

INTRODUCTION

A convulsion or seizure is a period of involuntary muscular contraction, often followed by a period of lethargy and confusion and sometimes profound sleep. The commonest presentation to ambulance services is the tonic/clonic seizure, previously known as 'grand mal'.

Eclamptic convulsions are specific to pregnancy and often associated with pre-eclampsia (raised blood pressure with proteinuria). One third of cases occur for the first time in the first 48 hours after delivery (*refer to pregnancy induced hypertension (including eclampsia) guideline*).

Convulsions can occur for various reasons, including:

Epilepsy:	In pre-hospital care, the majority of episodes attended are convulsions occurring in patients known to have epilepsy. These patients are usually on anti-epileptic medication, (e.g. phenytoin, sodium valproate (Epilim), carbamazepine (Tegretol), and lamotrigine (Lamictal). Urinary incontinence and tongue biting often accompany a full epileptic convulsion (tonic/clonic).
Febrile	The other most common
Convulsions:	ambulance emergency involving convulsions is febrile convulsions. These tend to occur in children.
Cardiac Arrest:	REMEMBER , as a convulsion occurs, the brain is acutely starved of oxygen (O ₂). A convulsion may be the presenting sign of circulatory arrest at the onset of sudden CARDIAC ARREST. Always take a defibrillator to patients who are convulsing.
Hypoglycaemia:	Convulsions may be a presenting sign of HYPOGLYCAEMIA and should be considered in ALL patients, especially known diabetics. An early blood glucose level reading is essential in all actively convulsing patients (including known epileptics).

Hypoxia:

Any patient suffering from hypoxia, regardless of cause, may convulse. The cause may be very simple which is why good A and B maintenance is important prior to drug therapy.

Hypotension:

Severe hypotension can trigger a convulsion. This may be seen with syncope or a vasovagal attack where the patient remains propped up. In these instances there will usually be a clear precipitating event and no prior history of epilepsy. Once the patient lies flat and the blood pressure is restored the convulsion may stop.

There are a significant number of other causes of convulsions and these include:

- infection
- cerebral tumour
- electrolyte imbalance
- drug overdose.

It is important not to label a patient as epileptic unless there is a known diagnosis.

HISTORY

Is the patient known to be epileptic?

If so, are they on medication, and are they taking it?

Have they had convulsions recently?

Has the adult patient been unwell at present? Have they had a high temperature?

Is the patient **DIABETIC** (could this be secondary to hypoglycaemia)?

Is the patient pregnant or delivered in the last 48-hours? – could this be due to eclampsia? (*refer to pregnancy induced hypertension (including eclampsia) guideline*).

Is there any history of head injury?

Is there any evidence of alcoholism or drug usage? Convulsions are more common in alcoholics, and associated with hypoglycaemia and can be triggered by a number of prescription or illegal drugs (e.g. tricyclic antidepressants).

ASSESSMENT

Assess **ABCD's**

Check blood glucose level.

Evaluate whether there are any TIME CRITICAL features present: These may include:

- any major ABCD problems
- serious head injury
- status epilepticus (*see below*)
- underlying infection, e.g. meningococcal septicaemia (*refer to benzylpenicillin drug protocol*).

If any of these features are present, **CORRECT A AND B PROBLEMS ON SCENE THEN COMMENCE TRANSFER** to nearest suitable receiving hospital – in these cases the ease and safety with which the patient can be moved whilst still convulsing should be considered and treatment may need to begin in situ.

Provide a **Hospital Alert Message / Information call**.

En-route continue patient **MANAGEMENT** (*see below*).

If no **TIME CRITICAL** problems are present, perform a more thorough assessment and a brief secondary survey.

Is there any sign of **ARRHYTHMIA** in an elderly patient (*refer to cardiac rhythm disturbance guideline*)? (e.g. a burst of rapid ventricular tachycardia may drop the blood pressure, and cause transient cerebral **HYPOXIA**, giving rise to a convulsion).

Assess type of convulsion, if still convulsing; is this a generalised convulsion, or a focal fit?

Assess for raised temperature (patient may feel hot after a convulsion) and any sign of a rash i.e. possible meningococcal septicaemia (*refer to meningococcal septicaemia guideline*).

Assess for mouth/tongue injury, incontinence.

MANAGEMENT

Follow **medical emergencies guideline**, remembering to:

Start correcting:

- **AIRWAY**
- **BREATHING**
- **CIRCULATION**
- **DISABILITY** (mini neurological examination)

- administer high concentration oxygen (O₂) (*refer to oxygen protocol for administration and information*) via a non-re-breathing mask, using the stoma in laryngectomee and other neck breathing patients, to ensure an oxygen saturation (SpO₂) of >95%, except in patients with chronic obstructive pulmonary disease (COPD) (*refer to COPD guideline*). All patients who are convulsing, post ictal or have a convulsion secondary to a head injury (*refer to head trauma guideline*) (even if they appear fully recovered) should receive high concentration O₂
- establish if any treatment e.g. rectal diazepam has already been administered
- obtain IV access if convulsion persists or recurs.

Specifically consider:

- position for airway security, comfort and protection from dangers, especially the head
- **DO NOT** attempt to force an oropharyngeal airway into a convulsing patient. A nasopharyngeal airway is a useful adjunct in such patients
- apply ECG and pulse oximetry and monitor especially in the elderly
- check **BLOOD GLUCOSE LEVEL** to exclude hypoglycaemia. If blood glucose <4.0mmol/l or hypoglycaemia is clinically suspected, give oral glucose, glucose 10% IV titrated to response or **glucagon IM** (*refer to glucose 10% and glucagon protocols for dosage and administration*)
- most tonic/clonic convulsions are self-limiting and do not require drug treatment. However, if a patient convulses repeatedly in close succession or has one convulsion lasting >5 minutes then administer **diazepam** IV titrated to response. **Stesolid** may be given when IV access cannot be obtained (*refer to diazepam protocol for dosage and administration*)
- if the patient can be moved, despite the convulsing, it is important to reach hospital for definitive care as rapidly as possible
- **CORRECT A AND B PROBLEMS ON SCENE THEN COMMENCE TRANSFER IMMEDIATELY TO NEAREST SUITABLE HOSPITAL**
- provide a **Hospital Alert Message / Information Call**.

ADDITIONAL INFORMATION

Post ictal

This is the term given to patients who have had a convulsion but who are now in the recovery phase. Convulsions are extremely disorientating, even for epileptics who may suffer them regularly. It is not uncommon for patients to act out of character when in the post ictal state. This may include verbal or physical aggression. Oxygen therapy and a calm approach are important. Remember, when the patient recovers they may be a completely different person.

Status Epilepticus

Patients with persistent and continual convulsions are in **STATUS EPILEPTICUS**, and need aggressive ABC care and rapid transfer to hospital. Intravenous diazepam, 10mg should be given by slow IV injection. Stesolid may be given where appropriate (**refer to diazepam protocol for dosage and administration**). **This is a medical emergency and patients must be removed to hospital as rapidly as possible.**

Epilepsy

A number of patients with diagnosed epilepsy, who have repeated convulsions and a well documented history of this, may present regularly to the Ambulance Service.

If they are **fully recovered and not at risk**, and **in the care of a responsible adult**, consideration may be given to not transferring patients routinely to hospital unless they wish to travel. These cases must have vital signs recorded along with the explanation given to the patient. Patients and the responsible adult should be advised to contact either the General Practitioner (GP) if the patient feels generally unwell or 999 if there are repeated convulsions.

The reasons for the decision not to transfer to further care must be documented, and must be signed by the patient and/or carer. Ensure contact is made with the patient's GP particularly in cases where the patient has made repeated calls.

There are many causes of convulsions as outlined above and you should remember to consider them in other settings, such as in a road traffic collision (RTC) with a driver who has "blacked out", consider whether the accident may be related to a convulsion.

It is important, wherever possible, to obtain contact details of any witnesses to a convulsion in the above circumstances and pass this to the receiving hospital.

Key Points – Convulsions in adults

- Most tonic/clonic convulsions are self-limiting and do not require drug treatment.
- Convulsions may be secondary to other medical conditions e.g. hypoxia, hypoglycaemia.
- Administer drugs if convulsion lasts longer than 5 minutes.
- Consider eclampsia as a cause of the convulsion.
- Only patients with known epilepsy who make a full recovery and can be supervised adequately can be considered to be left at home.

METHODOLOGY

Refer to methodology section.