This document does not provide immediate guidance on the management of seizures.

If the child is actively fitting, call for help and refer to SOP for **STATUS EPILEPTICUS** in Children.
First Afebrile Seizure in Children

**Guideline for the management of First Afebrile Seizure in Children < 16 years**

Approved by Children’s Hospital & Children’s Emergency Department Clinical practice group: July 2019

Trust Ref: D1/2019

Next Review: July 2022

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**CHILD PRESENTS WITH FIRST SEIZURE**

**Febrile**
- Child 6 months to 6 years of age
  - See Febrile Convulsion
    - Febrile Convulsion UHL Paediatric Emergency Department Guideline

**Febrile**
- Child under 6 months or over 6 years of age
  - See Meningitis / Encephalitis
    - Meningitis UHL Childrens Medical Guideline
    - Encephalitis UHL Childrens Medical Guideline

**Afebrile**
- Full history & examination
  - Check ECG (QTc) & Blood Glucose (Correct and investigate as required)

**Actively Fitting**
- See Status Epilepticus
  - Status Epilepticus in Children UHL Paediatric Emergency Department Guideline

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**CATEGORISE RISK**

**Reassuring features**
- Full recovery to baseline “back to normal”
- Age > 12 months
- ECG & Blood Glucose normal
- No concerning features in history or examination

**Warning features**
- Age < 12 months
- Age > 12 months + residual/atypical features
- Focal seizures

**Concerning features**
- GCS ↓
- Todd’s paresis
- Focal neurology
- Hx of Trauma
- ? SOL
- ? ↑ICP
- ?NAI

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**Senior (ST4+) r/v to consider:**
- Further investigation
- Further observation (e.g. CSSU)
- Further discussion with Paediatric Senior (ST4+)

**Paediatric Senior (ST4+) r/v to consider:**
- CT Head
- Further investigation
- Urgent treatment
- Need for admission

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**ARRANGE ADMISSION**

**To CSSU**
- via CED Doctor and Nurse in Charge

**To Children’s Hospital**
- via CAT Senior (ST4+)

**Referral to QMC Neurosurgery**

If Time-Critical: see Time Critical transfer of the sick or injured child UHL ED SOP

Time-Critical Transfer of the Sick or Injured Child UHL Paediatric Emergency Department Guideline

If Urgent: phone Neurosurgical reg via QMC switchboard

Complete referapatient.org referral

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**Discharge with:**
- Patient information leaflet
- Seizure safety net advice
- Outpatient referral

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**NB:** Paper copies of this document may not be most recent version. The definitive version is held in the Policies and Guidelines Library on INsite
1. Scope, Introduction and Background

Scope

This guidance is for the assessment, investigation and management of children < 16 years presenting to UHL following a first afebrile seizure. It is for the use of medical and nursing staff working as part of the single front door for children.

Key points

1) 1 in 20 healthy people will have a single seizure in their lifetime
2) A blood glucose and an ECG are the only mandatory investigations
3) NICE recommend that essential information be given upon discharge to the patient and family
4) NICE recommend that all children require follow up

Don’t Miss

Did the child definitely have a seizure?

There are many seizure mimics (page 6 has common differentials).

A detailed history is essential.

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Introduction & Background

A seizure is a short episode of symptoms caused by a burst of abnormal electrical activity in the brain. Typically, a seizure lasts from a few seconds to a few minutes and resolve spontaneously. In a small minority of seizures last for more than 5 minutes requiring treatment. A seizure lasting longer than 20 minutes or recurrent seizures without recovery in between is defined as status epilepticus, and is covered in a separate guideline.

Status Epilepticus UHL Childrens Medical Guideline
Status Epilepticus in Children UHL Paediatric Emergency Department Guideline

Types of seizure:

There are many different types of seizures but they can be divided into generalised or focal. These terms relate to the whether the burst of electrical activity in the brain occurs is generalised across the entire brain or limited to a focal area.

When a child has a generalised seizure, you may notice that the child:

- becomes very stiff with shaking limbs
- goes floppy and blue around the lips
- starts to roll his/her eyes upwards
- become unconscious

Typically once a seizure has finished, the child is often drowsy and wishes to go to sleep.

A child that has a focal seizure can have a variety of presentations depending on which part of the brain is affected. Symptoms range from:

- muscular jerks
- strange sensations in a limb
- sensory hallucinations e.g. hear, feel, smell, taste odd sensations

A complex focal seizure can be even more bizarre with partial loss of consciousness, appearing vacant, smacking lips, fidgeting or other repetitive movements. Note this is not an exhaustive list. Focal seizures usually last for up to a few minutes. They can go on to develop generalised tonic clonic seizures (secondary generalised seizures).

Differential Diagnosis

Did the child definitely have a seizure? There are many seizure mimics.
A challenge in managing a child after their first seizure is to clarify whether the child had a seizure in the first place. Other differentials include:

- Syncope/vaso-vagal
- Cardiac arrhythmia
- Hyperventilation/panic attack
- Reflex anoxic seizure
- Breath holding attacks

See table on page 6 for typical features of common differential diagnoses.
2. Detailed History and Examination

It is critical to obtain as detailed a history as possible at the time of presentation, including what happened before, during and after the episode. Was it provoked or unprovoked? The determination that a seizure has occurred is typically based on a detailed history provided by a reliable observer. Video footage is often helpful.

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<th>The Event Itself</th>
<th>Provoking factors</th>
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<td>Systemic illness</td>
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<td>Warning Symptoms:</td>
<td>Fever</td>
</tr>
<tr>
<td>Behaviour:</td>
<td>Trauma</td>
</tr>
<tr>
<td>Aura:</td>
<td>Drugs/medication/poisons</td>
</tr>
<tr>
<td>LOC:</td>
<td>Alcohol</td>
</tr>
<tr>
<td>Vocal:</td>
<td>Photosensitivity</td>
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<tr>
<td>Fall/Postural changes</td>
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</tr>
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<td>Facial changes</td>
<td>Stress/migraine</td>
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<td>Type of movements</td>
<td>Menstruation</td>
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<tr>
<td>Breathing</td>
<td>Problems at home/school</td>
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<td></td>
<td>Emotional upset</td>
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</table>

<table>
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<tr>
<th>Background</th>
<th>Differential Diagnoses (see table 1)</th>
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</thead>
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<tr>
<td>PMHx:</td>
<td>Idiopathic</td>
</tr>
<tr>
<td>Previous similar events</td>
<td>Febrile convulsion</td>
</tr>
<tr>
<td>Prolonged febrile convulsions</td>
<td>Epilepsy</td>
</tr>
<tr>
<td>Hypoglycaemia</td>
<td>Cardiac Arrhythmia Panic</td>
</tr>
<tr>
<td>Head injury</td>
<td>Attack</td>
</tr>
<tr>
<td>Medications</td>
<td>Breath holding attack</td>
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<tr>
<td>Drugs/Poisons</td>
<td>Reflex anoxic seizures</td>
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<tr>
<td></td>
<td>Gastro-oesophageal reflux</td>
</tr>
<tr>
<td>Family Hx:</td>
<td>Self-gratification episodes</td>
</tr>
<tr>
<td>Seizures or similar events</td>
<td>Non-epileptic episodes</td>
</tr>
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</table>

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<thead>
<tr>
<th>Residual Symptoms after attack</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time taken to return to normal</td>
<td>Drowsiness, Amnesia, Confusion</td>
</tr>
<tr>
<td>Focal neurological deficit</td>
<td>Lethargy, headache, muscle ache</td>
</tr>
<tr>
<td>Incontinence of urine</td>
<td>Nausea, Vomiting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examination</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>ABCD - Don’t Ever Forget Glucose!</td>
<td>GCS</td>
</tr>
<tr>
<td>Focal neurological signs / asymmetry/ Gait</td>
<td>Dysmorphism</td>
</tr>
<tr>
<td>Gait</td>
<td>Neurocutaneous lesions</td>
</tr>
<tr>
<td>Signs of infection</td>
<td>Fundoscopy</td>
</tr>
<tr>
<td></td>
<td>CVS examination (Include BP/ECG)</td>
</tr>
<tr>
<td></td>
<td>Developmental delay</td>
</tr>
<tr>
<td></td>
<td>Hepatosplenomegaly</td>
</tr>
<tr>
<td></td>
<td>Weight/Height/Head Circumference</td>
</tr>
</tbody>
</table>
Table 1: Typical features of common differential diagnoses for Afebrile seizure-type episodes

<table>
<thead>
<tr>
<th>Epilepsy</th>
<th>Syncope / Vaso-vagal Episode</th>
<th>Cardiac Arrhythmia</th>
<th>Hyperventilation/panic attack</th>
<th>Reflex anoxic seizure</th>
<th>Breath holding attacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>FHx PMHx inc head injury/ meningitis/ encephalitis</td>
<td>Hx previous faints</td>
<td>Congenital/ Acquired heart disease</td>
<td>Recent stress, previous panic attacks</td>
<td>FH of faints</td>
</tr>
<tr>
<td>Provoking factors</td>
<td>Sleep deprivation Usually none</td>
<td>Postural changes Prolonged standing Dehydration Vaso-vagal events</td>
<td>Exercise</td>
<td>Psycho-social</td>
<td>Head trauma Pain/ discomfort Excitement Fright Cold</td>
</tr>
<tr>
<td>Warning signs</td>
<td>Usually none</td>
<td>Light headedness Visual symptoms Blurring/ blacking out Buzzing/echoing/ distant sounds</td>
<td>Palpitations</td>
<td>Fear Feeling of unreality Breathlessness</td>
<td>Pallor Fall to floor</td>
</tr>
<tr>
<td>Features of the attack</td>
<td>Stiff phase followed by rhythmical jerking Repeated complex movements/ behaviours Cyanosis</td>
<td>Pallor May have brief jerks or stiffening Can have incontinence</td>
<td>Pallor May have brief jerks or stiffening Sweating</td>
<td>Agitation / fear Rapid breathing Stiffening of hands Shaking Paraesthesiae of hands and feet</td>
<td>Hypoxia may induce brief generalised tonic clonic seizure and short lived asystole (vagal induced)</td>
</tr>
<tr>
<td>Residual symptoms</td>
<td>Drowsiness Agitation/ disorientation Headache Bitten tongue Urine incontinence</td>
<td>Rapid recovery. Lethargic but orientated</td>
<td>Rapid recovery</td>
<td>Rapid recovery</td>
<td>Rapid recovery</td>
</tr>
</tbody>
</table>

2.1 Assessment post-seizure

Following a seizure the child may have residual symptoms including:

- Drowsiness, Amnesia, confusion
- Lethargy, headache, muscle ache
- Bitten tongue/other injury
- Nausea, Vomiting
- Incontinence of urine
- Focal neurological deficit

It is important that the patient fully return to their baseline level of consciousness and activity, with any failure to fully recover prompting review of the differential diagnosis and consideration of further investigation/management as necessary.
2.2 Investigation in Children

If a child has stopped fitting, has no atypical features and has fully recovered, no special investigations/blood tests are required.

A full history of the attack including provoking factors should be ascertained. The child should be fully examined with particular emphasis on focal neurological findings and any signs of acute infection.

A blood glucose and ECG should be done on all children following a suspected seizure.

Further emergency investigations (E.g. full blood count, blood urea and electrolytes, calcium or magnesium, imaging) are not routinely indicated unless history or examination suggests warning or concerning features.

Outpatient EEG is NOT routinely indicated after the first simple afebrile seizure.

2.3 Disposition and follow-up

Children who have had a first seizure do not necessarily need to be admitted to hospital provided they have returned to normal and are given appropriate safety advice. NICE guidelines recommend all children who have had their first seizure should be seen by an appropriate paediatrician in an out-patient setting.

Excepting for rare circumstances and on the advice of a specialist, children should not be started on anti-epileptic medication. A seizure with an obvious trigger (termed a “provoked seizure”) has an estimated 3-10% chance of recurrence; therefore most children will go on to be seizure-free. The incidence of a recurrence of an unprovoked seizure is slightly higher, with 25% risk of a further episode over the next year and 45% risk over the next 3 years. This increases to 70-80% chance of further seizures after a second seizure.
2.4 Admission

Consider admission for children in the following situations:

- Age Less than 1 year – Consider Paediatric Neurology opinion after Consultant Paediatrician assessment.
- Reduced level of consciousness - Glasgow coma scale (or equivalent) <15/15 (>1 hour post-fit)
- New neurological signs – Consider imaging (MRI/CT as available)
- Suspected ↑ intracranial pressure - (e.g. papilloedema, tense fontanelle, high BP with low HR)
- Generally unwell - Irritable, uninterested, vomiting
- Meningism e.g. Kernig’s sign positive, photophobia, neck stiffness
- Complex seizure - prolonged (>15 minutes), focal recurrent Consider imaging (MRI/CT as available)
- Signs of aspiration - e.g. respiratory distress, need for oxygen, chest signs.

Discharge Checklist:

If a child has stopped fitting, has fully neurologically recovered, and has no admission criteria, they may be considered safe for discharge.

Before discharging the child from PED make sure the patient and carers have:

- An Emergency Department information advice sheet
- A referral has been made for paediatric out-patient follow up
- Appropriate advice has been given about bathing and sports
- Tear off page from “First seizure in Children" leaflet stuck in notes
3. Education and Training
None

4. Monitoring Compliance

<table>
<thead>
<tr>
<th>What will be measured to monitor compliance</th>
<th>How will compliance be monitored</th>
<th>Monitoring Lead</th>
<th>Frequency</th>
<th>Reporting arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate investigations documented: ECG and Blood glucose</td>
<td>Records audit</td>
<td>Gareth Lewis</td>
<td>3 yearly</td>
<td>departmental audit meeting</td>
</tr>
<tr>
<td>Outpatient review occurred</td>
<td>Records audit</td>
<td>Gareth Lewis</td>
<td>3 yearly</td>
<td>departmental audit meeting</td>
</tr>
</tbody>
</table>

5. Supporting References

An EEG should not be obtained routinely after first unprovoked seizure in childhood. Neurology 2000;54:635


Epilepsies: diagnosis and management. NICE guidelines CG137. Jan 2012

F Davies, C. Westrope. “First Fit in Children” Leicester Royal Infirmary Emergency Department. July 2004-2008

N Hussain. Afebrile Seizure, Children’s Hospital Medical Guideline, University Hospitals of Leicester NHS Trust. Review date December 2015.


6. Key Words
Afebrile, Children, Fit, Fitting, Paediatric, Seizure
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.

<table>
<thead>
<tr>
<th>CONTACT AND REVIEW DETAILS</th>
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<tr>
<td><strong>Guideline Lead (Name and Title)</strong></td>
</tr>
<tr>
<td>Dr G Lewis – Consultant in Paediatric Emergency Medicine</td>
</tr>
<tr>
<td>Dr A Bonfield – Speciality Registrar</td>
</tr>
<tr>
<td>Dr R Radcliffe – Consultant Paediatrician</td>
</tr>
<tr>
<td>Dr D Bhaskaran – Higher Speciality Dr</td>
</tr>
</tbody>
</table>

**Details of Changes made during review:**
- Combined previous 2 guidelines – First afebrile seizure Children’s Medical g/l C251/2016
- First afebrile seizure in Children Paed ED g/l C26/2016

**Flow chart (pg 2)**
- Removed temperature parameters
- Added section – febrile <6 months & >6 years
- Amended all references to 18 month parameters to 12 months of age
- Removed fever >6 years from warning features – now in separate section age specific
- Added focal seizures to warning features
- Changed terminology from Todd’s palsy to paresis
- Senior review now specified as ST4+
- Added admission to CSSU, Children’s Hospital, Time critical transfer and referral documentation
- Hyper links added to relevant sign posts

**Admission (pg 8)**
- Added consider imaging MRI/CT
- Amended terminology from Raised ICP to Suspected Raised ICP
- Removed High parent or carer anxiety

**Updated references**