

## The diagnostic and treatment algorithms in the East Timor National Epilepsy Training Program

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*Background and Objective:* The East Timor National Epilepsy Training Program (ETNETP) is a joint effort of East Timor Ministry of Health, the Epilepsy Society of Australia, Epilepsy Action and AusAID to improve epilepsy care in East Timor by training primary health nurses to diagnose and treat generalised tonic-clonic seizures. The nurses were trained to take a standardized history and use diagnostic and treatment algorithms.<sup>1</sup> The objective of this communication is to describe the diagnostic and treatment algorithms used.

### Diagnostic algorithm

*Entry point:* Any patient thought to have epilepsy (there is no requirement for loss of consciousness, shaking or falls).

*Diagnosis:* A questionnaire is administered to the patient and family. If 2 of the following 6 are present, a diagnosis of generalised tonic-clonic seizures (GTCS) is made: groan, moan or scream at the start of attack; drooling during attack; cyanosis; tongue biting; confusion after attack; occurrence during sleep.

*Syncope:* The main differential diagnosis is syncope and the flowchart attempts to make a positive diagnosis.

*Acute symptomatic seizures:* There is a prompt to detect intracranial infection, such as cerebral malaria, meningitis and encephalitis.

*First seizure is not treated.*

*Juvenile myoclonic epilepsy (JME)* is diagnosed and the patient receives valproate if 3 of the following 4 features are present: onset age 10-20; most seizures within an hour of waking; jerks of the hands within an hour of waking; precipitation by sleep deprivation. Otherwise, carbamazepine is used.

### Treatment algorithm

*Counselling of patient and family* on safety, first aid, compliance, side effects and for females, contraception and folic acid.

*Doses* are low and are titrated according to response.

*Continuing seizures:* There are prompts to review the diagnosis and to check for precipitating factors and non-compliance before increasing the dose.

*Medical referral* if the diagnosis is uncertain, seizures continue at the maximum dose or there has been a 2-year seizure-free period.

*Discussion:* The ideal algorithm has high sensitivity and specificity, is simple and unambiguous and is of a manageable size. Specific to epilepsy, it should detect acute symptomatic seizures, avoid treatment of the first seizure, include patient and family education, minimise side effects and teratogenic risk; if seizures continue, prompt to check for lifestyle issues, diagnostic errors and non-compliance before increasing the dose. It should also minimise drug costs. The algorithms used by the ETNETP possess most of these features. It is intended to have a higher sensitivity than other similar algorithms<sup>2</sup>; but in doing so, the risk of a false positive diagnosis is increased. The commonest false positive diagnoses are likely to be convulsive syncope and non-epileptic seizures (pseudoseizures). However, most patients presenting for diagnosis have had their disorder for years. Because they are untreated, their attack frequency is often high and they are known in their community to have epilepsy. They are already experiencing the psychosocial disability of epilepsy and this is not increased by an incorrect diagnosis, although they will be inappropriately treated.

If the algorithm fails to detect JME, the patient receives carbamazepine, which may be ineffective or aggravate JME. However, some patients respond favourably and the algorithm prompts referral to a doctor if seizures persist. If the algorithm incorrectly diagnoses focal epilepsy as JME, the patient receives valproate, which is still likely to be effective, although it results in increased cost and teratogenic risk. It should be noted that such diagnostic errors are common even in developed countries with access to neurologists and diagnostic tests.

Very low doses are started, as the goal is to suppress only GTCS, and the body size is small. There is also less need for rapid control, as the epilepsy is generally longstanding and most patients do not drive or have paid employment. The use of minimally effective doses also reduces teratogenic risk and dose-related side effects.

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## References

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