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SINGAPORE MEDICAL JOURNAL
JOURNAL OF THE SINGAPORE MEDICAL ASSOCIATION

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Permit No: MICA (P) 198/07/2005
ISSN 0037 - 5675

Claude Bernard (1813-1878): father of experimental medicine
(Refer to pages 440-441)

E d i t o r i a l

Managing the medical literature mountain

D Tovey, R Oates-Whitehead

Practising evidence-based medicine (EBM) involves combining individual clinical expertise with the best available clinical evidence[1]. However, as Martin Dawes describes in his article on critically appraised topics (CATs) and EBM journals[2], the rapid increase of medical literature and the limited free time of today's busy clinicians result in an obvious problem. Even with the best will in the world, there is insufficient time for doctors to read and absorb all the latest research. One estimation suggested that for a clinician to keep abreast of all the emerging literature in general medicine, he would have to read 19 articles per day, 365 days per year[1]. The volume of information continues to grow. MEDLINE alone includes more than 14 million references with over 500,000 additional references added in 2002 and more than 525,000 in 2003.

Recent research reveals that even seasoned clinicians generate about five questions for every inpatient encountered[3], and about two questions for every three outpatients seen[4]. Despite this, many of these questions are never pursued or answered[5,6]. Reasons for this include a failure of the clinician to recognise a need, inability to access evidence-based answers, inability to comprehend the answers, and inability to implement the learning. However, audits of inpatient clinical teams in general medicine indicate that clinicians who direct their scarce reading time to selective, efficient, patient-driven searching, appraisal, and synthesis of the best available evidence, can, and do, practise evidence-based medicine[5]. Synthesising the results of research is nothing new[7]. In 1753, James Lind, who proved the efficacy of oranges and lemons in the treatment of scurvy, recognised that systematic methods for identification, extraction and appraisal of information from individual studies were necessary for reducing bias in the interpretation of research[8].

The task of facilitating access to evidence-based answers has led to a wide variety of different approaches. Secondary sources aim to distil answers from the published research. More evidence-based resources of the best available synthesised evidence are becoming available to aid the harassed clinician in the seemingly impossible task of maintaining an up-to-date knowledge of all the latest evidence. In 1979, the epidemiologist and physician, Archie Cochrane, stated: "It is surely a great criticism of our profession that we have not organised a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomised controlled trials[9]". The Cochrane Collaboration was formed in response to this challenge in 1993 and is now a gold standard provider of the best possible synthesised evidence. The Cochrane Database of Systematic Reviews now contains the full text of

Clinical Evidence
BMJ Knowledge
BMJ Publishing Group Ltd
BMA House
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2,000 Cochrane reviews which will be updated as new evidence emerges, as well as more than 1,400 published protocols for reviews in progress.

A further secondary evidence-based resource aiming to answer clinical questions relating to interventions "at the point of care" is the British Medical Journal's Clinical Evidence. Clinical Evidence is complementary to but different from the work of the Cochrane Collaboration. Clinical Evidence aims to summarise the current state of knowledge and uncertainty about the prevention and treatment of clinical conditions, based on thorough searches and appraisal. Whereas each Cochrane review focuses on one intervention for a particular condition, each chapter of Clinical Evidence seeks to bring all the evidence for all the clinically relevant interventions for a condition together. Clinical Evidence has an international circulation, in paper and electronic formats, and is also available in other non-English language editions.

Unfortunately, despite their best efforts, it is presently impractical for either the Cochrane Library or Clinical Evidence to cover all possible conditions and scenarios, or to individualise to one unique patient with unique circumstances. One approach to bridge this gap is that of the CAT. CATs have appeal to clinical learners at every stage of their careers, due to the fact they are patient-centred[10]. However, because they are also evidence-based, they promote literature searching and critical appraisal skills, as well as the integration of evidence with clinical expertise to form patient-care decisions, rather than increasing the reliance of clinicians on external "experts"[10]. It is likely that work on constructing CATs is a useful way to increase skills in critical appraisal and evidence-based practice. In addition, the potential for sharing CATs means that the output can reach a wide audience, and can lead to economies of effort[2].

Of course, CATs, like all other models, have their shortcomings. Firstly, CATs are dependent on individual expertise, and vary in their methodological rigour. Hence, individual CATs can be flawed. It is not uncommon for searches to be limited, and for formal quality assessment and peer review to be imperfect. Because of understandable time constraints, they sometimes also rely on abstracts alone. Studies have shown that, on examination, abstracts often display inadequate reporting and an absence of important clinical results[11,12]. One study showed that inconsistencies between the abstract and the full-text article included the primary outcome measure, which differed 14% of the time, and the results, which differed 19% of the time[11]. Secondly, individual CATs contain a single element of the relevant literature. They may be based on quick searches for at least one useful article, and not comprehensive explorations for all useful articles. Although many summarise systematic reviews, most are based on reports of single investigations, and thus are at least incomplete, and may not be representative of the entire body of evidence. CATs also usually do not examine unpublished literature in the way that some systematic reviews do. Thirdly, like other evidence-based resources, CATs will become obsolete if they are not updated regularly to reflect new evidence as it comes to light.

However, most of these flaws are not unique to CATs, and in this issue of the Singapore Medical Journal, Martin Dawes not only highlights invaluable tools to help assess the relevancy and reliability of CATs, but provides tips on how a clinician can develop appropriate questions and construct critically appraised topics[2]. CATs are an

CATs are an important way of bridging the gap to support evidence-based practice combined with individual clinical expertise in these areas. They are also an effective vehicle for extending clinicians' engagement with evidence-based approaches.

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