

loading (18 mg/kg intravenously at 50 mg/min) and an adequate continuing dose, seizures are often successfully controlled. Phenytoin is effective when coadministered with diazepam in treating status epilepticus, controlling 60% to 80% of seizures.⁴ Brain concentrations of phenytoin peak at 10 minutes and are three to four times those in plasma after injection. Phenytoin has a p*H* of 12, so intramuscular dosage is inappropriate. Local reactions to phenytoin occur often and thrombophlebitis necessitates frequent changes of cannulas and makes central administration the preferred route.

Fosphenytoin has been used for some years in the United States and can be administered intravenously or intramuscularly. Studies have found it to be as effective as phenytoin in treating status epilepticus, with several advantages over its parent drug. In one series of 81 patients with generalised convulsive status epilepticus treated with fosphenytoin 76 became seizure free.⁵ Another showed that 37 of 40 patients treated with fosphenytoin were seizure free within 30 minutes.⁶ Intravenous fosphenytoin is tolerated at infusion rates up to three times faster than those for phenytoin, and therapeutic concentrations are established within 10 minutes.⁷⁻¹⁰

Intramuscular administration of fosphenytoin has benefits: rapid and complete absorption, no requirement for cardiac monitoring, and a low incidence of side effects.^{11 12} Patients with neurological or neurosurgical disorders which affect conscious levels, or patients for which the gastrointestinal route is not available, would be well suited to the use of intramuscular fosphenytoin. Side effects are similar to those of parenteral phenytoin: nystagmus, dizziness, pruritus, paraesthesias, headache, somnolence, and ataxia.¹²

Refractory status is characterised by seizure activity for about an hour in which the patient has not responded to therapy. General anaesthesia is recommended to abolish electroencephalographic and seizure activity and prevent further cerebral damage. Agents of choice for refractory status epilepticus are the newer agent propofol and older thiopentone, whose disadvantages include a tendency to accumulate

in fatty tissues, an active metabolite, haemodynamic instability, long recovery time after infusion, and the need for blood concentration monitoring.

Continued seizure activity in status epilepticus is associated with neuronal damage. The aim should be to halt this activity urgently. The ideal drug should be 100% effective, administered quickly without compromising conscious level or producing cardiovascular or airway reflex effects, and have no harmful effects. For status epilepticus fosphenytoin is safe and effective in the emergency initiation and maintenance of anticonvulsant treatment and may usefully complement current practices for early control of seizures.

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Practitioners of evidence based care

Not all clinicians need to appraise evidence from scratch but all need some skills

High quality health care implies practice that is consistent with the best evidence. An intuitively appealing way to achieve such evidence based practice is to train clinicians who can independently find, appraise, and apply the best evidence (whom we call evidence based practitioners). Indeed, we ourselves have advocated this approach.¹ Now, however, we want to highlight the limitations of this strategy and suggest two complementary alternatives.

The skills needed to provide an evidence based solution to a clinical dilemma include defining the problem; constructing and conducting an efficient search to locate the best evidence; critically appraising the evidence; and considering that evidence, and its implications, in the context of patients' circumstances

and values. Attaining these skills requires intensive study and frequent, time consuming, application.

After a decade of unsystematic observation of an internal medicine residency programme committed to systematic training of evidence based practitioners,¹ we have concluded—consistent with predictions²—that not all trainees are interested in attaining an advanced level of evidence based medicine skills. Our trainees' responses mirror those of British general practitioners, who often use evidence based summaries generated by others (72%) and evidence based practice guidelines or protocols (84%) but who overwhelmingly (95%) believe that "learning the skills of evidence-based medicine" is not the most appropriate method for "moving ... to evidence based medicine."³

Because of the amount of time required to make “from scratch” evidence based decisions, evidence based practitioners will often not succeed in reviewing the original literature that bears on a clinical dilemma they face. Thus, two reasons exist why training evidence based practitioners will not, alone, achieve evidence based practice. Firstly, many clinicians will not be interested in gaining a high level of sophistication in using the original literature, and, secondly, those who do will often be short of time in applying these skills.

In our residency programme we have observed that even trainees who are less interested in evidence based methods develop a respect for, and ability to track down and use, secondary sources of preappraised evidence (evidence based resources) that provide immediately applicable conclusions. Having mastered this restricted set of skills, these trainees (whom we call evidence users) can become highly competent, up to date practitioners who deliver evidence based care. Time limitations dictate that evidence based practitioners also rely heavily on conclusions from preappraised resources. Such resources, which apply a methodological filter to original investigations and therefore ensure a minimal standard of validity, include the *Cochrane Library*, *ACP Journal Club*, *Evidence-based Medicine*, and *Best Evidence* and an increasing number of computer decision support systems. Thus, producing more comprehensive and more easily accessible preappraised resources is a second strategy for ensuring evidence based care.

The availability of evidence based resources and recommendations will still be insufficient to produce consistent evidence based care. Habit, local practice patterns, and product marketing may often be stronger determinants of practice. Controlled trials have shown that traditional continuing education has little effect on combating these forces and changing doctors’ behaviour.⁴ On the other hand, approaches that do change targeted clinical behaviours include one to one conversations with an expert, computerised alerts and reminders, preceptorships, advice from opinion leaders, and targeted audit and feedback.⁵⁻⁷ Other effective strategies include restricted drug formularies, financial incentives, and institutional guidelines. Application of these strategies, which do not demand even a rudimentary ability to use the original medical literature and instead focus on behaviour change, thus constitute a third strategy for achieving evidence based care.

Nevertheless, there remain reasons for ensuring that medical trainees achieve the highest possible skill level in evidence based practice. Firstly, attempts to change doctors’ practice will sometimes be directed to ends other than evidence based care, such as increasing specific drug use or reducing healthcare costs. Clinicians with advanced skills in interpreting the medical literature will be able to determine the extent to which these attempts are consistent with the best evidence. Secondly, they will be able to use the original literature when preappraised synopses and evidence based recommendations are unavailable. At the same time, educators, managers, and policymakers should be aware that the widespread availability of comprehensive preappraised evidence based summaries and the implementation of strategies known to change clinicians’ behaviour will both be necessary to ensure high levels of evidence based health care.

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Systems for emergency care

Integrating the components is the challenge

The British government’s announcement of the first 36 new NHS “walk in centres” is the latest in a series of important changes in the provision of immediate access services over the past 20 years.¹ A study of first contact out of hours care in England 16 years ago recorded only attendances at accident and emergency departments, general practitioners’ home visits and telephone advice, and visits by deputising services.² Contacts with regional trauma centres, minor injury units, general practitioners’ out of hours cooperative treatment centres, community phar-

macies, and community mental health teams, for example, were either negligible or non-existent.

The recent development of triage and advice telephone services, such as NHS Direct,³ has further complicated the picture, and now the government proposes 36 walk in centres (with more under consideration) to “offer a service to the public, when the public need it and where the public need it.”¹ These services, based in shops, health centres, and hospitals will be nurse led, with access to general practitioners in some cases, and will offer extended opening hours, including