REFERRAL GUIDELINE

Pediatric Neurology	Febrile Seizures: Simple and Complex

Background	Febrile seizures are the most common neurologic disorder in infants and young children, occurring in 2 - 4% of children younger than 5 years of age **Simple Febrile Seizure:** • Primarily occur in neurologically healthy infants/children • Associated with a febrile illness in the absence of a CNS infection who present for evaluation within 12 hours of the event • Most common seizure in children between the ages of 6 months to 5 years, with peak incidence occurring approximately 12-18 months of age • Onset after 7 years is uncommon • Symptoms include: - Quick rise of fever ≥100.4 F or 38 C - Usually a generalized tonic-clonic seizure lasting ≤ 15 minutes, with mean duration of 3-4 minutes, without treatment. - Usually without recurrence in 24 hrs **Complex Febrile Seizure:** • Have focal onset (shaking of one limb or one side of the body) OR • Prolonged seizure occurring ≥ 15 minutes OR • Recurrent seizure within 24 hrs • Risk factors after 1 simple seizure include: - < 15 months of age - Family history (first degree relative) of febrile seizures - Low degree of fever at time of seizure - Short duration of illness before occurrence of seizure - History of frequent fevers • Reoccurrence of risk increases with higher number of risk factors - No risk factors: 4% - 1 risk factor: 23% - 2 risk factors: 32% - 3 risk factors: 62% - 4 risk factors: 76%
Initial Evaluation	**Pertinent History**: • Initial evaluation aimed toward identifying the source of fever • Document family history of febrile seizures or epilepsy, immunization status, recent antibiotic use, duration of the seizure, family history of seizure, any prolonged postictal phase, any focal symptoms and history of neurologic problems or developmental delay

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	Pertinent Physical and Neurological Exam: • Abnormal vital signs (tachypnea or hypoxemia) • Attention to presence of meningeal signs (altered consciousness, nuchal rigidity, petechial rash) • Tense or bulging fontanelle • Focal differences in muscle tone, strength or spontaneous movements
Initial Management	**EEG:** • **Simple Febrile Seizure:** Should not be performed in the evaluation of a neurologically healthy child • **Complex Febrile Seizure:** Should be performed if the neurological exam is abnormal and in the event of a prolonged or focal seizure **Lab Testing:** • Directed at identifying source of fever. Tests **not** performed routinely for the sole purpose of identifying the cause of a simple febrile seizure include: serum electrolytes, calcium, phosphorus, BUN, magnesium, glucose or CBC, unless h/o vomiting, diarrhea, and abnormal fluid intake or when findings of dehydration or edema is present. **Neuro-Imaging:** • **Simple Febrile Seizure:** Should not be performed as routine evaluation • **Urgent Neuro-Imaging:** CT w/contrast or MRI: Should be performed in children with focal features, abnormally large heads, persistently abnormal neurological exam or signs of increased ICP Refer to: Pediatrics.aappublications.org/content/pediatrics/127.2.full.pdf
Pre-Visit Work Up	PCP Medical record to include: • Office visit with detailed H&P, vital signs • Medication list to include OTC and prescription medication • Developmental history

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When to Refer	**Refer to local Emergency Department for the following:** Patients with complex febrile seizure and qualify for urgent neuro-imaging or LP: Lumbar Puncture *should* be performed on any child who: • Presents with seizure, fever and has meningeal signs in ages 6-12 months • Meningeal signs include: - Neck stiffness - Kernig and/or Brudzinski signs - Any history or examination that suggest the presence of meningitis or intracranial infection Lumbar Puncture should be considered an *option* for: • Any infant between 6 to 12 months of age who presents with a seizure, fever and partially immunized against *Haemophilus influenza* type b (Hib) or *Streptococcus pneumoniae* immunization that has not received scheduled immunization as recommended or when immunization status cannot be determined • Any child who is pre-treated with antibiotics *** LP not necessary in most well appearing children who have returned to a normal baseline after the febrile seizure *** CBC, Blood Culture, Serum Glucose should be drawn prior to patients receiving LP **Neurologist:** • Refer if signs of developmental delay or encephalopathy present, or if EEG and/or neuro-imaging is warranted
Return to Primary Care Endpoint	• Care/follow-up to be transferred back to Primary Care Provider once stabilized and medical plan in place. • Do not prescribe antiepileptic's or antipyretics to prevent febrile seizures • Instruct family on how to manage febrile seizure at home regarding seizure safety precautions and first aid
Guidelines Referenced	• http://www.childneurologyfoundation.org/disorders/febrile-seizures/ • http://pediatrics.aappublications.org/content/pediatrics/127/2/389.full.pdf • http://patients.aan.com/disorders/index.cfm?event=view&disorder_id=925 • https://ncbi.nih.gov>NCBI>PubMedCentral (PMC) • https://www.uptodate.com/contents/febrile-seizures-beyond-the-basics

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See Algorithm Below:

Algorithm for Management of Febrile Seizure in otherwise healthy children aged 6 months to 6 years who present within 12 hours of event

Evaluate with history and physical

Simple Febrile Seizure:
- History of fever ≥ 100.4 F or 38 C
- ≤ 15 minutes
- w/o recurrence in 24 hrs

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Provide reassurance and education
Follow-up as necessary

Complex Febrile Seizure:
- History of fever ≥100.4 F or 38 C, **WITH**
- Focal onset (shaking of one limb or one side of the body) OR
- Prolonged seizure occurring ≥ 15 minutes OR
- Recurrent seizure within 24 hrs

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Provide reassurance and education
Consider referral to Neurology for additional evaluation/EEG or Emergency Room**
Follow-up as necessary

Emergency:
- Meningeal signs
- Seizure lasting more than 5 minutes
- Focal features, abnormally large head, persistently abnormal neurological exam or signs of increased ICP

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Stabilize and transfer to ED for further evaluation and management

**Consider LP in any infant between 6 and 12 months of age if not fully immunized against *Haemophilus influenza* type b (Hib) or *Streptococcus pneumoniae* immunizations or when immunization status cannot be determined OR if recently ("within days") received antibiotics because of an increased risk of bacterial meningitis (Level D Evidence).

***LP is not necessary in most well appearing children who have returned to a normal baseline after the febrile seizure.

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