

Febrile convulsion - Emergency management in children

Purpose

This document provides clinical guidance for all staff involved in the care and management of a child presenting to an Emergency Department (ED) with a suspected febrile convulsion in Queensland.

This guideline has been developed by senior ED clinicians and Paediatricians across Queensland, with input from Paediatric Neurology, Queensland Children's Hospital, Brisbane. It has been endorsed for use across Queensland by the Queensland Emergency Care of Children Working Group in partnership with the Queensland Emergency Department Strategic Advisory Panel and the Healthcare Improvement Unit, Clinical Excellence Queensland.

Key points

- Most febrile convulsions are brief, isolated generalised tonic-clonic seizures that occur with an acute febrile illness in children aged six months to six years (known as simple febrile convulsions).
- The diagnosis of a simple febrile convulsion is based on careful history and examination.
- The simple febrile convulsion recurrence rate is 30 – 35% with 10% of children experiencing three or more convulsions.
- Simple febrile convulsions do not cause neurological damage and are not typically associated with a future diagnosis of epilepsy.
- Management is directed at identifying and appropriately treating the source of the infection.

Introduction

Febrile convulsions are a frequent ED presentation and the most common seizure disorder in children.¹ Approximately 1 in 30 children will experience a febrile convulsion as a result of a fever, mostly between the ages of six months and six years.

Most febrile convulsions are brief, isolated generalised tonic-clonic seizures that occur with an acute febrile illness in children with no history of afebrile seizures, significant known neurological abnormality or current CNS infection.^{1,2}

There is no evidence to suggest any structural neurological damage or increased risk of cognitive decline in a child who experiences a simple febrile convulsion.³



Recurrent febrile convulsions

The estimated overall febrile convulsion recurrence rate is 30-35%⁴ with 10% of children experiencing three or more convulsions.⁵

Risk factors for recurrent febrile convulsions include:

- first febrile convulsion at less than 18 months of age
- family history of febrile convulsions or epilepsy

Febrile convulsions and epilepsy

Most children who experience a febrile convulsion will not develop epilepsy later in life.¹ Children who have multiple febrile convulsions starting less than one year of age are at the highest risk of developing afebrile seizures by 25 years of age.⁶ However, even in this group the risk is only 2.4% compared to the background 1% risk for the general population.⁶⁻⁸

Classification

Classification of febrile convulsions	
Simple febrile convulsion	Complex febrile convulsion
Fever and ALL of the following: <ul style="list-style-type: none"> • generalised onset • can be up to 15 minutes though most are less than this • does not occur more than once in 24 hours • no history of afebrile seizures, known neurological abnormality or current CNS infection 	Fever and ANY of the following: <ul style="list-style-type: none"> • duration greater than 15 minutes • focal symptoms • reoccurs within a 24-hour period.

Assessment

The aim of the assessment is to:

- differentiate simple febrile convulsion from other convulsions which require specialist referral
- identify and, if necessary, treat the source of the fever (refer to [Febrile illness Guideline](#))

Prior to diagnosing a simple febrile convulsion in a child aged outside of six months to six years, carefully consider and exclude alternative diagnoses.

Febrile convulsions are extremely distressing to the care giver and other witnesses so be aware of the likely parental anxiety at the time of presentation.

History

Questioning to differentiate simple febrile convulsions from other convulsions should include:

- details preceding the convulsive episode including:
 - prior events and behaviour of the child
 - signs or symptoms of illness



- details of the convulsion including:
 - how it started
 - the exact movements of the eyes and limbs
 - symmetry of the movements
 - focal movements
 - estimated duration
- appearance/behaviour of the child post convulsion
- any previous convulsions (including afebrile)
- medical and surgical history including intracranial infection or severe metabolic disturbance such as hypoglycaemia or electrolyte disturbance, neurological damage, neurosurgical procedures (including the placement of ventriculo-peritoneal shunts)

Examination

The examination should be directed by the history, with particular emphasis on:

- localising a source for the fever
- assessing neurological status and return to normal level of alertness and activity

Investigations

Simple febrile convulsions

Investigations are not routinely required for simple febrile convulsions providing the child is aged between six months and six years and makes a full recovery to normal self after a period of observation.² Investigations in this group of children should be directed by the suspected underlying cause of infection (see [Febrile illness Guideline](#)) rather than the febrile convulsion itself dictating investigation.

The following investigations are **NOT** routinely recommended if the child is otherwise well:

- bloods
- lumbar puncture (LP)
- imaging
- electroencephalogram (EEG) (not predictive of future febrile convulsion or epilepsy risk)^{9,10}

Refer to the [Meningitis Guideline](#) for the indications for a lumbar puncture in a child with suspected meningitis. Research has shown fully immunised children aged 6 to 18 months who present after a febrile convulsion and are clinically well with no prior antibiotic treatment are at a very low risk of bacterial meningitis.^{11,12}

Atypical simple and other febrile convulsions

Any febrile convulsion that has a focal component, is prolonged (more than 15 minutes), or results in a slow return to normal conscious state should prompt investigation into underlying infection. A focal component to the seizure, or any focal neurological findings, should prompt consideration of CNS infection or structural abnormality.



Investigations in the management of atypical and other febrile convulsions	
Investigation Type	Indications
Full blood count (FBC)	<ul style="list-style-type: none"> consider in prolonged or focal convulsion to aid in assessment of febrile illness
Serum biochemistry	<ul style="list-style-type: none"> consider in prolonged or focal convulsion to exclude electrolyte abnormality
Urine MCS	<ul style="list-style-type: none"> consider if no focus of fever evident on initial assessment to screen for a UTI
Lumbar puncture (LP)	<ul style="list-style-type: none"> consider if suspected infective meningitis or encephalitis consider in child with prolonged or focal convulsion or focal neurological findings for investigation of possible CNS infection or structural abnormalities
EEG	<ul style="list-style-type: none"> only on specialist advice (may be required in febrile status epilepticus or following atypical febrile convulsion)
Neuroimaging	<ul style="list-style-type: none"> consider if persistent focal neurology or if otherwise clinically indicated on specialist advice on specialist advice (as an outpatient) for recurrent and complex febrile convulsions (especially if developmental delay and abnormal head circumference¹³)

Management



ALERT – A convulsion for longer than five minutes is a medical emergency. Refer to the [Status epilepticus](#) guideline for management.



Seek senior emergency/paediatric advice for all children with a complex febrile convulsion.

Management of children following a febrile convulsion will be dictated by the source of the fever. Refer to the [Febrile illness Guideline](#) for guidance on the management of febrile children with no focus of infection evident on initial assessment.

Ibuprofen and/or Paracetamol may alleviate discomfort in a febrile child. Neither antipyretics or anticonvulsants prevent the recurrence of simple febrile convulsions.^{13,14}



Escalation and advice outside of ED

Clinicians can contact the services below if escalation of care outside of senior clinicians within the ED is needed, as per local practices. Transfer is recommended if the child requires a higher level of care.

Refer to the [Status epilepticus Guideline](#) for the recommended management of child with a convulsion lasting more than five minutes.

Advice may be required for the following children:

- following a complex febrile convulsion
- specific concerns relating to the instigating illness
- recurrent febrile convulsions
- consideration of neuroimaging

Reason for contact	Who to contact
Advice (including management, disposition or follow-up)	Follow local practice. Options: <ul style="list-style-type: none"> • onsite/local paediatric service • Queensland Children's Hospital experts via Children's Advice and Transport Coordination Hub (CATCH) on 13 CATCH (13 22 82) (24-hour service) • local and regional paediatric videoconference support via Telehealth Emergency Management Support Unit TEMSU (access via QH intranet) on 1800 11 44 14 (24-hour service)
Referral	First point of call is the onsite/local paediatric service

Inter-hospital transfers

Do I need a critical transfer?	<ul style="list-style-type: none"> • discuss with onsite/local paediatric service • view Queensland Paediatric Transport Triage Tool
Request a non-critical inter-hospital transfer	<ul style="list-style-type: none"> • contact onsite/local paediatric service • contact RSQ on 1300 799 127 for aeromedical transfers • contact Children's Advice and Transport Coordination Hub (CATCH) on 13 CATCH (13 22 82) for transfers to Queensland Children's Hospital
Non-critical transfer forms	<ul style="list-style-type: none"> • QH Inter-hospital transfer request form (access via QH intranet) • aeromedical stepdown (access via QH intranet) • commercial aeromedical transfers: <ul style="list-style-type: none"> ○ Qantas ○ Virgin ○ Jetstar



When to consider discharge from ED

Discharge will be based on the source of the infection and the management required. There is no evidence for a prescribed minimum duration of observation following a febrile convulsion.

Consider discharge for a child who meets the following criteria:

- suffered a simple febrile convulsion
- returned to their normal age appropriate baseline neurology
- has an infectious source identified that can be managed as an outpatient
- can be safely managed at home

Prior to discharge, parent/s should receive education regarding:

- the recurrence rate of febrile convulsions
- first aid for a convulsion

On discharge, parent/s should be provided with a [Febrile convulsions factsheet](#)

Follow-up

- with General Practitioner within a week to ensure resolution of the instigating febrile illness.

When to consider admission

The requirement for admission will be based on the management of the underlying infectious disease.

The decision to admit a child with complex febrile convulsions or status epilepticus will be made by the specialist referral team based on the further investigations and management required.

Facilities with a Short Stay Unit (SSU)

Consider admission to an SSU for a child following a febrile convulsion for prolonged observation if ongoing parental anxiety or inappropriate community setting (i.e. middle of the night, transport not available).

Related documents

Guidelines

- [Febrile illness](#)
- [Meningitis](#)
- [Sepsis](#)

Factsheets

- [Febrile convulsions](#)
- [Fever in children](#)



References

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Guideline approval

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The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- Providing care within the context of locally available resources, expertise, and scope of practice
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
- Ensuring informed consent is obtained prior to delivering care
- Meeting all legislative requirements and professional standards
- Applying standard precautions, and additional precautions as necessary, when delivering care
- Documenting all care in accordance with mandatory and local requirements

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