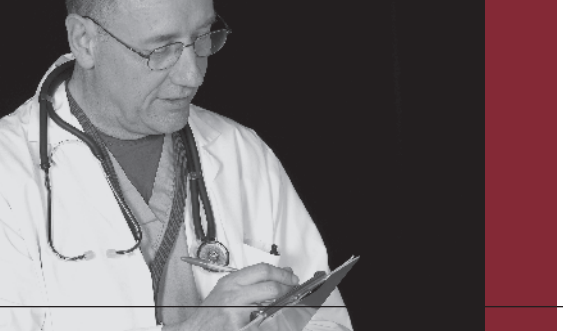

REASSESSMENT: NEUROIMAGING IN THE EMERGENCY PATIENT PRESENTING WITH SEIZURE

This is a summary of the reassessment of the American Academy of Neurology's 1996 guideline which evaluated the usefulness of performing an immediate neuroimaging procedure in the emergency department on persons presenting with seizures.

UTILITY OF NEUROIMAGING AS SCREENING PROCEDURE FOR ALTERING MANAGEMENT OF EMERGENCY PATIENT

Please refer to Tables 1–5 in the full guideline at www.aan.com for data answering the following questions.

1. *What is the likelihood that acute management for the adult emergency patient presenting with a first seizure is changed as a result of a neuroimaging study?*

Overall, head CT scans in the emergency department for an adult presenting with seizure resulted in a change of acute management of 9 to 17 percent of patients. Frequently found head CT abnormalities that changed acute management include traumatic brain injury, subdural hematomas, non-traumatic bleeding, cerebrovascular accidents, and brain abscesses.

Conclusion	An emergency head CT in adults with first seizure is possibly useful for acute management of the patient (Class III).*
Weak evidence supports	An emergency head CT may be considered in adults with first seizure (**Level C**).**

2. *What is the likelihood that acute management for the pediatric emergency patient presenting with a first seizure (not excluding complex febrile seizure) is changed as a result of a neuroimaging study?*

Overall, head CT scans in the emergency department for children presenting with seizure resulted in a change in acute management in approximately 3 to 8 percent of patients. Frequent head CT abnormalities that resulted in a change in acute management were cerebral hemorrhages, tumors, cysticercosis, and obstructive hydrocephalus.

Conclusion	An emergency head CT in children with a first seizure is possibly useful for acute management of the patient (Class III).
Weak evidence supports	An emergency head CT may be considered in children with a first seizure (**Level C**).

3. *What is the likelihood that acute management for the emergency patient presenting with a chronic seizure is changed as a result of a neuroimaging study?*

The rates of abnormal head CT findings in patients with chronic seizure vs. a first seizure in the emergency setting are not different and approximately 7 to 21 percent of patients with chronic seizure have abnormal imaging studies. Frequent head CT abnormalities were cerebral hemorrhages and shunt malfunction.

Conclusion	The evidence is inadequate to support or refute the usefulness of emergency CT in persons with chronic seizures.
Inadequate evidence to support or refute	No recommendation regarding an emergency head CT in persons with chronic seizures (**Level U**).

4. *What is the likelihood that the results of a neuroimaging study will lead to a change in acute management in special populations presenting with seizure (age less than 6 months, AIDS, children with immediate post-traumatic seizures)?*

- Children less than 6 months of age with seizure will be very likely to have significant abnormalities on head CT scans. Frequent head CT abnormalities for children less than 6 months of age included Aicardi syndrome, Miller-Decker syndrome, tuberous sclerosis, infarct, and depressed skull fractures.

- Persons with AIDS and first seizure have very high rates of head CT abnormalities. Frequent head CT abnormalities for persons with AIDS included atrophy, mass lesions, CNS toxoplasmosis, and PML.
- Children with immediate post-traumatic seizures had a very low rate of head CT abnormalities.

Conclusion	An emergency head CT in children less than 6 months of age and in patients with AIDS is possibly useful for acute management (Class III).
Weak evidence supports	An emergency head CT may be considered in children less than 6 months of age and in patients with AIDS (**Level C**).

5. *What factors are associated with an abnormal neuroimaging study for patients presenting with seizure in the emergency department?*

Factors associated with an abnormal heat CT scan include 1) a predisposing history, closed head injury, recent CSF shunt revision, malignancy, or neurocutaneous disorder, and 2) focal onset of seizure.

Conclusion	The clinical and historical features of an abnormal neurologic examination, a predisposing history, or a focal seizure onset are probably predictive of an abnormal CT study for patients presenting with seizures in the emergency department (Class II).
Good evidence supports	An emergency CT should be considered in patients presenting with seizure in the emergency department who have an abnormal neurologic examination, predisposing history, or focal seizure onset (**Level B**).

This guideline summary is evidence-based. The AAN uses the following definitions for the level of recommendations and clarification of evidence.

***Classification of Evidence for Rating of Screening Articles: Class I** = A statistical population-based sample of patients studied at a uniform point in time (usually early) during the course of the condition. All patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation that is masked to the patients' clinical presentation. **Class II** = A statistical, non-referral-clinic-based sample of patients studied at a uniform point in time (usually early) during the course of the condition. Most patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation that is masked to the patients' clinical presentations. **Class III** = A sample of patients studied during the course of the condition. Some patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation by someone other than the treating physician. **Class IV** = Expert opinion, case reports, or any study not meeting criteria for Class I to III.

****Classification of Recommendations: A** = Established as effective, ineffective, or harmful for the given condition in the specified population. (Level A rating requires at least two consistent Class I studies.) **B** = Probably effective, ineffective, or harmful for the given condition in the specified population. (Level B rating requires at least one Class I study or at least two consistent Class II studies.) **C** = Possibly effective, ineffective, or harmful for the given condition in the specified population. (Level C rating requires at least one Class II study or two consistent Class III studies). **U** = Data inadequate or conflicting given current knowledge; treatment is unproven.

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