LRI Children's Hospital

Recurrent afebrile seizure: newly diagnosed epilepsy

Staff relevant to:	Medical & Nursing staff
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Written by: Review by :	H Salleh, M Joshi, N Hussain V 3 M. Joshi & N Hussain
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1. Introduction & Scope

An epileptic seizure is defined by the International League Against Epilepsy (ILAE) as manifestation(s) of epileptic (excessive and/or hypersynchronous) activity of neurons in the brain. ILAE has proposed the definition of epilepsy to be a disease of the brain defined by any of the following conditions:

(1) At least two unprovoked seizures occurring >24 hours apart;
(2) One unprovoked seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years;
(3) Diagnosis of an epilepsy syndrome.

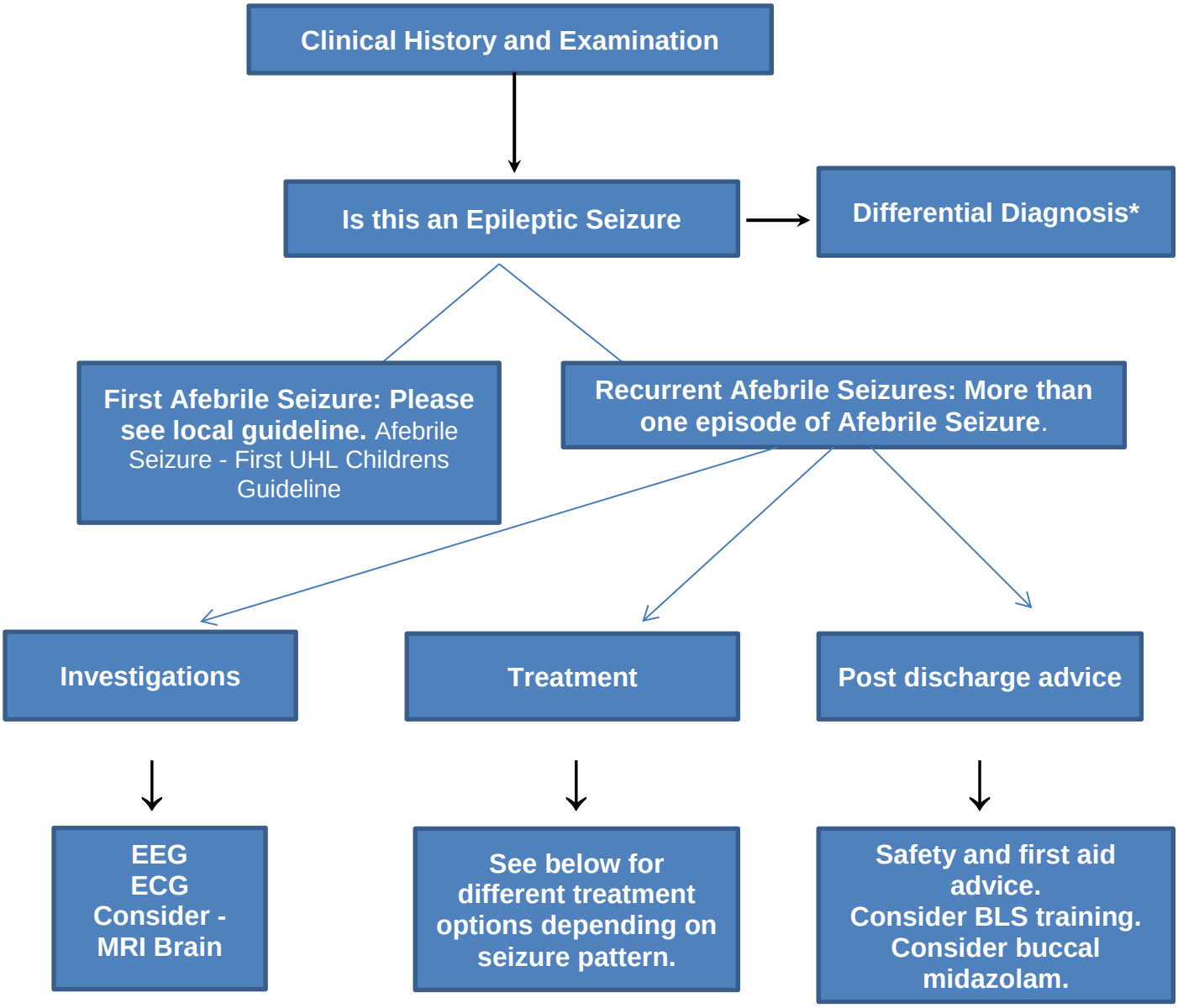
Seizure not related to temperature / illness.

This guideline is intended for use by Medical and Nursing staff working within UHL Children's Hospital caring for children who present with recurrent afebrile seizures.

Related documents:

Febrile Convulsions UHL Childrens Guideline C42/2006
Seizure Management UHL Childrens Hospital Guideline C77/2007
Afebrile Seizure - First UHL Childrens Guideline C251/2016

2. Management Flowchart



Common differential diagnosis of non-epileptic seizure*

1. Febrile convulsions
2. Cardiac Arrhythmia
3. Vasovagal syncope
4. Breath holding attack
5. Reflex anoxic seizures
6. Seizures secondary to metabolic or electrolyte imbalance
7. Gastro-oesophageal reflux in infants
8. Non-epileptic attack disorder

Tics or movement disorder can also be differential diagnosis of focal motor seizures.

2.1 Investigations

1. EEG

All children with recurrent afebrile seizure need to have an EEG.
The EEG should not be used to exclude a diagnosis of epilepsy in a child, young person or adult in whom the clinical presentation supports a diagnosis of a non-epileptic event. The EEG should not be used in isolation to make a diagnosis of epilepsy.

2. MRI Brain

NICE 2012 recommend MRI to be the imaging investigation of choice in children, young people and adults with epilepsy. Not every child with epilepsy requires MRI investigation but MRI should be offered to children:

- who develop epilepsy before the age of 2 years
- who have any suggestion of a focal onset on history, examination or EEG (unless clear evidence of benign focal epilepsy)
- in whom seizures continue in spite of first-line medication.

3. ECG

An ECG should be considered in children with afebrile seizures if there are diagnosis uncertainties.

2.2 Treatment

Anti-epileptic drugs (AED) are chosen based on the seizure type and epileptic syndrome. As per NICE guidelines, the following medications are recommended pharmacological management for different seizure patterns.

Choice of AED

1. **MHRA advice on Valproate-**

In April 2018, warnings were added that valproate treatment must not be used in girls and women including in young girls below the age of puberty, unless alternative treatments are not suitable and unless the conditions of the **pregnancy prevention programme (PPP)** are met.

The Pregnancy Prevention Programme is a system of ensuring all female patients taking valproate medicines: (1. have been told and understand the risks of use in pregnancy and have signed a Risk Acknowledgement Form, 2. are on highly effective contraception if necessary and 3.see their specialist at least every year)
Medicines containing valproate taken in pregnancy can cause malformations in 11% of babies and developmental disorders in 30–40% of children after birth.

https://www.gov.uk/drug-safety-update/valproate-medicines-epilim-depakote-contraindicated-in-women-and-girls-of-childbearing-potential-unless-conditions-of-pregnancy-prevention-programme-are-met

On the basis of current information and alerts, Sodium Valproate to be used in males only and seek specialist advice if considering Sodium Valproate use in females.

2. Liver dysfunction (including fatal hepatic failure) has occurred in association with valproate (especially in children under 3 years and in those with metabolic or degenerative disorders, organic brain disease or severe seizure disorders associated with mental retardation) usually in first 6 months and usually involving multiple antiepileptic therapies.

3. In myoclonic seizures, carbamazepine can exacerbate seizures.

4. Although Levetiracetam is mentioned as an adjunctive therapy for focal seizure in BNFC, it can be used as monotherapy if Carbamazepine and Lamotrigine are unsuitable or not tolerated as per NICE guidance 1.9.3.2. Same dose of Levetiracetam should be used (as mentioned as adjunctive therapy) according to BNFC as discussed with Paediatric Neurology team at LRI. Similarly Levetiracetam can be used as monotherapy in benign epilepsy with centrotemporal spikes (Ref- NICE 1.9.11.3), myoclonic (Ref- NICE 1.9.6.2) and in juvenile myoclonic epilepsy (Ref- NICE 1.9.13.2).

Table 1- AED options by seizure type

Seizure type	First-line AEDs	Adjunctive AEDs
Generalised tonic–clonic	Sodium Valproate (males only) Lamotrigine Carbamazepine	Lamotrigine Levetiracetam Topiramate Sodium Valproate (Neuro)
Tonic or atonic	Sodium Valproate (males only) Lamotrigine	Sodium Valproate (Neuro)
Absence	Ethosuximide Sodium Valproate (males only) Lamotrigine	Lamotrigine Ethosuximide Sodium Valproate (Neuro)
Focal	Carbamazepine Lamotrigine Levetiracetam	Lamotrigine Carbamazepine Levetiracetam Sodium valproate (Neuro)
Myoclonic	Sodium Valproate (males only) Levetiracetam Topiramate	Topiramate Levetiracetam Sodium valproate (Neuro)

Table 2- AED options by epilepsy syndrome

Epilepsy syndrome	First-line AEDs	Adjunctive AEDs
Benign epilepsy with centrotemporal spikes	**Medications are not always indicated** **Consider-** Carbamazepine Lamotrigine Levetiracetam	 Levetiracetam Carbamazepine Lamotrigine
Juvenile myoclonic epilepsy	Sodium Valproate (males only) Lamotrigine Levetiracetam	Levetiracetam Lamotrigine Sodium valproate (Neuro)
Infantile spasms not due to tuberous sclerosis	Steroid (prednisolone) or vigabatrin or combined therapy Discuss with, or refer to, a tertiary paediatric epilepsy specialist	
Infantile spasms due to tuberous sclerosis	Vigabatrin or steroid (prednisolone) or combined therapy Discuss with, or refer to, a tertiary paediatric epilepsy specialist	

2.3 Discharge

- Parents and patient needs to have first aid advice in the event of another seizure occurring.

- Provide written information leaflet to parents & children regards to Epilepsy/ first aid/safety advice (including water/bath safety) /SUDEP/medication information & side effects etc. These leaflets can be printed from the website resources as mentioned in check list- web links.

- Support groups/ useful web resources such as Epilepsy Society/Epilepsy Action should be mentioned during the discussion.

- If there is history of prolonged seizure, BLS training needs to be arranged prior to discharge and patient is to be discharged home with buccal midazolam along with buccal midazolam training.

2.4 Referral to tertiary centre/neurology team

Referral to tertiary Paediatric neurology needs to be consultant to consultant referral. The following are the criteria for referral to Tertiary Paediatric neurology service

1. Movement disorders;
2. Already diagnosed complex Epilepsy syndromes;
3. Suspected Epileptic seizures in children less than two years and/or specific Epilepsy syndrome;
4. Children with diagnosis of Epilepsy on **OR** tried two or more different anti-epileptic drugs.

2.5 Follow up

Patients with well-controlled Epilepsy stable on single AED (Anti-Epileptic Drug) will be followed up in the community setting by the general Paediatrician.

Patients with poorly controlled Epilepsy (on two different AED) or patients on single AED needing more input in view of more seizures will be seen by either Paediatrician with interest in Epilepsy or Paediatric neurologist based on the complexity.

Referral to Epilepsy Specialist Nurse for first aid/safety advice, life style advice and rescue medication (midazolam)/BLS (in case of prolong seizures) training.

Checklist of issues that can be covered during consultations with patient/family:

Epilepsy in general https://www.epilepsy.org.uk/info/about https://www.epilepsy.org.uk/info/children-young-adults/children	
RCPCH document- Safety-netting information following a first seizure without a fever in children and young people https://www.rcpch.ac.uk/resources/safety-netting-information-following-first-seizure-without-fever-children-young-people	
Medications/management	
Side effect of medications https://www.medicinesforchildren.org.uk/search-for-a-leaflet	
Monitoring – e.g. FBC / LFT/ Bone profile/ Vit D	
Discuss supply of medications / on-going prescriptions- Hospital / GP	

Risk management e.g. swimming, climbing heights https://www.epilepsy.org.uk/info/daily-life/safety	
First aid advice https://www.epilepsy.org.uk/info/firstaid/what-to-do	
For prolonged seizures – BLS & midazolam training, midazolam before discharge	
Lifestyle issues: smoking, alcohol consumption, driving, career choices	
Prognosis	
SUDEP (Sudden unexpected death in epilepsy) https://sudep.org/leaflets-and-downloadable-information	
Link to Support group or charity organisations e.g. Epilepsy Society/ Epilepsy Action / Epilepsy Research UK https://www.epilepsysociety.org.uk/ https://sudep.org/ https://www.epilepsy.org.uk/	

3. Education and Training

No new training is required to implement this guideline

4. Monitoring compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Children and young people who meet the criteria for neuroimaging for epilepsy have magnetic resonance imaging.	Audit	Consultant	TBC	Local clinical practice group
Children and young people with epilepsy are seen by an epilepsy specialist nurse who they can contact between scheduled reviews.	Audit	Specialist Nurse	TBC	Local clinical practice group

There is a national audit- Epilepsy 12 – conducted by RCPCH (Royal College of Paediatrics & Child Health) and data from the unit should be submitted as per requirement.

5. Supporting Documents and Key References

1. NICE guideline (CG137)- Epilepsies: diagnosis and management, January 2012 (last updated May 2021).

https://www.nice.org.uk/guidance/cg137

2. A practical clinical definition of epilepsy. Epilepsia, 55(4):475–482, 2014.

3. Links to NICE pathway on AED:
   http://pathways.nice.org.uk/pathways/epilepsy
   https://pathways.nice.org.uk/pathways/epilepsy#path=view%3A/pathways/epilepsy/pharmacological-treatment-of-epilepsy.xml&content=view-index

4. Management of Status Epilepticus- Children UHL guideline
5. Epilepsy and pregnancy- UHL guideline
6. RCPCH Document- Safety-netting information following a first seizure without a fever in children and young people.

Support group websites-

https://www.epilepsysociety.org.uk/
https://www.epilepsy.org.uk/
https://www.epilepsyresearch.org.uk/

6. Key Words

AED - Anti Epileptic Drug, Epilepsy, Seizure, Afebrile

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) M. Joshi - Consultant	**Executive Lead** Chief Medical Officer
Details of Changes made during review: Advice to provide/signpost to written information leaflet, website resources (list updated) & Support groups. Reasons for referral to Epilepsy Specialist Nurse outlined- first aid/safety advice, life style advice and rescue medication (midazolam)/BLS (in case of prolong seizures) training. Acknowledgment of national audit- Epilepsy 12 and data submission requirements References update	