only for use in conjunction with advice from specialist palliative care.

If necessary, a combination of the above medications may be used. Seek advice from specialist palliative care.

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**Practice points**

- **Midazolam** injection is licensed for intravenous (IV), intramuscular (IM) and rectal use but it can also be given (unlicensed) via SC, CSCI, intranasal and buccal routes. There are newer buccal preparations available and these may be easier and maintain more dignity for the patient than rectal diazepam.

- Although first seizures are not usually treated, for those with intracranial tumours, anti-epileptic drugs are normally commenced following first seizure. There is no evidence of benefit of prophylactic anti-epileptic drugs (before any seizure occurs). 30% of patients with primary brain tumours have a seizure in the last week of life.

- Consider commencement of (or review dose of) corticosteroid in those with intracranial tumour and seizure.

- Levetiracetam and lamotrigine do not significantly induce enzymes and will have minimal interactions with other medications such as chemotherapy.

- Monitor effect of medication which can lower seizure threshold such as haloperidol or levomepromazine; review need and dose if there is definite exacerbation of seizure activity as a result.

- In patients with moderate to severe renal impairment defined by a creatinine clearance of <30ml/min/1.73m², consider reducing levetiracetam dose to 250mg twice daily or 500mg/24 hours via syringe pump.

- Seizures are frightening for patients and their families. Educate and address any concerns such as desired management of further seizures, management of risk of seizure recurrence if stopping anti-epileptic drugs, for example due to swallowing difficulties.

- If relevant, it is important to remind patients that anti-epileptic drug treatment would be life-long and that there are implications for driving following seizures.

- **Buccolam®** (midazolam 5mg/ml) is unlicensed for use in adults. **Epistatus®** (midazolam 10mg/ml) is unlicensed for use in adults. Check local policy for product choice.

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\(^2\) Indicates this medication is associated with QT prolongation

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References


