



A **seizure** occurs when there is a sudden **change in behavior** or **sensation** caused by **abnormal** and **excessive electrical hypersynchronization** of neuronal networks in the cerebral cortex. Normal inhibition is overcome by excessive excitatory stimuli.

FEBRILE SEIZURE: A convulsion, within 24 hours, of a **temp $\geq 38^{\circ}\text{C}$** in a child **6 months to 5 years**, with no previous afebrile seizure history, in the **absence of CNS infection, inflammation, acute metabolic abnormalities**, etc.

SIMPLE FEBRILE SEIZURES (85%)	COMPLEX FEBRILE SEIZURES	FEBRILE STATUS EPILEPTICUS
<ul style="list-style-type: none"> ➤ Only 1 seizure in a 24-hour period ➤ Generalized; no focal features ➤ Lasting < 15 minutes 	<ul style="list-style-type: none"> ➤ Frequent (recurrent seizures in 24 hours) ➤ Focal features ➤ Lasting ≥ 15 minutes 	<ul style="list-style-type: none"> ➤ Prolonged febrile seizure ➤ Lasting ≥ 30 minutes
<p>Febrile seizures occur in 2-5% of children under 5 years old. They are the most common type of convulsions.</p>		

HISTORY

- **Seizure history:** pre-ictal, ictal, and post-ictal. Ask about duration, focal symptoms, and provoking events. Do they take an AED?
- **Illness symptoms:** fever, nausea, vomiting, diarrhea, or rash. Symptoms suggestive of otitis media, respiratory illness, or UTI.
- **Past medical history:** neonatal history, perinatal complications, history of seizure, developmental delay, or head injury.
- **Family history:** family history of seizures, including febrile seizures and epilepsy.
- **Medication history:** meds that may lower seizure threshold, including antibiotics (eg: penicillins, metronidazole), anti-asthmatics (eg: theophylline), antidepressants (eg: bupropion, tricyclics), hormones (prednisone, insulin), etc.
- **Other risk factors:** recent immunizations, daycare attendance, developmental delay, etc.

RED FLAGS

Consider **lumbar puncture** if:

- Altered level of consciousness
- Lethargy, irritability
- Meningismus – positive Kerning's or Brudzinski's sign
- Bulging fontanelle – \uparrow ICP
- Focal neurological findings
- Age: < 6 months or > 6 years

A CT scan of the head is obtained to establish the safety of performing an LP.

PHYSICAL EXAM

- **ABCs, vitals, level of consciousness**
- **General physical exam:** source of infection (eg: ears, upper respiratory tract, lungs, GI tract, urinary tract, and skin).
- Thorough **neurological exam**
- **Developmental exam**
- **Meningeal signs:**
 - **Brudzinski's sign:** when the neck is flexed, severe neck stiffness causes a patient to flex their hips and knees.
 - **Kerning's sign:** flex the thigh at the hip with the knee at 90° , then extend the knee. It is a positive sign if it is painful leading to resistance.
 - These signs are not present in young infants.

NEUROIMAGING

Indicated in children with:

- Abnormal neurologic examination
- Macrocephaly
- Signs and symptoms of increased ICP (headache, nausea, vomiting, hypertension, confusion, double vision, papilledema)

Further diagnostic investigations are **unnecessary** in children with a **typical history of a simple febrile seizure** and a **normal neurological exam**.

INVESTIGATIONS

History of **vomiting, diarrhea**, and **decreased fluid intake** or physical exam findings of **dehydration**:

- CBC/diff
- Calcium
- Electrolytes
- Urea
- Glucose

ACUTE TREATMENT	PROPHYLACTIC TREATMENT
<ul style="list-style-type: none"> ▪ IV benzodiazepines (lorazepam, diazepam, midazolam) if the seizure has not stopped at 5 minutes. ▪ Treat the cause (eg: infection, metabolic disorders, stop the offending med, etc). 	<ul style="list-style-type: none"> ▪ Prophylactic medication is rarely indicated. ▪ Antipyretics have not shown to prevent recurrence. ▪ SL/PO lorazepam or diazepam prescription for children with a history of prolonged febrile seizures (> 5 mins).

RISK FACTORS FOR RECURRENCE

Recurrence risk: 40%

- 1st febrile seizure < 18 months
- Duration of fever < 24 hours
- Complex febrile seizure
- Family history of febrile seizures
- Temperature < 40°C (104°F)

EDUCATION / REASSURANCE OF CAREGIVERS

- Febrile seizures are **common**, occurring in **2-5%** of children ≤ 5 years old.
- **No risk of death, brain damage, learning problems, or decreased IQ.**
- Most patients have 2 or 3 febrile seizures in a lifetime.

GENERALIZED EPILEPSY WITH FEBRILE SEIZURE PLUS (GEFS+)

- Initially, these children have febrile seizures, but soon develop non-febrile seizures.
- **Treatment:** valproic acid