

## 1. Introduction

- A convulsion (seizure, fit) results from abnormal electrical activity in the brain and can occur for many reasons (including meningitis).
- A convulsion can be triggered by fever, but a febrile convulsion is not epilepsy. A child having convulsions that are not triggered by fever requires further investigation.
- Convulsions may also be triggered by other brain insults e.g. infection, head injury, hypoxia, hypoglycaemia or electrolyte imbalance. Occasionally, hypertension can cause convulsions (even in children).
- Cardiac arrest can occasionally present with a convulsion.
- Generalised convulsive (tonic–clonic) status epilepticus (CSE) is defined as a generalised convulsion lasting at least 30 minutes or a series of convulsions that occur so frequently over 30 minutes that the patient does not recover consciousness between them.

## 2. Incidence

- 1 in 200 people have active epilepsy. It is twice as common in children as in adults. It may be related to another underlying condition.
- Febrile convulsions are seen in children aged from 6 months to 6 years. They occur in 1 in 20 children and most occur in the first 3 years of life; 1 in 20 febrile convulsions presents with CSE.
- Convulsive status epilepticus is the commonest medical neurological emergency in children. It is seen in 1 in 20 epileptic children.

## 3. Severity and Outcome

### Febrile convulsions

- Simple febrile convulsions have an excellent prognosis – two-thirds of children will only have one isolated febrile convulsion. The remaining third have further febrile convulsions during subsequent febrile illnesses.

### Convulsive Status Epilepticus

- CSE carries a significant morbidity and mortality, which may be related to seizure duration. Neurological consequences include epilepsy, motor deficits, learning difficulties, and behavioural problems. Adverse neurological outcomes are more common in younger children.
- CSE can be fatal, but mortality in children (about 4%) is lower than that in adults.

## 4. Assessment (refer to Table 3.80)

- Correct hypoxia and seek the underlying cause for the seizure.
- Record the events that immediately preceded the convulsion including a history of head injury and any serious past medical history.
- If the child is febrile, this should be documented and if the child was unwell prior to the event, this should also be noted.

- When managing a child with a febrile convulsion, it is crucially important to identify the underlying infection to explain the cause for the child's fever (although this must not delay immediate treatment priorities or hospital transport).
- In any child with a convulsion (especially if they have fever), it is important to look for the typical rash of meningococcal septicaemia (and treat appropriately if present). Also remember that meningitis can present with seizures so signs of this should be sought if the child is well enough (i.e. stopped fitting).

## 5. Management

(refer to Table 3.80 and Figures 3.19–3.20)

- This follows ABCD priorities, treating the convulsion once ABC issues have been addressed. Often it is safest to treat the convulsion before moving the child, although if the seizure has not rapidly stopped after one dose of anticonvulsant the child will have to be moved while still convulsing.
- Manage airway, breathing and circulation as usual (also remember to measure the blood glucose as hypoglycaemia can cause seizures). An oropharyngeal airway may be helpful to maintain airway patency (alternatively, if the jaw is clenched a nasopharyngeal tube may prove useful). Administer oxygen and treat shock in the usual way. Oxygen saturation monitoring should be applied.
- Most convulsions stop spontaneously.
- Anticonvulsant treatment should be given if the convulsion lasts more than 5 minutes as it may not stop spontaneously. Prehospital treatments include **buccal midazolam** and **diazepam** (both rectal and intravenous preparations). Buccal midazolam is twice as effective as rectal diazepam but often diazepam is the only drug available. Both drugs can cause respiratory depression. (Do not delay the first dose of anticonvulsant medication whilst attempting venous access i.e. use either the buccal or rectal routes.)
- If the convulsion is continuing 10 minutes after the first dose of medication has been given, a second dose of anticonvulsant can be given. This must, however, be given intravenously or intra-osseously – not buccally or rectally e.g. **diazepam IV/IO** (refer to **diazepam guideline**). (This also applies if a carer has given the first dose of medication before the clinician arrives on scene.)

### Hospital transfer

- Pre-alert the hospital if the child continues to fit during the journey or appears to be otherwise very unwell.
- All children having their first convulsion should be transported to hospital for investigation.
- If the child has fully recovered and is a known epileptic it may not be necessary to take them to hospital.

## Methodology

For details of the methodology used in the development of this guideline refer to the guideline webpage.