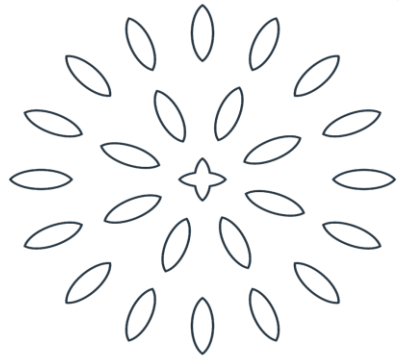


Table of contents

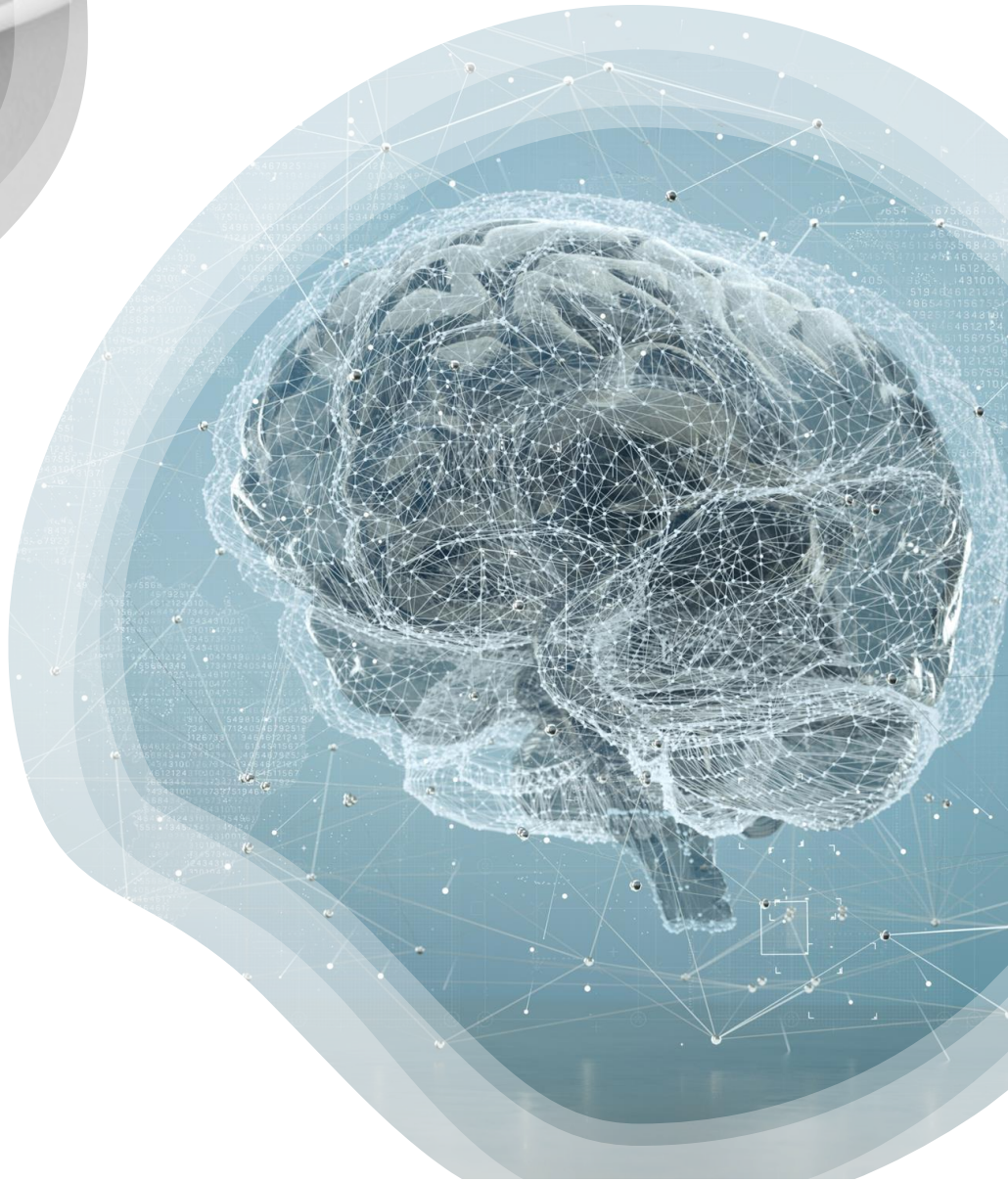


# Febrile Seizures

Registrar Education Series

*Updated March 2023*

Summary



# Table of Contents

Definitions

History and Exam

Evaluation  
Overview

Summary

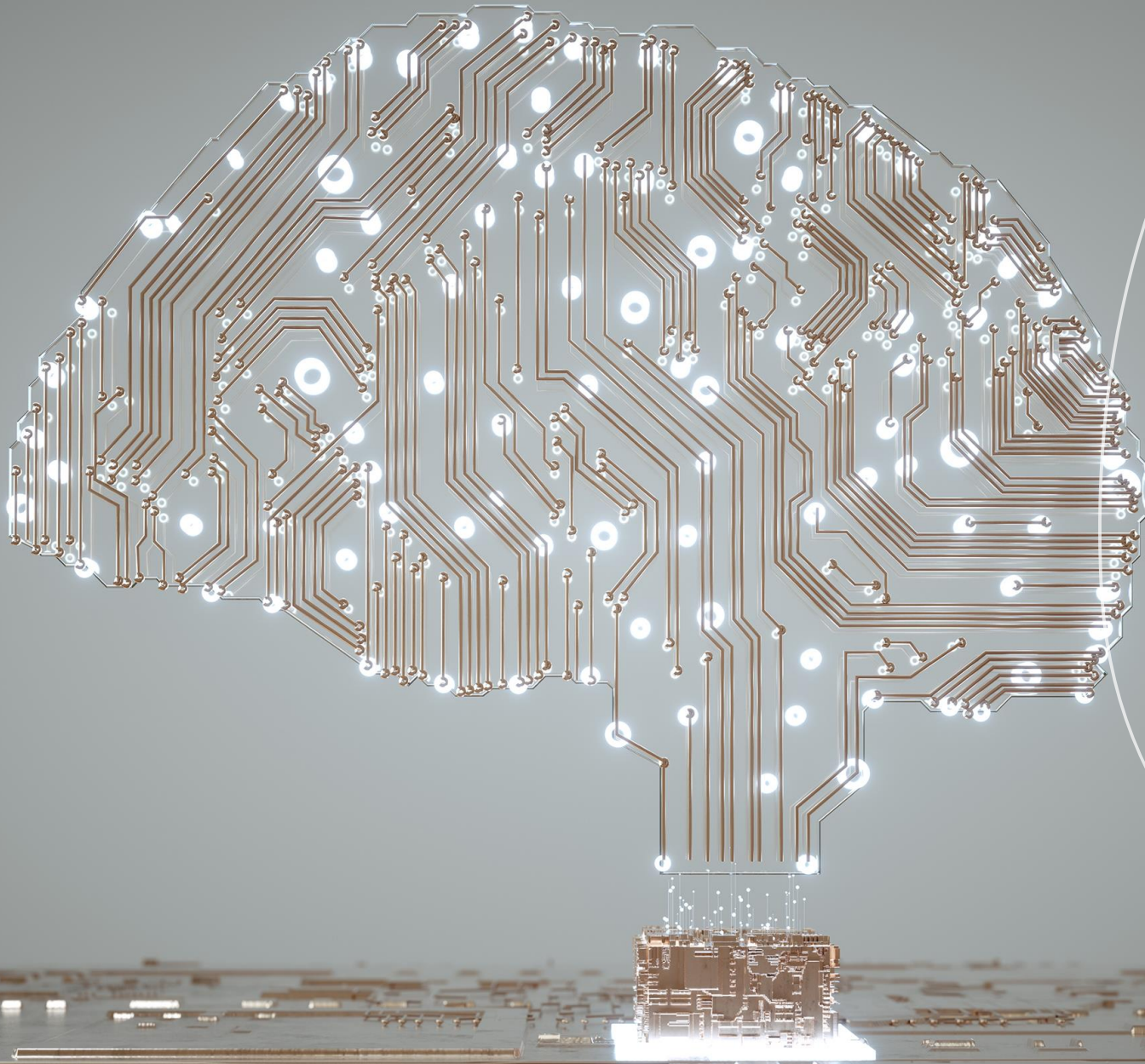


Specific  
Investigations

Acute  
Management

Prognosis





## Definitions

What is a febrile seizure?

What is a simple febrile seizure?

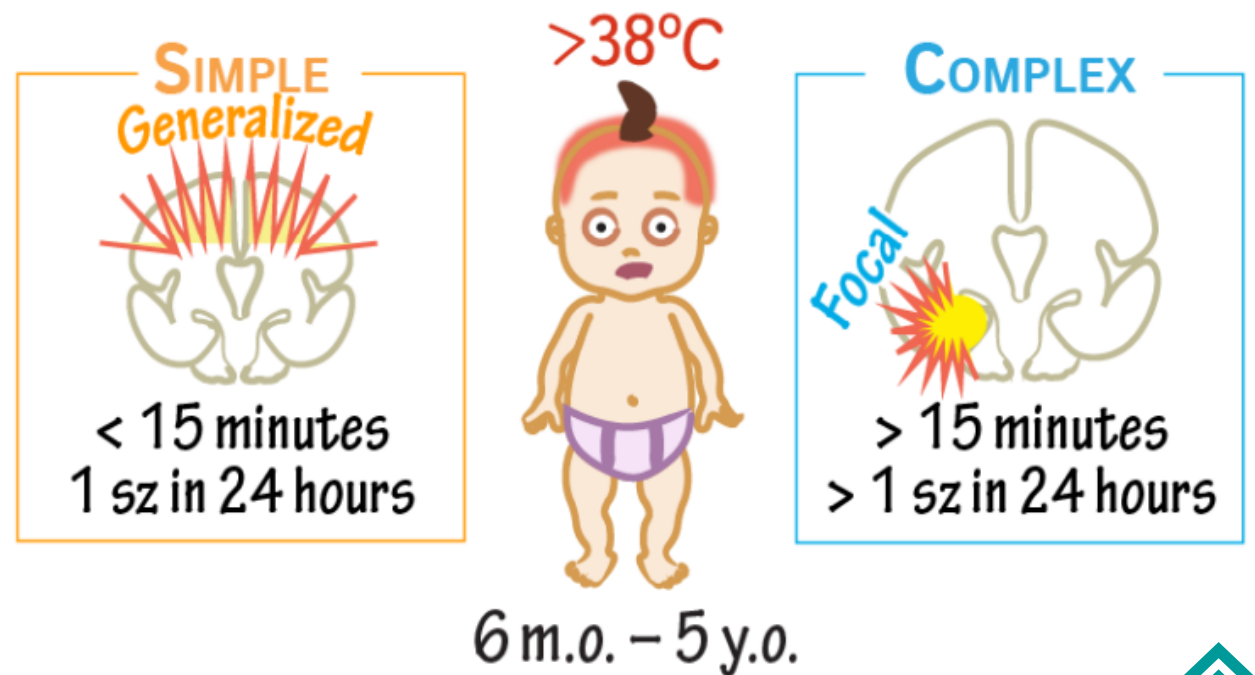
What is a complex febrile seizure?



# Definitions

- *Febrile seizure*: seizure occurring in a child 6mo – 5 years accompanied by a fever ( $\geq 38^{\circ}\text{C}$ ) without CNS infection.

Simple (All of the following)	Complex (Any of the following)
< 15 minutes	$\geq 15$ minutes
Generalized	Focal neurologic signs
Once in 24 hours	Recurr within 24 hours
No previous neurologic problems	



# History and Exam

What information needs to be obtained for all patients presenting with suspected febrile seizures?

Which minimum components need to be included in a physical exam?

What is on the differential?





# History and Exam

## History

- Preictal, ictal, postictal states, duration of episode
- Personal or family history of seizures (febrile or nonfebrile) or epilepsy
- Pre-existing structural lesion
- Recent illness or antibiotic use, recent vaccinations, immunization status for HiB and PCV
- Signs of CNS infections and other infections
- Birth history, developmental history

## Exam

- HEENT (look for source of infection)
- Comprehensive neurological exam
- Focal neurologic findings

## Differential diagnosis

- Aseptic meningitis
- Bacterial meningitis
- Encephalitis
- Tonic-clonic seizures



## Evaluation overview

What investigations are indicated for simple febrile seizures?

What investigations are indicated for complex febrile seizures?



# Evaluation overview

## Simple Febrile Seizures

- Usually none, it is a clinical diagnosis (SORT C)
- If no obvious source of infection, check the ears and consider urinalysis

## Complex Febrile Seizures

- Consider LP/CSF analysis, especially if: irritable, reduced feeding, lethargy, clinical signs of meningitis/encephalitis
- Consider: RBS, electrolytes, EEG, MRI







# Specific Investigations

When is LP indicated?

When is EEG indicated?

When are blood tests indicated?

When is neuroimaging indicated?



# Specific investigations

## Lumbar Puncture

- Additional findings suggestive of meningitis: obtunded or comatose mental status, nuchal rigidity, prolonged focal seizure, petechial rash, multiple seizures
- Consider if: > 12 months and well-appearing but incomplete or unknown immunization status for HiB or PCV

## EEG (outpatient)

- Children with multiple risk factors for epilepsy (developmental delay, family history of epilepsy, > 1 defining feature of a complex febrile seizure)
- Not a routine part of evaluation if no neurological signs. Does not predict the future recurrence or epilepsy even if abnormal result.

## Blood tests

- Persistently abnormal mental status between or after seizures: RBS and electrolytes

## Neuroimaging

- Complex febrile seizure AND abnormal or focal findings on neuro exam
- NOT recommended for 1<sup>st</sup> simple febrile seizure





# Acute Management

---

When are benzodiazepines indicated?

What is the role of antipyretics?

Are antiepileptic drugs indicated for febrile seizures?

Who should be admitted to the hospital?



# Acute Management

## Benzodiazepines

- Duration > 5 minutes: IV lorazepam or diazepam. If not available, buccal midazolam or rectal diazepam.

## Antipyretics

- May reduce discomfort, but do not reduce the risk of recurrent seizures (SORT A)

## Antiepileptic drugs

- Not indicated. Adverse events occur in up to 30% of patients, so not worth it given the benign nature of febrile seizures (SORT B)

## Hospital admission

- Usually not indicated
- Consider if: younger age, need for further observation because of abnormal exam findings, unreliable follow-up



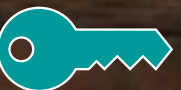
# Prognosis

What are the 4 independent risk factors for recurrent febrile seizures?

What are the risk factors for future unprovoked seizure after a febrile seizure?

What anticipatory guidance should be given to parents?

WHAT'S  
NEXT?



# Prognosis

## Risk factors for recurrence:

- Age < 18 months
- Fever duration < 1 hour before seizure onset
- 1<sup>st</sup> degree relative with febrile seizure
- Temp < 40C (SORT B)

## Risk factors for future unprovoked:

- Age > 3yo at time of 1<sup>st</sup> febrile seizure
- Complex febrile seizure, family history of epilepsy
- Fever duration < 1 hour before seizure onset
- Neurodevelopmental abnormality

## Anticipatory guidance

- Focus on reassurance, emphasizing the benign nature of febrile seizures and overall excellent prognosis even if seizures recur
- Initial management: protect child from injury during seizure. Do not restrain child or put anything in the mouth. Seek evaluation if it lasts > 5 minutes.



# Risk of Recurrence After an Initial Febrile Seizure

Risk Factors
Age < 18 months
Duration of fever < 1 hour before seizure onset
1 <sup>st</sup> degree relative with febrile seizure
Temperature < 40C

Number of risk factors	Two-year risk of recurrence (%)
0	14
1	24
2	32
3	63
4	75



# Summary

## Definition

- Seizure in a child 6mo-5yo accompanied by a fever ( $\geq 38^{\circ}\text{C}$ ) without CNS infection
- Simple:  $< 15\text{min}$ , generalized, once in 24 hours
- Complex:  $> 15\text{min}$ , focal,  $> 1$  in 24 hours

## Diagnosis: Clinical

- Simple and well-appearing: No investigations indicated
- Complex: May consider LP, RBS, electrolytes, EEG, MRI

## Management

- Simple: Supportive care, address source of infection, reassurance
- Duration  $> 5$  minutes: IV lorazepam or diazepam
- AEDs not indicated
- Antipyretics may reduce discomfort but not the risk of recurrent seizures

## Prognosis

- 33% risk of recurrence after 1<sup>st</sup> febrile seizure, regardless of whether it is simple or complex
- Risk of epilepsy: 2.4% in simple febrile seizures, 6-8% in complex febrile seizures

## Anticipatory guidance

- Focus on reassurance
- Emphasize benign nature of febrile seizures and overall excellent prognosis, even if the seizures recur

