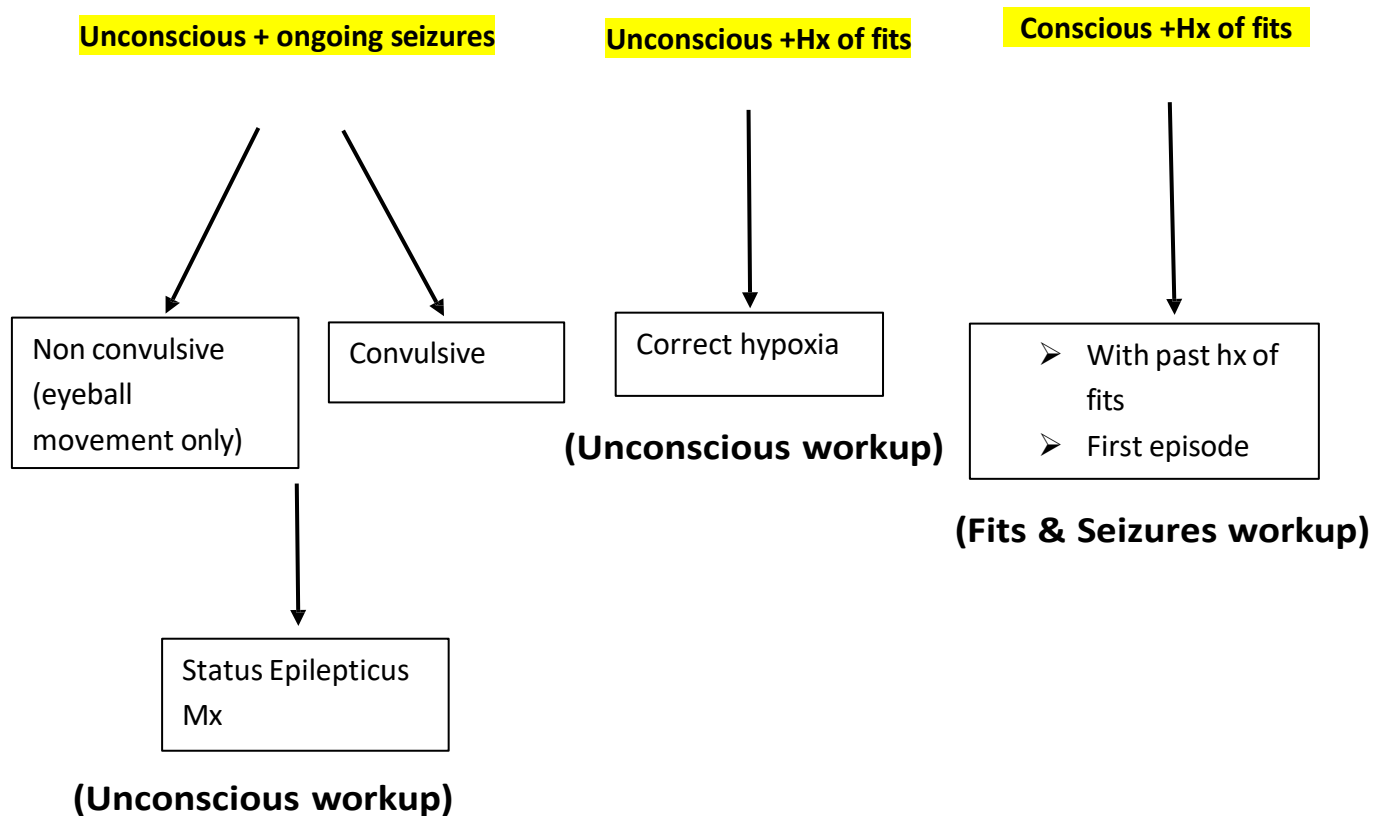


Fits and Seizures

Follow the basic acute care workup

1. Triage and Re-traige
2. Initial stabilization
 - A- patent airway
 - B- Look, Listen, Feel- RR, SpO2
 - C- PR, BP, CRFT- IV canula, ECG
 - D- AVPU/GCS, Blood sugars
 - E-Rashes, Temperature
3. Focused History
4. Focused Examination
5. Focused investigations
6. Management and disposition plan



Acute management of ongoing seizures (1)

After >5 minutes seizure activity (adult)

- Treat the cause
- Obtain IV access
- Start benzodiazepine

IV Midazolam 10mg/ IV Diazepam 10mg



Fits settled

- Loading antiepileptics

IV levetiracetam 60 mg/kg up to 4500 mg

Or

IV sodium valproate 40 mg/kg up to 3000 mg

Or

IV phenytoin sodium 20 mg/kg

Fits not settled



Status epilepticus algorithm

Causes

metabolic disorders

- hypoglycaemia
- hyponatraemia
- hypocalcaemia
- kidney failure

intoxication with some drugs or poisons

drug or alcohol withdrawal

stroke (ischaemic or haemorrhagic)

brain trauma (including neurosurgery)

intracranial infection

- meningitis (nonviral)
- encephalitis
- cerebral abscess

autoimmune encephalitis

hypertensive encephalopathy

severe cerebral hypoxia (eg cardiac arrest)

eclampsia

Immediate follow up after seizure (1)

no history of previous seizures	has a history of previous seizures but is not being treated with an antiepileptic drug	has a history of previous seizures and is being treated with an antiepileptic drug
take a detailed history from the patient and witnesses to classify the seizure and explore causes. If not already done, check the blood glucose concentration and send blood for a full	investigate as above unless the results of previous investigations are known. Antiepileptic drug therapy is usually required	explore common seizure triggers (eg sleep deprivation, febrile illness, non concordance with therapy). Measure the plasma concentration of

biochemical panel and blood count. Consider performing a urine drug screen. Perform computed tomography. Perform a lumbar puncture if intracranial infection is suspected. If an acute treatable cause is suspected, see acute symptomatic seizures. If an acute treatable cause is not found, suspect epilepsy.		antiepileptic drug(s) if this is readily available.
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First ever seizure (2)

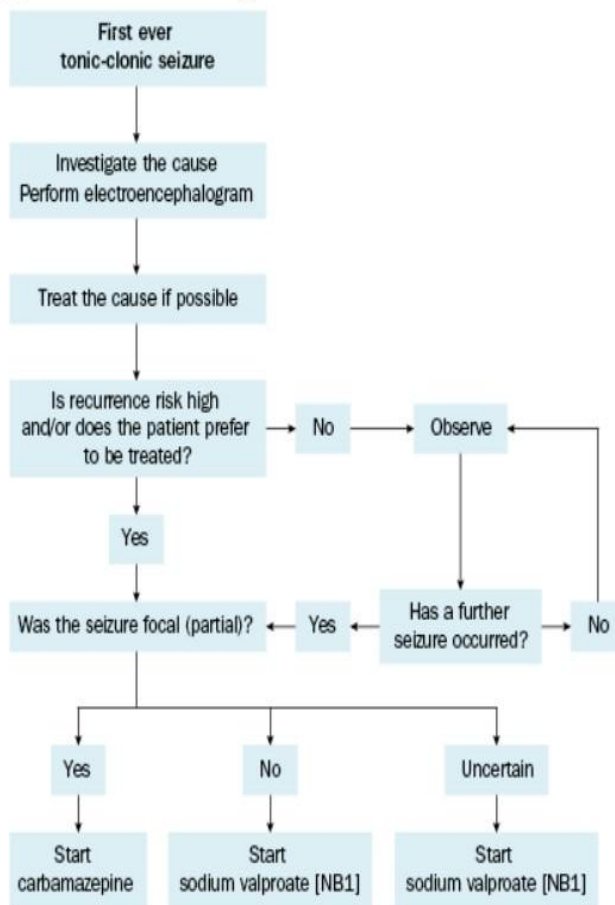
Evaluate the potential cause of the seizure.

- CNS:
 - Infections - meningitis, encephalitis
 - Strokes (bleed, embolism, thrombosis)
 - Traumatic ICH
 - Space occupying lesions
 - Encephalopathies – Uraemic, hepatic, hypertensive
- Metabolic: Disorders of glucose, sodium, calcium, tonicity (hyper/hypo), acid base
- Withdrawal states – alcohol, benzodiazepine, barbiturate
- Toxins – TCA, propranolol, theophylline, anticonvulsants, tramadol, organophosphates
- Illicit drugs – cocaine, MDMA, other stimulants
- Environmental – hyperthermia/heatstroke

Investigations- BSL; CT brain + /- contrast; ECG (note QT interval); FBE; U&E(full electrolyte panel including Mg); LFT

Management (3)

Figure 7.4 Initial management of tonic-clonic seizures



NB1: If possible, avoid sodium valproate in females of childbearing potential. If sodium valproate is the drug of choice, ensure reliable contraception (see [advice](#)).

Generalized tonic clonic (3)

Adults/ females with contraception- sodium valproate 500 mg orally, once daily for 1 week, then increase to initial target dose of 500 mg twice daily. If needed, increase up to 1500 mg twice daily.

Females without contraception- levetiracetam 250 mg orally, twice daily for 1 week, then increase to initial target dose of 500 mg twice daily. If needed, increase by 500 mg daily up to 1500 mg twice daily.

Children- sodium valproate , child older than 2 years, 5 mg/kg orally, twice daily for 5 days, then increase to 10 mg/kg twice daily; usual maintenance dose 10 to 20 mg/kg twice daily; maximum 2500 mg daily.

Focal seizures (3)

Adult- carbamazepine modified-release 100 mg orally, at night for 1 to 2 weeks, then every week increase the daily dose by 100 to 200 mg to initial target dose of 200 mg twice daily. If needed, increase up to 600 mg twice daily

Children - carbamazepine (preferably modified-release) 2.5 mg/kg orally, twice daily for 5 days, then increase to initial target dose of 5 mg/kg twice daily. If needed, increase up to 10 mg/kg twice daily

Note- loading dose of phenytoin/phenobarbital following initial management is beneficial to prevent further seizure attacks

Febrile fits – last more than 5 minutes (3)

midazolam 0.2 to 0.3 mg/kg (up to 10 mg) buccally or intranasally. Repeat once 10 minutes later if the seizure continues

OR

midazolam 0.15 to 0.2 mg/kg (up to 10 mg) intramuscularly. Repeat once 10 minutes later if the seizure continues

Disposition (2)

Admit if:

- Multiple seizures or status epilepticus
- Prolonged post ictal confusion, or focal neurological deficit
- Investigations reveal underlying condition that requires treatment

Discharge if:

- Patient has normal physical examination and investigation results and is observed for a period of time determined by a senior ED staff determined by circumstances.
 - ❖ Arrange specialist referral/ neurology clinic before discharge

Known patient with seizures with recurrent fits

Evaluate the precipitating factors (3)

- poor concordance with antiepileptic drug therapy or lifestyle advice
- wrong diagnosis of epilepsy (eg psychogenic nonepileptic events, convulsive syncope)
- wrong diagnosis of epilepsy syndrome (focal seizures mistaken for generalised seizures, or vice versa)

- suboptimal choice or use of antiepileptic drug
- drug-resistant epilepsy

Management – as above depending on the epilepsy type

Disposition

Known patient with epilepsy and known precipitating factors – can discharge, increase routine antiepileptic dosage, advice on avoiding triggers

All others- admit for further evaluation

Fits/Seizures

Indications for admission

1. Admit all patients with status epilepticus
2. History of seizure and presenting with unconsciousness → observe until fully awake and if the cause of unconsciousness is likely to be post-ictal phase, consider discharge with seizure workup.
3. Patient with history of seizure but now conscious, follow seizure workup.

Patients presenting with first seizure/ new onset seizures

1. Presentation with status epilepticus
2. History/examination or investigations reveal underlying condition that requires treatment (eg. CNS infection, intracranial lesions, electrolyte imbalances)
3. Pregnant patients
4. New focal neurological abnormality
5. Prolonged post ictal confusion, or focal neurological deficit
6. Social circumstances preventing reliable observation at home/ difficult access to hospital/ living alone.

Known patient with epilepsy presenting with breakthrough fits

1. Presentation with status epilepticus
2. Wrong diagnosis of epilepsy syndrome (focal seizures mistaken for generalised seizures, or vice versa)
3. Seizure precipitant requiring treatment (eg: CNS infection, intracranial lesions, electrolyte imbalances) or unidentified cause
4. Different semiology to previous seizures.
5. Social circumstances preventing reliable observation at home/ difficult access to hospital/ living alone.

Discharge from ED

Note- arrange neurology followup prior to discharge

Patients presenting with first seizure/ new onset seizures

Note- Usually will require admission as complete initial workup difficult in the ED setting

1. Patient with normal basic investigations including electrolytes, basic imaging and normal neurology
2. Seizure secondary to a reversible cause(ex: Hypoglycemia if blood sugar has stabilized)

Known patient with epilepsy presenting with breakthrough fits

1. Clear precipitant; eg: missed drug dose/ sleep deprivation
2. Wrong diagnosis of epilepsy ; eg: Psychogenic non epileptic attack disorder/convulsive syncope