

Treatment of Convulsive Status Epilepticus in Adults

(16 years and over)

Status Epilepticus (SE); a life-threatening medical emergency, defined as tonic-clonic seizures

- lasting ≥ 5 minutes
- 2 or more seizures without return to consciousness
- 3 or more tonic-clonic seizures within a 1-hour timeframe

Initial management

- Maintain airway, resuscitate and administer oxygen
- Assess cardio-respiratory function
- Institute regular monitoring:
 - Neurological observations + BP, T, HR, SaO₂, BMs
- Establish IV access in largest vein possible
- **Start treatment without delay – most common causes of treatment failure are underdosing and delays to treatment initiation**

Manage hypoglycaemia:

Give 150-200mL 10% glucose IV stat

If blood-glucose remains <4 mmol/L commence 10% glucose infusion at 100mL/hour

If suspected alcohol excess or malnutrition, give 1 pair Pabrinex IV

5-10 minutes: Initial treatment

Action: Start benzodiazepine treatment ASAP – DO NOT DELAY

If patient has reduced respiratory rate, is hypoxic or cyanosed call MET team (#2222) immediately

IV access

Lorazepam 4mg IV bolus
2mg STAT + 2mg PRN may be appropriate in frailty and renal impairment on advice of consultant
Monitor and give 2nd dose after 10 minutes if seizures continue

IV access – Lorazepam shortage

Diazepam 10mg slow IV injection
Maximum rate of injection 1mL (5mg) per minute
Diazepam IV is available as solution and emulsion – dose and rate of injection are equivalent*
Monitor and give 2nd dose after 5 minutes if seizures continue

No IV access

Diazepam 10mg PR, or
Midazolam 10mg buccal, or
Midazolam 10mg IM (ITU only)
Monitor and give 2nd dose after 10 minutes if seizures continue

- Consider whether any pre-admission benzodiazepines have been given (if seizure occurred out of hospital)

10-30 minutes: Established status epilepticus – risk of long-term brain damage

Action: Call MET team (2222) - Start emergency IV anti-epileptic drug (AED) therapy ASAP

Both sodium valproate and levetiracetam are unlicensed, but are non-inferior in terms of efficacy and safety compared to phenytoin, and have practical advantages. For further guidance regarding drug choice, see table overleaf.

- Treatment options:
 - Levetiracetam 60mg/kg IV infusion (max 4500mg)
 - Sodium valproate 40mg/kg IV infusion (max 3000mg)
 - Phenytoin 20mg/kg IV infusion (max 2000mg)

Inform anaesthetist/request airway support if patient is still in Status Epilepticus after 50% of infusion has been administered

Investigations (after IV meds started):

ABG, FBC, U&Es, LFTs, Ca²⁺, Mg²⁺, clotting screen, anti-epileptic drug serum levels
Continuous ECG monitoring required for PHY infusion

30 minutes onwards:

If seizure resolves:

Actions checklist:

- **Reinstate existing anti-epileptic medication (via PO/IV/NG route)**
 - Ward/on-call pharmacist or on-call neurologist can advise if alternative formulations or route of administration is required
- Monitor neurological observations and GCS every 30 minutes and if patient does not regain consciousness within 1-2 hours, call for senior help
 - Continue neurological observations 4-hourly for the next 12 hours
- Establish aetiology, identify and treat medical complications

If seizure continues:

Transfer to HDU/ ITU

Choice of IV anti-epileptic drug therapy guidance

Drug	Dose and administration	Preferred if:	Avoid if:
Levetiracetam	<p>Dose: 60mg/kg Max dose: 4500mg* Max rate: 6mg/kg/min</p> <p>Preparation: Dilute required dose in at least 100mL sodium chloride 0.9%</p>	<p>Polypharmacy – no drug:drug interactions Hepatic impairment</p>	<p>Confirmed history of severe mood or behavioural disorder *Maximum dose reduced in renal impairment:</p> <ul style="list-style-type: none"> • CrCl 50-79mL/min - max dose 2000mg • CrCl 30-49mL/min – max dose 1500mg • CrCl <30mL/min – max dose 1000mg
Sodium Valproate	<p>Dose: 40mg/kg Max dose: 3000mg Max rate: 10mg/kg/min</p> <p>Preparation: Dilute required dose in at least 50mL of sodium chloride 0.9% or glucose 5%</p>	<p>Known/suspected idiopathic generalised epilepsy syndrome History of severe mood or behavioural disorder</p>	<p>Women of childbearing potential (sodium valproate is highly teratogenic) – seek immediate senior help and/or contact neurologist on-call for advice if levetiracetam and phenytoin are also contra-indicated</p> <p>Liver disease or pancreatitis is present Known or suspected metabolic/mitochondrial disorders Consider potential for drug interactions (CYP-enzyme inhibitor)</p>
Phenytoin	<p>Dose: 20mg/kg Max dose: 2000mg Max rate: 1mg/kg/min up to a max of 50mg/min</p> <p>Preparation: Dilute in sodium chloride 0.9% to a concentration of 5-10mg/mL and give through an in-line filter (0.2-0.5 micron)</p>	<p>Previous response to treatment with phenytoin for status epilepticus</p>	<p>Co-morbid cardiovascular disease Hypotension/bradycardia/heart block Known/suspected idiopathic generalised epilepsy syndrome Known or suspected recreational drug overdose or alcohol withdrawal seizures are present No access to large vein (extravasation risk and potential for severe tissue injury) High risk for drug interactions (CYP-enzyme inducer)</p>
Lacosamide	<p>Dose: 200-400mg Max dose: 400mg* Max rate: 200mg over 15-30 minutes, 400mg over 30-60 minutes</p> <p>Preparation: May be administered undiluted or diluted in any suitable volume of sodium chloride 0.9% or glucose 5%.</p>	<p>May only be considered on the advice of a neurologist if all other options are unsuitable</p>	<p>Known 2nd/3rd-degree atrioventricular block Caution in severe cardiac disease or history of arrhythmias No access to large vein/central line</p>
Phenobarbital	<p>Dose: 10mg/kg Max dose: 1g Max rate: 100mg/minute</p> <p>Preparation: Dilute each 1mL to 10mL with sodium chloride 0.9% or glucose 5%</p>	<p>May only be considered on the advice of the critical care team in cases of suspected drug overdose</p>	<p>Acute intermittent porphyria Severe renal or hepatic impairment Severe respiratory depression High risk for drug interactions (CYP-enzyme inducer) No access to large vein/central line</p>

Neurology SpR / consultant on-call can be contacted through PRH switchboard (01444 441881).

Detailed clinical information for the diagnosis and management of Status Epilepticus can be found via BMJ best practice (<https://bestpractice.bmj.com/topics/en-gb/3000127>)