

USING EVIDENCE-BASED MEDICINE TO HELP PHYSICIANS KEEP UP-TO-DATE

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Research shows that physicians need large amounts of external information on current best evidence to help them treat patients optimally. It is impossible for them to read all the relevant material and, indeed, reading time decreases rapidly after qualification. New sources are striving to produce selected structured abstracts with expert clinical commentaries in order to achieve a useful combination of best evidence and clinical expertise.

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Whether serving individual patients or populations, physicians always have sought to base decisions and actions on the best possible evidence. Although we need to keep up to date with clinically-important information, direct observations suggest that we usually fail to do so. For example, a group of North American general physicians responded to a questionnaire by stating that they needed new and clinically-important information just once or twice a week, and met these needs by consulting their textbooks and journals.¹ However, the 'shadowing' and direct questioning of these same clinicians as they saw patients, identified up to 16 needs for new, clinically-important information in just half a day, at a rate of about two questions for every three patients they saw (about half of their questions were related to therapeutics, and a quarter to diagnosis). As a net result, in a typical half-day of practice, four clinical decisions would have been altered if clinically-useful information about them had been available and employed.

However, only 30% of these information needs were met in the clinics and offices where the clinicians worked, and despite their earlier claim that they predominantly used texts and journals to gain this knowledge, direct observation again showed that most of it was obtained by asking colleagues. On further probing, these clinicians identified three barriers to obtaining clinically-important information: they lacked the time necessary for keeping up to date, their text books were out of date, and their journals were too disorganised to be useful. Although there is strong evidence to support clinicians' claims that their texts are out of date - even when new² - that's less of a problem with journals. So why aren't clinicians' information needs met through the latter?

The problem here is the sheer volume of the clinical literature. It is now so big that, for example, general physicians who want to keep abreast of the journals relevant to their practices have to examine 19 articles a day, 365 days a year.³ On the other hand, my polls of medical grand rounds audiences at a number of UK medical schools reveal that even self-reports (likely to be over-optimistic) of clinicians' average weekly times spent reading articles pertinent to their patients summarised in Table 1 reveal that there is simply no way we can keep abreast of our fields of

medicine using traditional approaches. Table 1 also reveals that house officers, up to 75% of whom haven't read around their patients at all in the previous week, are being taught by senior consultants, up to 40% of whom haven't read, either!

What is the net effect of this constant, but unfulfilled, need for clinically-important new information? Unfortunately, on average, it leads to progressive declines in our clinical competency after we complete our formal training. When our competency is measured by our knowledge of even the basics of the care of disorders like hypertension, as revealed in Table 1, it has been shown repeatedly that there is a statistically- and clinically-significant negative correlation between our knowledge of up-to-date care and the years that have elapsed since our graduation from medical school.^{4,5} Moreover, in a Canadian study of actual clinical behaviour, the decision to start antihypertensive drugs was better predicted by the number of years since medical school graduation in the doctor (most were graduates of North American or UK medical schools) than it was by the severity of target organ damage in the patient.⁶ We become out of date, and our patients pay the price for our obsolescence.

In the past, clinicians' attempts to overcome this situation by reading summary or review articles were thwarted by their low quality. The traditional review article, in which an 'expert' states opinions about the proper evaluation and management of a condition, supporting key conclusions with only a subset of relevant references, has been shown to be both non-reproducible and, as a scientific exercise, of low mean scientific quality. For example, one study showed that experts could not agree, even among themselves, about whether other experts who wrote review articles had: (i) conducted a competent search for relevant studies; (ii) generated a bias-free list of citations; (iii) appropriately judged the scientific quality of the cited articles; or (iv) appropriately synthesised their conclusions. Indeed, when these experts' own review articles were subjected to these same simple scientific principles, there was an inverse relationship between adherence to these standards and self-professed expertise (the correlation was -0.52 with an associated p-value of 0.004)?!

Rather than rely on reviews of highly variable validity, we clinicians who are seeking the best evidence now have two new information sources that are grappling with (and defeating) the problem of the sheer volume of the clinical literature. Both are products of the growing movement toward 'Evidence-Based Medicine' (EBM). With philosophical origins extending back to mid-19th century Paris and earlier, EBM is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.⁸ The practice of EBM means integrating individual clinical expertise with the best available external clinical evidence from systematic research. The first source of that best external evidence is found in a new type of journal of secondary publication of structured abstracts (the best evidence) and clinical commentaries (the clinical expertise). These publications employ a team of librarian/epidemiologists who hand-search dozens of clinical journals and, using pre-established subject matter and methodological criteria, select just those clinical articles (about diagnosis, prognosis, therapy, aetiology, prevention, quality improvement, continuing education, and economic analysis) that are scientifically sound and whose conclusions are therefore likely to be valid. They pass them on to a panel of front-line physicians, who filter out just those valid articles they judge to be also clinically important. These rigorous scientific and clinical filters reject 98% of the clinical literature, and it is the remaining 2% that appears in the form of structured abstracts, introduced by declarative titles that tell readers their clinical 'bottom lines', and accompanied by commentaries from clinical experts that place them in their appropriate clinical context. The first of these, *ACP Journal Club*, is for general internists (the North American term for general physician) and began publication in 1991 from the American College of Physicians. A sibling publication, *Evidence-Based Medicine*, combines a subset of *ACPJC* abstracts with those derived from journals in general practice, surgery, obstetrics & gynaecology, paediatrics, and psychiatry. Begun in 1995, *EBM* is a joint venture of the American College of Physicians and the British Medical Journal Publications Group. Five years of abstracts from *ACPJC* (to be joined by those from *EBM*) are now available as a

cumulative database on diskette, CD-ROM and the Internet.

The second new information source for clinicians seeking EBM goes a big step further by synthesising evidence systematically across all trials of a given intervention. It is an outgrowth of the scientific methods developed to combine (into overviews or 'meta-analyses') the growing numbers of randomised trials of the same or similar treatments for the same health condition. When properly carried out on as high a proportion as possible of all relevant trials (MEDLINE misses about half the published trials,⁹ so detailed journal searching, often by hand, is required to avoid bias), these systematic reviews provide the most accurate and authoritative guides to therapy. The performance of systematic reviews of therapy is so logical a step in progress toward evidence-based health care that it has become the focus of a rapidly growing international group of clinicians, methodologists, and consumers who have formed

the Cochrane Collaboration.¹⁰ The systematic reviews that are beginning to flow from this collaboration, updated each time an important new trial is reported, are providing the highest levels of evidence every achieved on the efficacy of preventive, therapeutic, and rehabilitative regimens. They are published on computer diskette and CD-ROM, on the Internet, and in a variety of other forms (including the EBM journals of secondary publication).¹¹ The most recent version, *The Cochrane Library*, also includes a related database of published systematic reviews abstracted by the York Centre for Reviews and Dissemination at the University of York in the UK.

Thus, busy clinicians seeking clinical 'bottom lines' will increasingly be able to eschew non-expert 'expert' reviews and self-serving commercial sources and find brief, but valid, summaries of best evidence on a growing array of clinical topics, appraised according to uniform scientific principles.

Table 1: How many minutes did you spend last week reading articles pertinent to your patients?

Number of minutes spent in the last seven days reading around my patients		
Stage of career	Range of median reading times	% who reported NO reading in the last week
Medical students	60-120 min.	0%
House Officers*	0-20 min.	up to 75
Senior House Officers	10-30 min.	up to 15%
Registrars	10-90 min.	up to 40%
Senior Registrars	10-45 min.	up to 15%
Consultants graduating since 1975	15-60 min.	up to 30%
Consultants graduating pre-1975	10-45 min.	up to 40%

* UK House Officers are in their 1st postgraduate year (like North American Interns), Senior House Officers their 2nd-4th years (like North American Residents), and Registrars and Senior Registrars (now being combined into a 'uniform training grade') are in their 5th and higher postgraduate years (like North American Senior Residents or Sub-Specialty Residents).

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