EPILEPSY

Epilepsy is a chronic noncommunicable disorder of the brain, characterized by recurrent unprovoked seizures. Epilepsy is one of the most common neurological disorders and with proper treatment, can be well controlled in the majority of people.

Epilepsy has many causes. It may be genetic. Epilepsy may occur in people who have a past history of birth trauma, brain injury (including head trauma and strokes), or brain infections. In some people, no cause may be identified.

Seizures are caused by abnormal electrical activity in the brain and are of two types: convulsive and non-convulsive. Non-convulsive epilepsy has features such as change in mental status while convulsive epilepsy has features such as sudden abnormal movements, including stiffening and shaking of the body. The latter is associated with greater stigma and higher morbidity and mortality. This module covers only convulsive epilepsy.

EPI » Quick Overview

Acute presentation of seizures/convulsions warrants emergency treatment & management

ASSESSMENT

- **EMERGENCY:** **Assessment & management of acute convulsions**
- **Assess if person has convulsive seizures**
- **Assess for an acute cause (e.g. neuroinfection, trauma, etc.)**
- **Assess if the person has epilepsy and for any underlying causes (by history or examination)**
- **Assess for concurrent priority MNS conditions**

MANAGEMENT

- **Management Protocol and Special Populations**
  1. Epilepsy
  2. Special Populations (women of childbearing age, children/adolescents, and people living with HIV)
- **Psychosocial Interventions**
- **Pharmacological Interventions**

FOLLOW-UP

EPI » EMERGENCY

PERSON PRESENTS WITH CONVULSION OR IS UNRESPONSIVE AND STIFF

CLINICAL TIP:
Assessment and management should occur simultaneously.

1

Any sign of head or neck injury?

NO

YES

» **KEEP HEAD AND NECK STABLE**

2

- » **Check AIRWAY, BREATHING, CIRCULATION (ABCs)**
  Ensure the person has nothing in their airway, is breathing well and has a stable pulse
- » **Check BLOOD PRESSURE, TEMPERATURE and RESPIRATORY RATE**
- » **Start timing the duration of the convulsions, if possible**
- » **Make sure the person is in a safe place and if possible, put them down on their side to help breathing;** loosen any neckties or clothing around the neck, take off eye glasses, and place something soft under the head (if available)
- » **Place an intravenous (i.v.) line for medication/ fluid administration if possible**
- » **DO NOT LEAVE THE PERSON ALONE**
- » **DO NOT PUT ANYTHING IN THE MOUTH**
- » **FOR A PERSON WITH POSSIBLE HEAD INJURY, NEUROINFECTION (FEVER) OR FOCAL DEFICITS, REFER URGENTLY TO HOSPITAL**

3 SPECIAL POPULATION: Pregnancy/Post-partum

Is the woman in the second half of pregnancy OR up to 1 week post partum AND has no past history of epilepsy?

YES

SUSPECT ECLAMPSIA

- » Give **magnesium sulphate** 10 g intramuscular (i.m.)
- » If diastolic **blood pressure >110 mmHg**, give **hydralazine** 5 mg i.v. slowly (3-4 min).
  Repeat every 30 min until ≤ 90 mmHg;
  Do not give more than 20 mg total
- » **REFER URGENTLY TO HOSPITAL**

NO

4

» GIVE MEDICATION TO STOP CONVULSIONS

IF NO I.V. ESTABLISHED

Give:

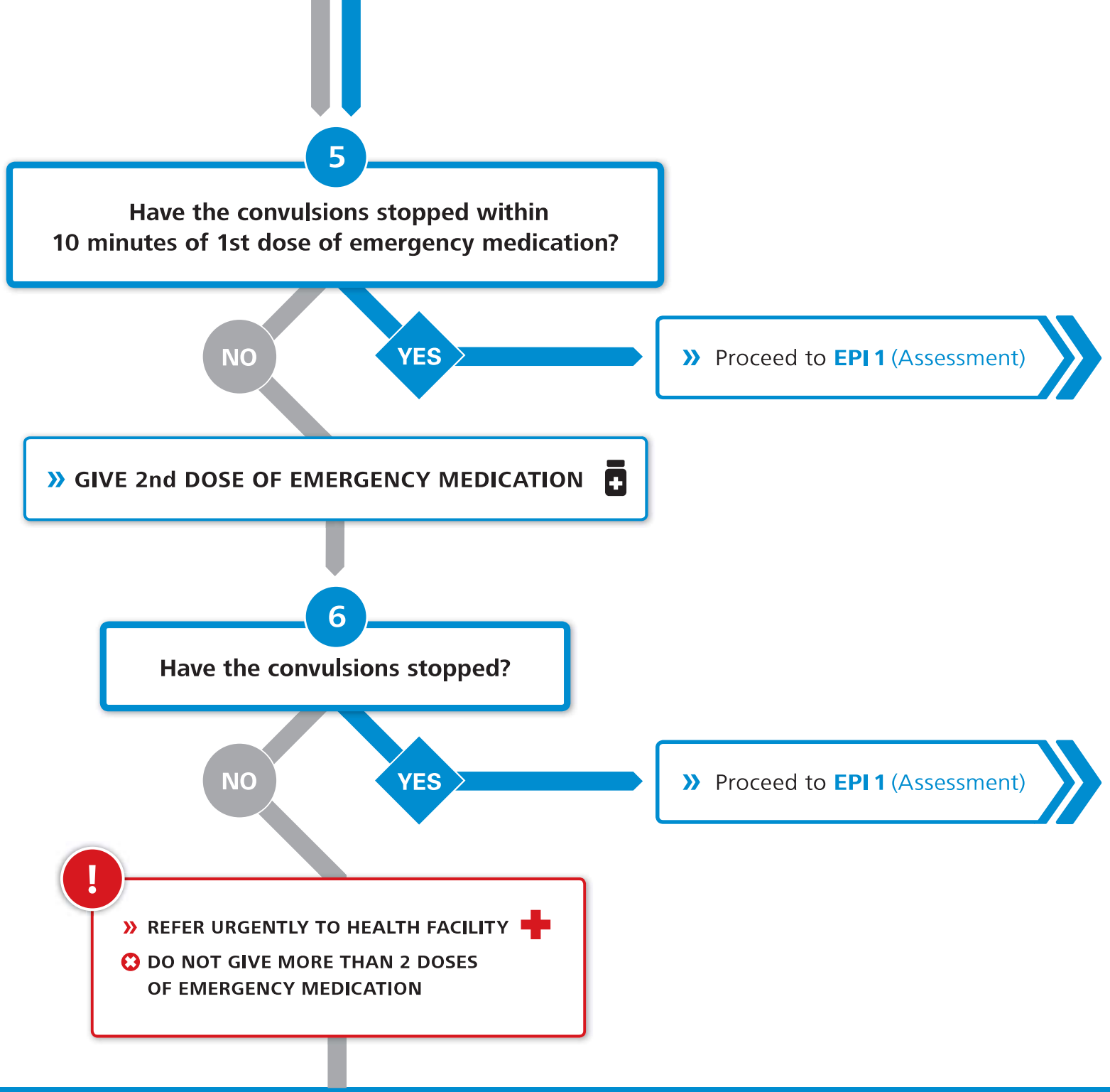
- » **diazepam** rectally (adult 10 mg, child 1 mg/year of age)

OR

- » **midazolam** buccally/intranasally (5-10 mg adult, child 0.2 mg/kg)

IF I.V. ESTABLISHED

- » Start normal **saline** administration slowly (30 drops/minute)
- » Give **glucose** i.v. (adult 25-50 ml of 50%; child 2-5 ml/kg of 10%)
- » Give emergency medication:
  – **diazepam** 10 mg i.v. (child 1mg/year of age i.v.)
  OR
  – **lorazepam** 4 mg i.v (child 0.1 mg/kg i.v.)


5
Have the convulsions stopped within 10 minutes of 1st dose of emergency medication?
NO
YES
» Proceed to EPI 1 (Assessment)
» GIVE 2nd DOSE OF EMERGENCY MEDICATION
6
Have the convulsions stopped?
NO
YES
» Proceed to EPI 1 (Assessment)
!
» REFER URGENTLY TO HEALTH FACILITY
DO NOT GIVE MORE THAN 2 DOSES OF EMERGENCY MEDICATION

7

IS THE PERSON IN STATUS EPILEPTICUS?

- » Convulsions continue after 2 doses of emergency medication, **OR**
- » No recovery in between convulsions

NO → SKIP to STEP 10

(e.g. convulsions stopped after second dose of emergency medication on arrival to health facility)

YES

! STATUS EPILEPTICUS IS LIKELY

Management should occur in health facility

8

- » **Continue to check AIRWAY, BREATHING, and CIRCULATION (ABCs)**
- » **Give oxygen**
- » **Monitor need for intubation/ventilation continuously**

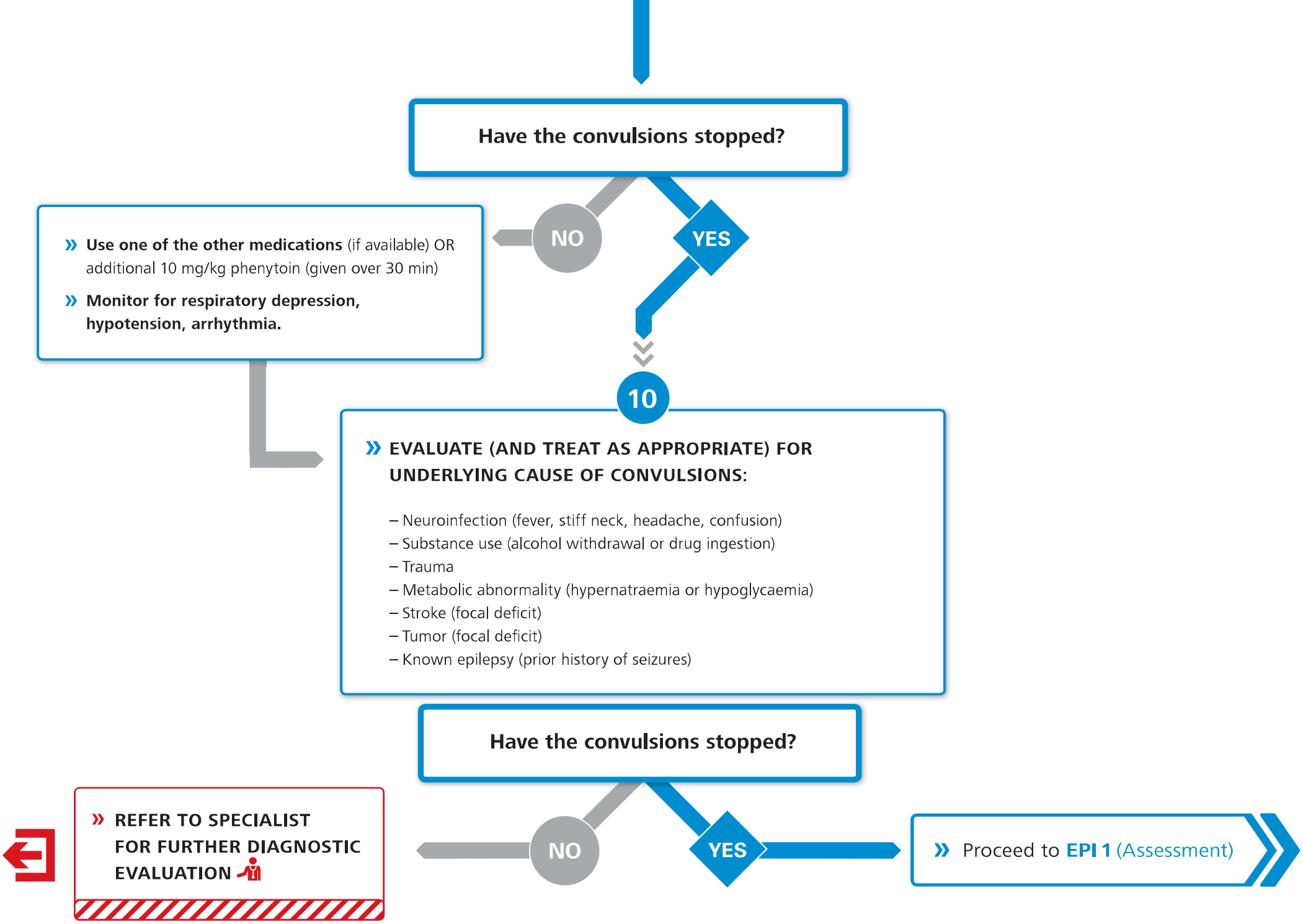
9

GIVE ONE OF THE FOLLOWING MEDICATIONS INTRAVENEOUSLY

- » **VALPROIC ACID:**
  20 mg/kg i.v. once up to maximum dose of 1 g, over 30 min
- » **PHENOBARBITAL:**
  15-20 mg/kg i.v.* up to maximum dose of 1 g, over 100 mg/min

  *If no i.v. access, can use i.m. phenobarbital (same dose as i.v.)

- » **PHENYOTIN:**
  15-20 mg/kg i.v. up to max dose of 1 g, over 60 min
  – use second i.v. line (DIFFERENT FROM DIAZEPAM)
  ! *PHENYTOIN CAUSES SIGNIFICANT DAMAGE IF EXTRAVASATES, MUST HAVE GOOD I.V. LINE!*


Have the convulsions stopped?
NO
YES
» Use one of the other medications (if available) OR additional 10 mg/kg phenytoin (given over 30 min)
» Monitor for respiratory depression, hypotension, arrhythmia.
10
» EVALUATE (AND TREAT AS APPROPRIATE) FOR UNDERLYING CAUSE OF CONVULSIONS:
– Neuroinfection (fever, stiff neck, headache, confusion)
– Substance use (alcohol withdrawal or drug ingestion)
– Trauma
– Metabolic abnormality (hypernatraemia or hypoglycaemia)
– Stroke (focal deficit)
– Tumor (focal deficit)
– Known epilepsy (prior history of seizures)
Have the convulsions stopped?
NO
YES
» Proceed to EPI 1 (Assessment)
» REFER TO SPECIALIST FOR FURTHER DIAGNOSTIC EVALUATION

EPI 1 » Assessment

COMMON PRESENTATIONS OF EPILEPSY

- *Convulsive movement or fits/seizures*
  During the convulsion:
  – *Loss of consciousness or impaired consciousness*
  – *Stiffness, rigidity*
  – *Tongue bite, injury, incontinence of urine or faeces*
- *After the convulsion: fatigue, drowsiness, sleepiness, confusion, abnormal behaviour, headache, muscle aches, or weakness on one side of the body*

1

Does the person have convulsive seizures?

Has the person had convulsive movements lasting longer than 1-2 minutes?

NO

Convulsive seizures unlikely

» Consult a specialist for recurrent episodes

» Follow-up in 3 months

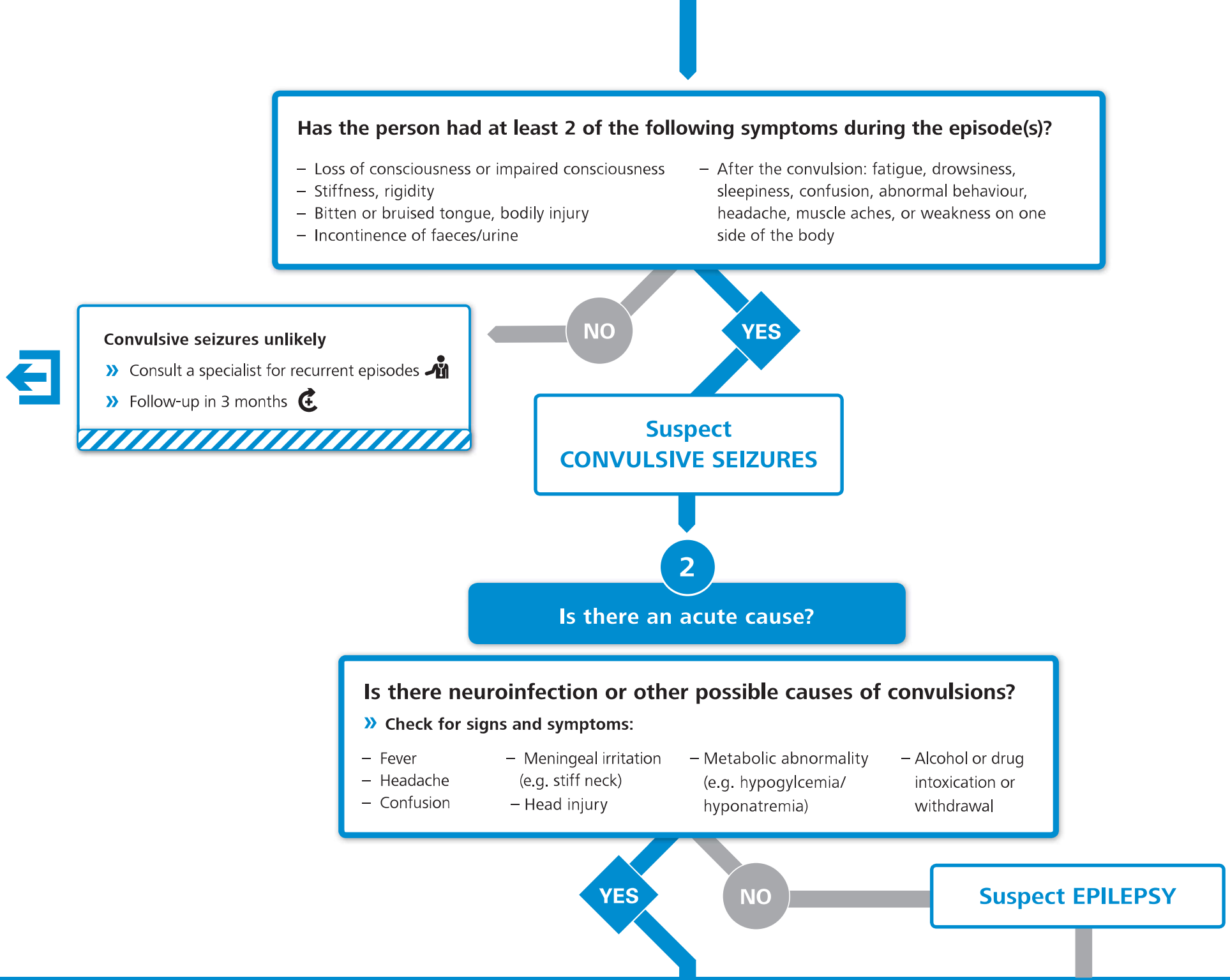
YES

CLINICAL TIP

Syncope and pseudoseizures should be considered during initial evaluation and in cases of treatment failure.

» Syncopal (fainting) spells often are associated with flushing, sweating, pallor, and occasionally a feeling of vision darkening prior to an episode. Mild shaking may occur at the end.

» Pseudoseizures are typically associated with a stress trigger. Episodes are often prolonged and can involve nonrhythmic jerking of the body, eyes may be closed, and pelvic thrusting is often seen. There is typically a rapid return to baseline after the episode. If pseudoseizures are suspected, go to **» OTH.**


Has the person had at least 2 of the following symptoms during the episode(s)?
– Loss of consciousness or impaired consciousness
– Stiffness, rigidity
– Bitten or bruised tongue, bodily injury
– Incontinence of faeces/urine
– After the convulsion: fatigue, drowsiness, sleepiness, confusion, abnormal behaviour, headache, muscle aches, or weakness on one side of the body
NO
YES
Convulsive seizures unlikely
» Consult a specialist for recurrent episodes
» Follow-up in 3 months
Suspect CONVULSIVE SEIZURES
2
Is there an acute cause?
Is there neuroinfection or other possible causes of convulsions?
» Check for signs and symptoms:
– Fever
– Headache
– Confusion
– Meningeal irritation (e.g. stiff neck)
– Head injury
– Metabolic abnormality (e.g. hypogylcemia/ hyponatremia)
– Alcohol or drug intoxication or withdrawal
YES
NO
Suspect EPILEPSY

IS IT A CHILD 6 MONTHS TO 6 YEARS OLD WITH A FEVER?

Are the convulsions:

- Focal: Starts in one part of the body
- Prolonged: Lasts more than 15 min
- Repetitive: More than 1 episode during the current illness

NO

SIMPLE FEBRILE SEIZURE

- » Look for cause (local Integrated Management of Childhood Illness (IMCI) guidelines)
- » Observe over 24 hours
- » No antiepileptic treatment needed

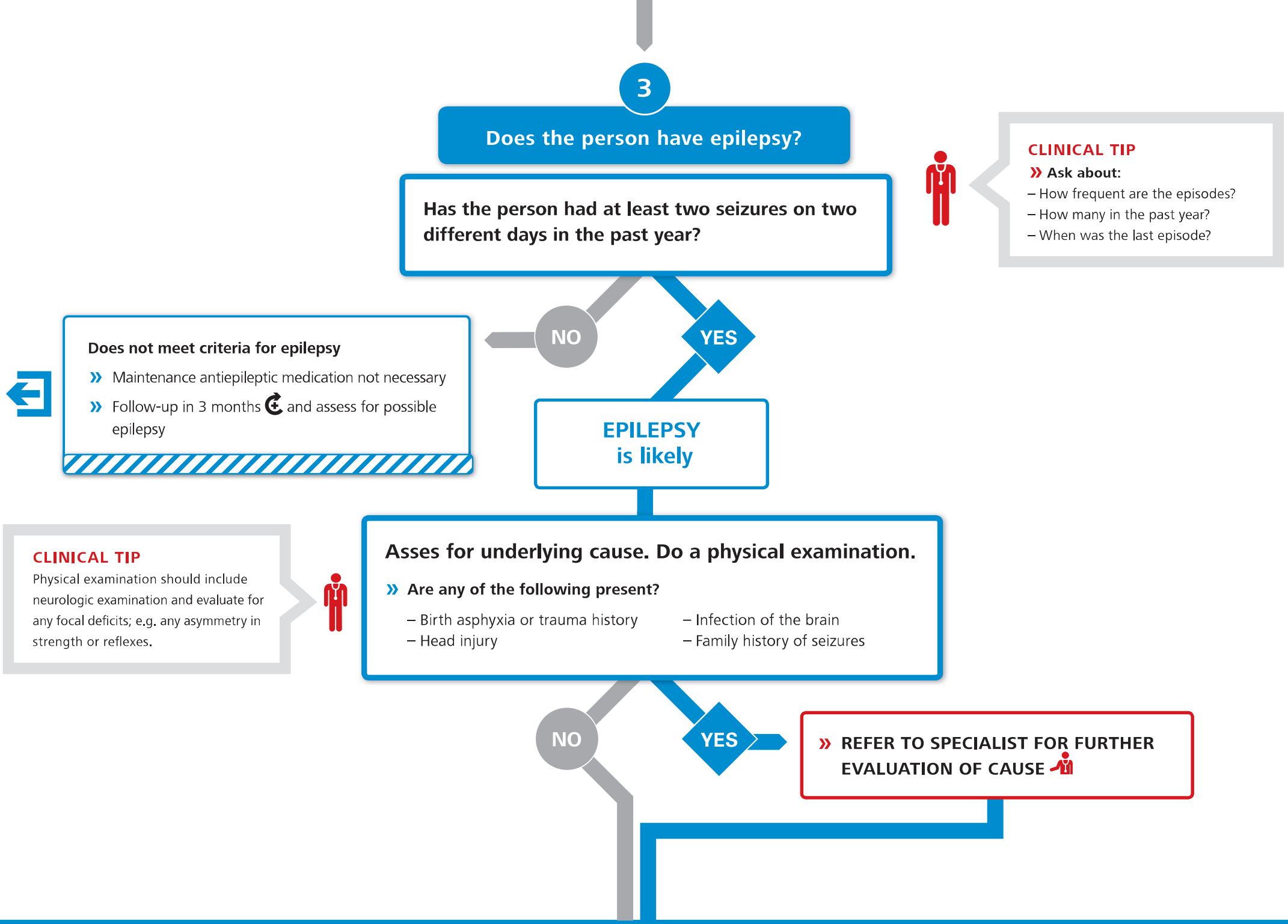
YES

COMPLEX FEBRILE SEIZURE

- » **REFER TO HOSPITAL FOR ADMISSION**

- » **EVALUATE & TREAT MEDICAL CONDITION**
- » **REFER TO HOSPITAL IF POSSIBLE FOR HEAD INJURY, MENINGITIS, AND METABOLIC ABNORMALITIES**
- *ANTIEPILEPTIC MEDICATION NOT REQUIRED*
- » **Follow-up in 3 months to assess for possible epilepsy**

SKIP to STEP 3


3
Does the person have epilepsy?
Has the person had at least two seizures on two different days in the past year?
CLINICAL TIP
» Ask about:
– How frequent are the episodes?
– How many in the past year?
– When was the last episode?
NO
YES
Does not meet criteria for epilepsy
» Maintenance antiepileptic medication not necessary
» Follow-up in 3 months and assess for possible epilepsy
EPILEPSY is likely
CLINICAL TIP
Physical examination should include neurologic examination and evaluate for any focal deficits; e.g. any asymmetry in strength or reflexes.
Asses for underlying cause. Do a physical examination.
» Are any of the following present?
– Birth asphyxia or trauma history
– Head injury
– Infection of the brain
– Family history of seizures
NO
YES
» REFER TO SPECIALIST FOR FURTHER EVALUATION OF CAUSE

4

Are there concurrent MNS conditions?

» **Assess for other concurrent MNS conditions according to the mhGAP-IG Master Chart (MC)**

! *Please note persons with EPILEPSY are at higher risk for DEPRESSION, DISORDERS DUE TO SUBSTANCE USE. CHILDREN AND ADOLSCENTS MAY HAVE ASSOCIATED MENTAL AND BEHAVIOURAL DISORDERS. SUBSTANCE USE DISORDERS*

» Go to **PROTOCOL 1**

! **IF THERE IS IMMINENT RISK OF SUICIDE, ASSESS AND MANAGE before continuing to Protocol. Go to » SUI.**

EPI 2 » Management

PROTOCOL

1

- » Provide **psychoeducation** to the person and carers (2.1)
- » Initiate **antiepileptic medications** (2.3)
- » Promote functioning in daily activities (2.2)

Special populations

Note that interventions are different for EPILEPSY in these populations

WOMAN OF CHILDBEARING AGE

Concern: Risk of antiepileptic medication to fetus/child

- » Advise folate (5 mg/day) to **prevent neural tube** defects, in **ALL women of childbearing age.**
- » AVOID VALPROATE.
- » ! **CAUTION If Pregnant:**
  - Avoid polytherapy. *Multiple medications in combination increase the risk of teratogenic effects during pregnancy.*
  - If medications are stopped during pregnancy, they should always be tapered.
  - Advise delivery in hospital.
  - At delivery, give 1 mg vitamin K i.m. to the newborn to prevent haemorrhagic disease.
- » **If breastfeeding**, carbamazepine preferred to other medication.

CHILD / ADOLESCENT

Concern: Effect of antiepileptic medication on development and/or behavior

- » For those with a **developmental disorder**, manage the condition. Go to **» CMH.**
- » For children with behavioural disorder, avoid phenobarbital if possible. Manage the condition. Go to **» CMH.**

HIV

PERSON LIVING WITH HIV

Concern: Drug interactions between antiepileptic medications and antiretrovirals

- » When available, refer to specific drug interactions for person's antiretroviral regimen and antiepileptic medication.
- » **Valproate** is preferred due to fewer drug-drug interactions.
- » AVOID PHENYTOIN AND CARBAMAZEPINE WHEN POSSIBLE.

PSYCHOSOCIAL INTERVENTIONS

2.1 Psychoeducation

Provide information on: *"What is a convulsion/epilepsy" and the importance of medication.*

- "A convulsion is caused by excess electrical activity in the brain – it is not caused by witchcraft or spirits."
- "Epilepsy is the recurrent tendency for convulsions."
- "It is a chronic condition, **but if you take your medicine as prescribed, in the majority of people it can be fully controlled."**
- The person may have several people helping them take care of their convulsions. Discuss this with the person.
- Ask the person to let you know if they are seeing a traditional or a faith healer, showing respect for this, but emphasizing the need for being seen at a healthcare facility. The person should also be informed that medicines and herbal products can sometimes have adverse interactions, so the health care providers must know about everything they take.

CLINICAL TIP:

- Seizures lasting greater than 5 minutes are a medical emergency – one should seek help immediately.
- Most people with epilepsy can have normal lives with good adherence to treatment.

Provide information on: *How carers can manage convulsion at home.*

- Lay person down, on their side, head turned to help breathing.
- DO NOT PUT ANYTHING IN THEIR MOUTH OR RESTRAIN THE PERSON.
- Ensure the person is breathing properly.
- Stay with person until the convulsion stops and they wake up.
- Sometimes people with epilepsy know that a convulsion is imminent. They should lie down somewhere safe if they have that feeling.
- Epilepsy is not contagious. You cannot catch the disorder by assisting the person experiencing convulsions.

Provide information on: *When to get medical help.*

- When a person with epilepsy appears to have trouble breathing during a convulsion, they need immediate medical help.
- When a person with epilepsy has a convulsion lasting longer than 5 minutes outside of a health facility, they need to be taken to one.
- When a person with epilepsy is not waking up after a convulsion, they need to be taken to a health facility.

2.2 Promote functioning in daily activities and community life

- **Refer to Essential Care and Practice (ECP)** for interventions that promote functioning in daily living and community life.
- **In addition, inform carers and people with epilepsy that:**
  - People with epilepsy can lead normal lives. They can marry and have children.
  - Parents should not remove children with epilepsy from school.
  - People with epilepsy can work in most jobs. However they should avoid jobs with high risk of injury to self or others (e.g. working with heavy machinery).
  - People with epilepsy should avoid cooking on open fires and swimming alone.
  - People with epilepsy should avoid excessive alcohol and recreational substances, sleeping too little, or going to places with flashing lights.
  - Local driving laws related to epilepsy should be observed.
  - People with epilepsy may qualify for disability benefits.
  - Community programs for people with epilepsy can provide assistance in jobs and support for both the person and family.

PHARMACOLOGICAL INTERVENTIONS

2.3 Initiate antiepileptic medications

- Choose a medication that will be consistently available.
- If special population (children, women of childbearing age, person living with HIV), see relevant section of this module.
- Start with only one medication at lowest starting dose.
- Increase dose slowly until convulsions are controlled.
- Consider monitoring blood count, blood chemistry and liver function tests, if available.

CAUTION!

- Check for **drug-drug interactions.** *When used together, antiepileptics may increase or reduce the effect of other antiepilepileptics. Antiepileptics may also reduce effect of hormonal birth control, immunosuppressants, antipsychotics, methadone, and some antiretrovirals.*
- Rarely, can cause severe bone marrow depression, hypersensitivity reactions including Stevens-Johnson Syndrome, altered Vitamin D metabolism and Vitamin K-deficient hemorrhagic disease of newborns.
- When possible, avoid use of sodium valproate in pregnant women due to **risk of neural tube defects.**
- All anticonvulsant medications should be discontinued slowly as stopping them abruptly can cause seizure breakthrough.

TABLE 1: Antiepileptic medications

MEDICATION	ORAL DOSING	SIDE EFFECTS	CONTRAINDICATIONS / CAUTIONS
CARBAMAZEPINE	**Adults:** Start 100-200 mg daily in 2-3 divided doses. Increase by 200 mg each week (max 1400mg daily). **Children:** Start 5 mg/kg daily in 2-3 divided doses. Increase by 5 mg/kg daily each week (max 40mg/kg daily OR 1400mg daily). **Women who are pregnant or breastfeeding:** Use with caution.	**Common:** Sedation, confusion, dizziness, ataxia, double vision, nausea, diarrhea, benign leukopenia. **Serious:** Hepatotoxicity, cardiac conduction delay, low sodium levels.	Caution in patients with history of blood disorders, kidney, liver or cardiac disease. Dose may need to be adjusted after 2 weeks due to induction of its own metabolism.

TABLE 1: Antiepileptic medications (cont.)

MEDICATION	ORAL DOSING	SIDE EFFECTS	CONTRAINDICATIONS / CAUTIONS
PHENOBARBITAL	**Adults:** **Start** 60 mg daily in 1-2 divided doses. Increase weekly by 2.5-5 mg (maximum 180 mg daily). **Children:** **Start** 2-3 mg/kg daily in 2 divided doses. Increase weekly by 1-2 mg/kg daily depending on tolerance (**maximum** 6mg daily).	**Common:** Sedation, hyperactivity in children, ataxia, nystagmus, sexual dysfunction, depression. **Serious:** Liver failure (hypersensitivity reaction), decreased bone mineral density.	Contraindicated in patients with acute intermittent porphyria. Lower doses for patients with kidney or liver disease.
PHENYTOIN	**Adults:** **Start** 150-200 mg daily in two divided doses. Increase by 50 mg daily every 3-4 weeks (max 400 mg daily). **Children:** **Start** 3-4 mg/kg daily in 2 divided doses. Increase by 5 mg/kg daily every 3-4 weeks (maximum 300 mg per day). **Women who are pregnant or breastfeeding:** Avoid **Older adults:** Use lower doses	**Common:** Sedation, confusion, dizziness, tremor, motor twitching, ataxia, double vision, nystagmus, slurred speech, nausea, vomiting, constipation. **Serious:** Hematologic abnormalities, hepatitis, polyneuropathy, gum hypertrophy, acne, lymphadeno-pathy, increase in suicidal ideation.	Lower doses for patients with kidney or liver disease.
SODIUM VALPROATE	**Adults:** **Start** 400 mg daily in 2 divided doses. Increase by 500 mg daily each week (maximum 3000 mg daily). **Children:** **Start** 15-20 mg/kg daily in 2-3 divided doses. Increase each week by 15 mg/kg daily (max 15-40 mg/kg daily). **Women who are pregnant:** Avoid **Older adults:** Use lower doses	**Common:** Sedation, headache, tremor, ataxia, nausea, vomiting, diarrhea, weight gain, transient hair loss. **Serious:** Impaired hepatic function, thrombocytopenia, leukopenia, drowsiness/confusion (valproate-induced hyperammonemic encephalopathy, a sign of toxicity), liver failure, hemorrhagic pancreatitis.	Use with caution if underlying or suspected hepatic disease. Drug-drug interactions: Valproate levels decreased by carbamazepine, increased by aspirin.

EPI 3 » Follow-up

1

REVIEW THE CURRENT CONDITION

Does the person have more than 50% seizure reduction in convulsion frequency?

NO

IF THE PERSON IS NOT IMPROVING ON CURRENT DOSE:

- » Review adherence to medications.
- » **Consider increase in medication dose as needed to maximal dose if no adverse effects.**
- » *If response is still poor,*
  - **– Consider switching medication. The new medication should be at an optimum dose before slowly discontinuing the first.**
- » *If response is still poor,*
  - – Review diagnosis.
  - **– REFER TO SPECIALIST.**
- » Follow-up more frequently.

YES

RECOMMENDATIONS ON FREQUENCY OF CONTACT

- » Follow up should occur every 3-6 months

CLINICAL TIP:

- » **ADVERSE EFFECTS** (e.g. drowsiness, nystagmus, diplopia, ataxia) are from too high doses of medication for the person.
- » **If there is an IDIOSYNCRATIC REACTION** (allergic reaction, bone marrow depression, hepatic failure), switch antiepileptic medication.

2 MONITOR TREATMENT

At every contact:

- » Evaluate side-effects of medication including adverse effects and idiosyncratic reactions (clinically and with appropriate laboratory tests when available).
- » Provide psychoeducation and review psychosocial interventions.
- » **Is the person a woman of childbearing age and considering pregnancy?** If so, consult specialist.
- » **Does the patient have any new symptoms of concern?** Review for any new symptoms of depression and anxiety given high risk of co-morbidity with epilepsy.
- » **Is the patient on any new medications that may have interactions?** (Many anticonvulsants have interactions with other medications). If so, consult a specialist.

3 CONSIDER MEDICATION DISCONTINUATION WHEN APPROPRIATE

Has the person been convulsion free for several years?

NO

IF THERE ARE NO PROBLEMS WITH MEDICATIONS

- » **Continue at current dose.** *Correct dosing is lowest therapeutic dose for seizure control, while minimizing adverse side-effects.*
- » Continue close follow-up and review for possible discontinuation of medications once seizure free for at least two years.

YES

- » **Discuss risk of seizure occurrence with person/carer** (if epilepsy is due to head injury, stroke or neuroinfection, there is a higher risk of seizure recurrence off medication), and risks and benefits of discontinuing medications.
- » **If in agreement, gradually take the person off medication by reducing the doses over 2 months and monitoring closely for seizure recurrence.**