

# Evidence-based medicine

In a recent international one day cricket match in Australia, the on ground umpire could not determine if a catch behind was fairly taken. He called on modern technology in the form of the 'third umpire' who viewed slow motion television replays. During the delay, the ex-cricketer television commentators gave their strong opinion that the catch had been taken. However, the third umpire decided that the level of evidence was not strong enough to prove that the batsman was out. Not satisfied with that level of evidence, one commentator opined that anyone who had played at this level of cricket would simply know (contrary to the technological evidence) that the batsman was out.

In the early 1990s Sackett introduced the term evidence-based medicine (EBM) and defined it as 'the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients'.<sup>1</sup> Since that time numerous articles, books, journals, and websites have expanded the use of EBM throughout the world with wide application to individual patients. This has undoubtedly been helped greatly by the rapid expansion of electronic technology in medicine over the last decade. To find the current evidence we no longer need to spend hours in the library laboriously thumbing through volumes of *Index Medicus*. Instead we use online data bases to come to our conclusion much more quickly.

We now realise that simply to find one or a number of the latest articles on a subject is not enough. The article must be critically evaluated so that its results can be seen as scientifically valid and applicable to our patient.

Can busy child neurologists themselves critically appraise the most recent literature and, even if they have this skill, apply it to their patients? Almost certainly both lack of skills and lack of time make this improbable in many circumstances. Modern technology helps to overcome this, however, by the ready availability of clinical guidelines (which themselves need critical appraisal) and good systematic reviews, the best known of which are gathered by the Cochrane Collaboration. Such systematic reviews have already been synthesized and critically appraised so they are time-efficient and usually easily accessible by clinicians.

How much should we be applying these principles to the practice of child neurology? Some would say levels of evidence for what we commonly do in child neurology are simply not available. If precedents for general medicine and neonatal intensive care hold for child neurology then over 80% of primary treatments have good evidence bases.

An examination of the Cochrane library indicates that the modern treatment of epilepsy, particularly with the more recently released drugs, is strongly evidence-based. But some entrenched current practices in epilepsy treatment have lower levels of evidence to support them. For example,

the results of comparing carbamazepine with sodium valproate for the treatment of partial epilepsy 'do not provide outright evidence in favour of carbamazepine for patients with a partial epilepsy, however they are in keeping with prior clinical belief, and support the policy of using carbamazepine as the treatment of choice for patients with a partial epilepsy'.<sup>2</sup>

However, no evidence has been found to support the use of valproate over carbamazepine as the treatment of choice in generalized epilepsies manifested by generalized tonic-clonic seizures. This surprising lack of evidence emphasizes an important principle in interpreting results of such reviews: we must not assume that a negative result necessarily means that there is a lack of positive effect. In this example, for statistical reasons, an important therapeutic difference could not be excluded.

It is good to know that the practice of waiting at least 2 seizure-free years before discontinuing antiepileptic drugs in children has evidence to support it, but further research is needed to identify risk factors predictive of relapse.

Many of us will be disappointed to learn that it is not known whether specialist epilepsy clinics improve outcomes for people with epilepsy (although many of us think they improve outcomes of the attendees who do not have epilepsy) and that specialist epilepsy nurses have not yet been shown to improve quality in epilepsy care, but then neither have specialist epilepsy doctors! Further research instigated by practising clinicians may definitively answer such clinically relevant questions.

So will we, as child neurologists, improve our practice and patient outcomes by paying more attention to the results of well designed randomized controlled trials, stringent systematic reviews, and evidence-based guidelines? Should not we also participate in and help decide which research studies should be done to answer questions about diseases and treatments where evidence is lacking? Or will we be like the cricket commentator and continue to practise eminence and vehemence based child neurology?<sup>4</sup>

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## References

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