Protocol for management of inpatient status epilepticus in adults

Convulsive status epilepticus

Status epilepticus is a life threatening medical emergency.

Treatment of suspected status epilepticus should be started immediately and not deferred or delayed for investigations, including EEG.

Status epilepticus is defined as: "A single seizure or serial seizures lasting more than 5 minutes, or two or more seizures without a return of consciousness between seizures"

Immediately:

Secure airway
Give oxygen
Assess cardiac and respiratory function
Secure IV access and fluid resuscitate if necessary
If hypoglycaemia is suspected – give 50ml 50% glucose immediately

Initial treatment:

Administer benzodiazepine either as:

- Lorazepam 4mg IV or
- Epistatus (Midazolam) 10mg buccally or intranasally if lorazepam is not available or IV access isn't possible or
- Diazepam 10mg IV if Epistatus (midazolam) or lorazepam are unavailable

If patient has not had a previous dose within 12 hours, dose can be repeated after 5 minutes if no response.

Other treatment:
If seizures persist, administer loading dose of antiepileptic drug intravenously.

Within 30 minutes:

First choice:

- Levetiracetam 60mg/kg (max dose 4500mg) over 10 minutes unless known severe renal failure (eGFR known to be less than 30 mL/min/1.73m^2 - see special circumstances below)

Second choice:

- Sodium valproate 40mg/kg (max dose 3000mg) IV over 10 minutes if ECG monitoring or phenytoin is not available. First choice in known severe renal failure. Use alternative where possible in pregnancy, acute liver failure or if there are concerns about mitochondrial disease.

OR

- Phenytoin 20mg/kg IV (max dose 2000mg) at max rate of 50mg/min. Infuse into a large vein with ECG and blood pressure monitoring due to risk of

hypotension and bradycardia. Use with caution in elderly and patients with cardiac disease (may reduce rate to 25mg/min or lower)

Special circumstances:

1. **Patient already prescribed levetiracetam**: Levetiracetam can be used as the first choice anticonvulsant drug,even if the patient was already prescribed levetiracetam prior to admission.
2. **Pregnancy**: Levetiracetam is the preferred drug in pregnancy. Avoid sodium valproate where possible (risk of teratogenicity).
3. **Known severe renal failure**: Where eGFR is known to be less than 30ml/min/1.73m², then sodium valproate should be used as first choice drug. No dose adjustment is required. Do not delay treatment to wait for blood results. Levetiracetam is an appropriate second line option (no dose adjustment) but the maintenance dose should be reduced (see below).
4. **Older people (and extremes of weight)**: Use creatinine clearance (Cockcroft-Gault) to calculate renal function instead of eGFR.

Beyond 30 minutes:
If status persists, then within 60 minutes:
Admit to ITU and administer general anaesthesia
Seek specialist advice

If impaired nutritional status or alcohol abuse is suspected, give IV thiamine (Pabrinex IV High Potency injection (ampoules I and II))

Investigations:

- Check full blood count, renal function, liver function, glucose, clotting, and store blood samples for anticonvulsant drug levels (e.g. phenytoin) for later analysis if required. See phenytoin monitoring guide for further information.
- Check blood gases
- Establish aetiology

Maintenance doses of anticonvulsant drugs:

- Levetiracetam: 1000-1500mg IV, oral or NG twice daily. Start 10-12 hours after loading dose.

  Maintenance dose of levetiracetam in known renal impairment:

eGFR	Dose
50-79ml/min	1000mg twice daily
30-49ml/min	750mg twice daily
<30ml/min	500mg twice daily

  If on dialysis seek advice from Renal Team. Could give 750mg daily dose. Levetiracetam is removed by HD and HDF.
- Phenytoin: 300mg IV once daily, or 100mg IV three times per day or 300mg oral capsules once daily. Prescribe 270mg once daily if using oral liquid. Start 6-8 hours after loading dose. See phenytoin monitoring guide for further information.
- Sodium valproate: 1000-1200mg IV, oral or NG twice daily. Start at least 6 hours after loading dose. **Maintenance doses of sodium valproate must not be started in women of childbearing age unless a Pregnancy Prevention Programme is in place – contact Neurology Specialist Nurse for advice**.

Non-convulsive status epilepticus

Non-convulsive status epilepticus should be considered in the following situations:
Recent risk factors for seizures or status epilepticus
Remote risk factors- poorly controlled seizures, previous status epilepticus
Tonic–clonic activity
History of epilepsy
Abnormalities of ocular-movement
Subtle motor activity

EEG recording is the best method of confirming the diagnosis and assessing treatment response when seizures are clinically subtle as occurs in non-convulsive status. However, non-availability of EEG should not delay diagnosis or treatment.

Immediately:

Secure airway
Give oxygen
Assess cardiac and respiratory function
Secure IV access and fluid resuscitate if necessary
If hypoglycaemia is suspected – give 50ml 50% glucose immediately

Initial treatment:

Maintain or reinstate usual anti-convulsant drug treatment
Consider benzodiazepine either as:

- Lorazepam 4mg IV or
- Epistatus (Midazolam) 10mg buccally or intranasally if lorazepam is not available or IV access isn't possible or
- Diazepam 10mg IV if Epistatus (midazolam) or lorazepam are unavailable

If patient has not had a previous dose within 12 hours, dose can be repeated after 5 minutes if no response.
Refer for specialist advice on further management.

References

1. Neligan A, Shorvon SD. Prognostic factors, morbidity and mortality in tonic-clonic status epilepticus: A review. Epilepsy Res 2011 Jan 1; 93 (1): 1-10.
2. Kapur J, Elm J, Chamberlain JM, Barsan W, Cloyd J, Lowenstein D et al. Randomised trial of three anticonvulsant medications for Status Epilepticus. N Engl J Med 2019 28; 381 (22): 2103-13.
3. CRC Press Taylor & Francis Group. The Renal Drug Database. Available from https://renaldrugdatabase.com/

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