

## AAP Updates Guidelines for Evaluating Simple Febrile Seizures in Children

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**Evidence rating system used?** Yes

**Literature search described?** Yes

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Febrile seizures are the most common seizures in children younger than 60 months and are accompanied by a fever of at least 100.4°F (38°C) without central nervous system infection. The American Academy of Pediatrics (AAP) recently updated its guidelines on the neurodiagnostic evaluation of simple febrile seizures in neurologically healthy children six to 60 months of age.

The guidelines aim to optimize physician understanding of the scientific basis for the evaluation of children with simple febrile seizures; optimize the evaluation of these children by identifying underlying diseases, minimizing morbidity, and reassuring anxious patients and parents; assist in clinical decision making using a structured framework; reduce costs from physician and hospital visits, and from unnecessary testing; and alert physicians that simple febrile seizures often do not require further testing.

### Key Action Statements

#### LUMBAR PUNCTURE

*Lumbar puncture should be performed in children with febrile seizures and signs and symptoms of meningitis (e.g., neck stiffness, Kernig sign, Brudzinski sign), or if the patient history or examination suggests the presence of meningitis or intracranial infection. Quality of*

*evidence: strong recommendation; overwhelming evidence from observational studies.*

Although lumbar puncture is an invasive, often painful test that can be costly, the benefit of detecting bacterial meningitis, which is a potentially fatal disease if left untreated, outweighs these drawbacks. The importance of detecting meningitis should be explained to parents, especially if they are resistant to the test. If lumbar puncture is warranted, blood culture should be performed to increase the sensitivity of detecting bacteria, and serum glucose testing should be performed to detect hypoglycorrhachia characteristics of bacterial meningitis.

*In infants six to 12 months of age with febrile seizures, lumbar puncture is an option if they have not received recommended Haemophilus influenzae type b (Hib) or pneumococcal vaccinations, or if their immunization status is unknown. Quality of evidence: optional; expert opinion, case reports.*

This recommendation is based on data from before and after the advent of Hib and pneumococcal immunizations. It does not apply to children older than 12 months because physicians should recognize signs and symptoms of meningitis in these children. Although complete immunization does not eliminate the risk of meningitis, current data no longer support routine lumbar puncture in well-appearing, fully immunized children. Data are not definitive; therefore, this recommendation is optional.

*Lumbar puncture is also considered an option in children with febrile seizures who are pretreated with antibiotics. Quality of evidence: optional; reasoning from clinical experience, case series.*

Antibiotics may be insufficient to eradicate meningitis and may mask the signs and ▶

symptoms of the disease. Although clinical experience is consistent with this recommendation, extensive studies are needed. There is insufficient evidence to define a duration of antibiotic pretreatment, and the ultimate decision to perform lumbar puncture in these patients is up to the physician.

### ELECTROENCEPHALOGRAPHY

*Electroencephalography (EEG) should not be performed in neurologically healthy children with simple febrile seizures. Quality of evidence: strong recommendation; overwhelming evidence from observational studies.*

There is no evidence that EEG in these children is predictive of recurrence of febrile seizure or of afebrile seizures (epilepsy) within the next two years. Only one study showed that paroxysmal EEG was associated with a higher rate of afebrile seizures, and there is no evidence that EEG would alter outcomes. Although EEG has limited prognostic value, parents should be told that it would not affect outcomes.

### LABORATORY TESTS

*The following tests should not be routinely performed solely for diagnosing the cause of simple febrile seizures: complete blood count and measurement of serum electrolyte, calcium, phosphorus, and magnesium levels. Quality of evidence: strong recommendation; overwhelming evidence from observational studies.*

There is no evidence that routine blood tests are beneficial in the evaluation of simple febrile seizures in children. Although a complete blood count in children with fever may identify those at risk of bacterial meningitis, the risk is the same with or without febrile seizures. Some children with febrile seizures have abnormal serum electrolyte levels; however, appropriate patient history and physical examination are usually sufficient. If the decision is made to perform laboratory

testing, it should focus on the cause of the fever and not the cause of the seizure.

### NEUROIMAGING

*Neuroimaging should not be routinely performed in children with simple febrile seizures. Quality of evidence: strong recommendation; overwhelming evidence from observational studies.*

Although neuroimaging might provide early detection of fixed structural lesions or rarely abscess or tumor, the costs and risks outweigh this potential benefit. Parents should be educated about these risks. The literature does not support the use of skull films in children with simple febrile seizures, and there are no data evaluating computed tomography or magnetic resonance imaging. However, studies have shown that computed tomography is associated with radiation exposure that may increase the risk of developing cancer, and that magnetic resonance imaging is associated with risks related to sedation. Furthermore, data on computed tomography in neurologically healthy children with generalized epilepsy have shown that clinically important intracranial structural abnormalities in this population are uncommon.

### Conclusion

The evaluation of children with simple febrile seizures should be directed toward determining the cause of the fever. Meningitis should be considered in any child with fever, and lumbar puncture should be performed if there are associated signs and symptoms. Based on physician judgment, lumbar puncture may be performed in children who have not received the recommended Hib or pneumococcal vaccines and in children who were pretreated with antibiotics. EEG, blood tests, and neuroimaging are generally not recommended in children with simple febrile seizures. ■