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THE AUSTRALIA AND NEW ZEALAND CHILD NEUROLOGY SOCIETY

TOP-FIVE RECOMMENDATIONS on low-value practices

Better care. **Better** decision-making. **Better** use of resources.

The Australia and New Zealand Child Neurology Society (ANZCNS) is a collaborative group of medical professionals working in the field of paediatric neurology or in allied neurosciences who are working to advance the science of paediatric neurology and advocate for improved care for young people with neurological disorders.

1. Do not routinely perform electroencephalographs (EEGs) for children presenting with febrile seizures
2. Do not routinely perform computed tomography (CT) scanning of children presenting with new onset seizures
3. Do not routinely undertake repeat blood level monitoring of antiepileptic drug (AED) treatments
4. Do not routinely undertake neuroimaging for new onset primary headache without first examining for neurological abnormality
5. Do not routinely perform electroencephalographs (EEGs) for children presenting with syncope (fainting)

1 Do not routinely perform electroencephalographs (EEGs) for children presenting with febrile seizures

Febrile seizures are seizures associated with fever, but without evidence of central nervous system infection. There is no evidence that epileptiform discharges (i.e. distinctive electroencephalograph patterns associated with epileptic disorders) in children with febrile seizures have any diagnostic or prognostic implications.

For instance, even among otherwise neurodevelopmentally normal children with a first complex febrile seizure (febrile seizures which are prolonged or occur multiple times within 24 hours or are confined to one side of the body) these EEG patterns are a poor predictor for epilepsy. Therefore, an EEG test should not be a routine investigation for these and other patients presenting with febrile seizures.

2 Do not routinely perform computed tomography (CT) scanning of children presenting with new onset seizures

The yield from neuroimaging of children presenting with new onset afebrile seizures is typically low, with one study finding that it led to a change in clinical management for only four percent of patients. As there are already a well-tested set of indicators for determining the likelihood of intracranial abnormalities in children with new onset unprovoked seizures, a combination of clinical history, examination, and electroencephalograph (where relevant) should first be used to determine whether the condition warrants neuroimaging.

Clinical indicators for intracranial abnormalities, which are likely to change initial patient management, include (i) a focal seizure in children aged less than three years, (ii) abnormal neurological examination, (iii) Todd's post-ictal paresis, or (iv) presence of a condition predisposing to seizures.

In children where an intracranial abnormality is considered likely, and neuroimaging is indicated, magnetic resonance imaging (MRI) is recommended over computed tomography (CT) because (i) there is superior anatomic resolution and characterisation of pathologic processes from using MRI, and (ii) there is radiation exposure and escalated future cancer risk associated with CT.

3 Do not routinely undertake repeat blood level monitoring of antiepileptic drug (AED) treatments

The serum concentration of an antiepileptic drug (AED) varies markedly between patients taking the same dosage because of differences in people's ability to absorb, distribute, metabolise and excrete drugs. The utility of drug blood level monitoring assumes that plasma drug level correlates better with clinical response or side effects than with dosage, or provides better information than clinical review of the patient. However, evidence from a major randomised controlled trial suggests that repeat blood level monitoring of AED treatments has no discernible impact on patient outcomes in terms of remissions from seizures or incidence of adverse effects. Other studies have also shown that there is no definitive correlation between a patient's AED blood level and clinical efficacy.

Specific exceptions where targeted AED blood level assessment can be useful include their use in assessing compliance, titrating AEDs in complex polypharmacy regimens, or adjusting for altered AED metabolism in disease states, puberty, or pregnancy.

4 Do not routinely undertake neuroimaging for new onset primary headache without first examining for neurological abnormality

Most headaches are attributable to benign conditions. Studies suggest that the yield of neuroimaging findings in children with headache that actually change patient management is no higher than 2.5 per cent. This supports the practice of selective imaging of paediatric headache patients with clinical presentation suspicious for intracranial abnormality.

Moreover, the routine use of neuroimaging may lead to the discovery of incidental benign abnormalities, which may cause undue alarm, and headaches may be wrongfully attributed to these incidental findings. For instance, a retrospective study revealed benign neuroimaging abnormalities in approximately 20 per cent of paediatric headache patients who underwent neuroimaging.

Neuroimaging on a routine basis is therefore not indicated in children with new onset primary headaches and a normal neurological examination. It should be reserved for a selected group of children whose history and/or physical examination suggest serious intracranial pathologies.

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5

Do not routinely perform electroencephalographs (EEGs) for children presenting with syncope (fainting)

Studies have found that the incidence of epileptiform discharges (i.e. distinctive EEG patterns associated with epileptic disorders) in patients with syncope is roughly similar to its incidence among healthy subjects, and that therefore EEG has very low diagnostic yield among these patients. Moreover, clinical criteria have been formulated that can differentiate syncope from seizures with very high sensitivity and specificity.

Thus, guidelines recommend that an EEG should not be performed if syncope is the most likely cause of the transient loss of consciousness. Moreover, clinical criteria have been formulated, which can differentiate syncope from seizures with very high sensitivity and specificity.

For the list of references supporting these recommendations and further information on the development process, see **https://evolve.edu.au/published-lists/australia-and-new-zealand-child-neurology-society**

WHAT IS EVOLVE?

Part of a global movement, Evolve is an initiative led by the Royal Australasian College of Physicians (RACP) to drive high-value, high-quality care in Australia and New Zealand.

As medical practice and medical research continues to grow in volume and complexity, physicians can be inundated with new guidelines, new research and new information. Evolve helps physicians to stay abreast of the current evidence and recommended best practice to support the provision of high-value, high-quality care to patients.

How does Evolve work?

Evolve identifies a specialty's Top 5 clinical practices that, in particular circumstances, may be overused, provide little or no benefit, or cause unnecessary harm.

Evolve recommendations are developed through a rigorous, peer-reviewed process; led by clinical experts, informed by in-depth evidence reviews, and guided by widespread consultation.

Evolve contribution to the Choosing Wisely campaigns

RACP is a founding member of Choosing Wisely in Australia and New Zealand, and all Evolve recommendations are also available via these campaigns.

By bringing together recommendations from multiple medical colleges and healthcare organisations, together with expertise in consumer and patient care, Choosing Wisely helps healthcare providers and consumers start important conversations about improving the quality of healthcare.