UHL Single Front Door for Children
Guideline for the management of

Afebrile Seizure - First in Children (<16 years)

University Hospitals of Leicester NHS
NHS Trust

Applies to:	**Children's Hospital and ESM Medical and Nursing Staff**
Trust Ref:	**D1/2019**
ED Senior team approval date:	**July 2019**
Children's Hospital approval date:	**May 2019**
Version:	**5 (updated May 2019)**
Revision Due:	**July 2022**
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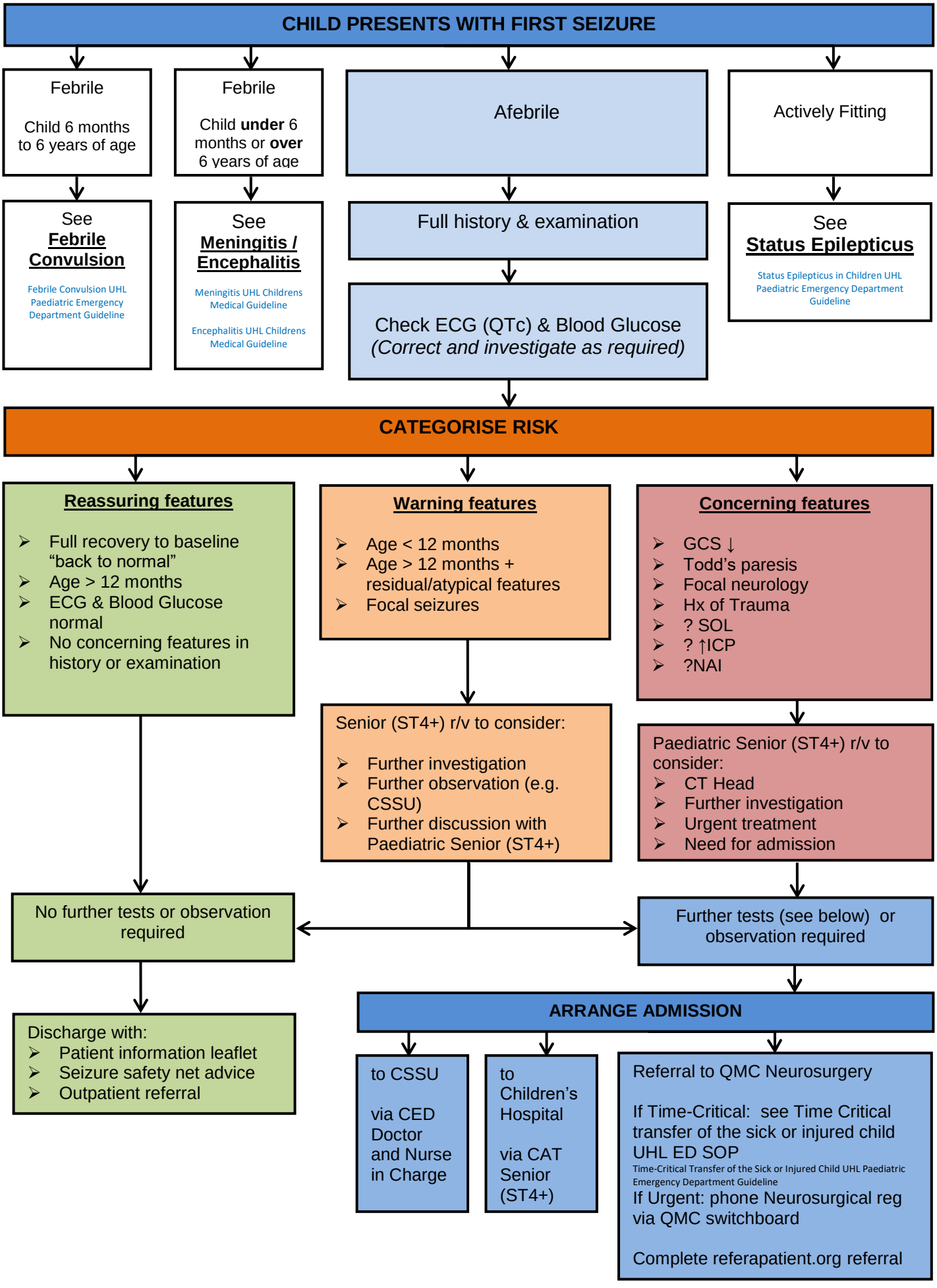
This document **does not** provide immediate guidance on the management of seizures.

If the child is actively fitting, call for help and refer to SOP for **STATUS EPILEPTICUS** in Childen


CHILD PRESENTS WITH FIRST SEIZURE
Febrile
Child 6 months to 6 years of age
Febrile
Child under 6 months or over 6 years of age
Afebrile
Actively Fitting
See Febrile Convulsion
Febrile Convulsion UHL Paediatric Emergency Department Guideline
See Meningitis / Encephalitis
Meningitis UHL Childrens Medical Guideline
Encephalitis UHL Childrens Medical Guideline
Full history & examination
See Status Epilepticus
Status Epilepticus in Children UHL Paediatric Emergency Department Guideline
Check ECG (QTc) & Blood Glucose
(Correct and investigate as required)
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
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
No further tests or observation required
Further tests (see below) or observation required
Discharge with:
Patient information leaflet
Seizure safety net advice
Outpatient referral
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

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**.

Table of Contents

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.

The Event Itself

Preceding Events:	Activity at time, relation to food/drink
Warning Symptoms:	Feeling faint/dizzy, anxious, panic, dry mouth, distortion of vision/hearing, taste/smell
Behaviour:	mood changes prior to seizure
Aura:	subjective symptoms
LOC:	Responsiveness, duration, incontinence of urine
Vocal：	cry or gasp, slurred/garbled speech
Fall/Postural changes	Stiff/floppy, limbs flexed/extended
Facial changes	eyes rolling /pupil dilation, drooling, tongue biting, colour change
Type of movements	Fine and juddering, single or repeated jerks, wild flailing movements
Breathing	Normal, rapid (change in breathing pattern), cessation of breathing

Provoking factors

- Systemic illness
- Fever
- Trauma
- Drugs/medication/poisions
- Alcohol
- Photosensitivity
- Sleep deprivation
- Stress/migraine
- Menstruation
- Problems at home/school
- Emotional upset

Background

PMHx:	Previous similar events	Meningitis/Encephalitis
	Prolonged febrile convulsions	Metabolic disorders
	Hypoglycaemia	Structural brain lesions
	Head injury	Cardiac problems
	Medications	Complex birth history
	Drugs/Poisons	Developmental delay
Family Hx:	Seizures or similar events	Sudden deaths

Differential Diagnoses (see table 1)

- Idiopathic
- Febrile convulsion
- Epilepsy
- Cardiac Arrhythmia Panic
- Attack
- Breath holding attack
- Reflex anoxic seizures
- Gastro-oesophageal reflux
- Self-gratification episodes
- Non-epileptic episodes

Residual Symptoms after attack

Time taken to return to normal	Drowsiness, Amnesia, Confusion	Lethargy, headache, muscle ache
Focal neurological deficit	Tongue biting/other injury	Nausea, Vomiting
Incontinence of urine		

Examination

ABCD - Don't Ever Forget Glucose!	GCS	CVS examination (Include BP/ECG)
Focal neurological signs / asymmetry/ Gait	Dysmorphism	Developmental delay
Gait	Neurocutaneous lesions	Hepatoslenomegaly
Signs of infection	Fundoscopy	Weight/Height/Head Circumference

Table 1: Typical features of common differential diagnoses for Afebrile seizure-type episodes

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

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 futher 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

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Appropriate investigations documented : ECG and Blood glucose	Records audit	Gareth Lewis	3 yearly	departmental audit meeting
Outpatient review occurred	Records audit	Gareth Lewis	3 yearly	departmental audit meeting

5. Supporting References

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

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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.

CONTACT AND REVIEW DETAILS	
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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**	