Workshops for teaching evidence-based practice

Evidence-based practice is based on a systematic approach to the literature with focused and answerable questions, critical appraisal of the validity and usefulness of what is found, application of the results to real patients and real at-risk populations, and evaluation of the practitioner's performance (1). This approach, which relegates content (the factual things we need to know) below process (how we go about learning and applying the facts), requires different skills and attitudes from those that most of us had when we left university. How do people acquire these new skills and attitudes, and how can they be most effectively taught?

The basic tenets of clinical epidemiology were taught to me 15 years ago at Oxford University in a 2-week block titled "Community Medicine"; the course had the worst attendance figures in the entire undergraduate curriculum. We were issued a set of equations and potted definitions that were filed—along with the porphyrin chain and other medical megaliths—in a binder labelled "Night Before File," the contents of which would be memorised, regurgitated, and gratefully forgotten as the examination season came and went.

Much of the work done in the field of evidence-based medicine since 1980 has been aimed at getting clinical epidemiology out of the "Night Before File" and into the clinic; the operating theatre; and (most difficult of all) the everyday vocabulary of managers, commissioners, and purchasers. Practised at the bedside and around the contracting table, evidence-based medicine forces health professionals to unite a scientific (hypothetico-deductive) paradigm with one that is hermeneutic (narrative-interpretive).

Here is an extract from one of the worksheets used in the 2nd U.K. Workshop on Teaching Evidence-Based Health Care, held at University College London (UCL) Medical School in February 1996:

> "Read the clinical scenario [about a patient aged 18 months with a single febrile seizure] and the attached case-control study on the long-term prognosis after febrile seizure in infants. Decide whether and to what extent a single uncomplicated febrile seizure increases the risk of subsequent epilepsy, and using a role-play or other appropriate teaching techniques, decide how you would convey this information to the child's parents."

In this and other clinical problems, practitioners of evidence-based medicine must take on aspects of the discipline that do not come naturally and for which they were not originally trained. The non-numerate must gain some grasp of statistics, whereas those who like to add up figures must learn to find the source of the figures and apply them to individual circumstances. Clinicians who make decisions on the basis of precise statistical likelihoods must, if they are to share decision making with a truly informed patient, find a way to express complex concepts in jargon-free terminology and to incorporate patient preferences into their probability trees.

Blind ideology did not prompt us at UCL to teach these multidimensional skills through the technique of problem-based, small-group, self-directed learning (2, 3). To achieve sustained behaviour change in fields outside of the practitioner's immediate area of expertise, such issues as confidence-building, teamwork, and intellectual initiative must not be treated as peripheral to the course content (4). McMaster University Medical School (5) in Canada and the Harvard New Pathway programme (6) in the United States have shown that undergraduate students taught by problem-based methods reflect more on their learning, memorise less, and report greater stimulation and satisfaction with the course than those allocated to a predominantly talk-and-chalk curriculum.

We were initially sceptical about replacing the traditional lecture-based conference format with a largely blank timetable in which the delegates' first task was to sit down in small groups and decide 1) what they needed to know and 2) how they were going to teach it to each other. We provided each group of 8 with little more than a seminar room and a flip chart. But by day 2 of the 6-day workshop, eminent professors were happily engrossed in pretending to be medical students not understanding likelihood ratios; geriatricians were role-playing as either patients who had had a stroke or the managers charged with rehabilitating them; and a group of public health physicians were, within the safety of their group, staging a mock press conference to assuage public anxiety about the safety of measles-mumps-rubella vaccine.

The delegates, who created these diverse teaching scenarios from their own experiences, were simultaneously required to consider the artificial situation they had created ("You are medical students; I am teaching you about likelihood ratios") and the meta-situation ("I am someone who is learning to teach; how could I do this more effectively?"). Each group member had an allocated role to play in the simulated teaching scenario, but they and the tutors could at any stage call a "time-out" and comment on the meta-situation.

The first U.K. workshop to follow the McMaster University model was held at Oxford University in June 1995. It led to the formation of the U.K. Consortium on Teaching Evidence-Based Medicine (supported by an educational grant from the North Thames Regional Office) in which centres throughout the United Kingdom collaborate to share educational materials (some of which will soon be available over the Internet [e-mail to http://cebm.jr2.ox.ac.uk]), to plan workshops, and to develop methods to evaluate their success. A third workshop was held in Oxford this July, and the UCL group will host the fourth at the Royal College of

Physicians in February 1997. A core textbook has been published (7), and we hope to explore the use of more imaginative teaching materials (such as video scenarios) in future workshops.

The responses to questionnaires issued before the UCL workshop showed that, for many delegates, implementation of evidence-based medicine at their home institutions was limited as much by lack of time, information technology skills, "political acceptance," and confidence as by lack of knowledge (8). Post-workshop responses showed that despite these barriers, 40% of the 88 delegates intended to introduce new teaching programmes in clinical schools, health authorities, or National Health Service trusts, and of these delegates, all but one planned to use small-group, problem-based learning in substantial portions of the curriculum.

An important challenge for medical educators in the United Kingdom is to recognise that the competent student (and clinician) is one who knows how to cope with an immense and rapidly changing body of knowledge and not one who excels in recalling the traditional or memorising the ephemeral. The deans of medical and nursing schools must develop an infrastructure that allows problem-based, self-directed learning methods to develop within the didactic, lecture-based curricula, which have seen no fundamental changes for 2 centuries or more. As one delegate asked me without a trace of irony, "Is there any way of having small-group seminars when you haven't got any seminar rooms?"

The UCL workshop achieved undeniable short-term gains in terms of the number of complex scientific articles read and understood (estimated at around 15 per delegate), new skills acquired (35% of the delegates before the workshop and 85% after were confident in using MEDLINE), altered attitudes (particularly to multidisciplinary learning), and exposure to new educational techniques. Despite these gains, the long-term influence of this type of workshop on the educational strategies used in traditional British medical schools and the behaviour of busy health professionals in the National Health Service has still to be determined.

At our 6-month reunion workshop this October, our first question to delegates will be this: Has the evidence-based medicine you learned in this workshop been incorporated into your daily practice and has its key message been passed on to others in a way that they can understand? Or have your notes, worksheets, and good intentions been placed back on the shelf next to the "Night Before File"?

For further information about the 4th U.K. Workshop on Teaching Evidence-Based Practice, contact us by e-mail at ebp@ucl.ac.uk.

Trisha Greenhalgh, MD

References

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6. **Tosteson DC, Adelstein SJ, Carver ST, eds.** New pathways to medical education: learning to learn at Harvard Medical School. Cambridge, Massachusetts: Harvard University Press; 1994.
7. **Sackett DL, Richardson WS, Rosenberg WM, Haynes RB.** Evidence-based medicine: how to practice and teach EBM. London: Churchill-Livingstone; 1997.
8. 2nd U.K. Workshop on Teaching Evidence-Based Health Care: report of the workshop. Available on disc (Word for Windows format) from the Department of Primary Health Care, University College London Medical School, Whittington Hospital, London N19 5NF, England, UK. Price £7.50.

Journals Reviewed for This Issue

Core Journals

Am J Med	Arch Gen Psychiatry	Clin Pediatr	J Neurol Neurosurg Psychiatry
Am J Obstet Gynecol	Arch Intern Med	Cochrane Library	J Pediatr
Am J Psychiatry	Arch Pediatr Adolesc Med	Diabetes Care	J Vasc Surg
Am J Surg	Arch Surg	Hypertension	Lancet
Anaesthesia	Arthritis Rheum	JAMA	N Engl J Med
Anaesth Analg	BMJ	J Am Board Fam Pract	Obstet Gynecol
Anesthesiology	Br J Gen Pract	J Am Coll Surg	Pediatrics
Ann Intern Med	Br J Obstet Gynaecol	J Gen Intern Med	Surgery
Ann Surg	Br J Surg	J Intern Med	
Arch Dis Child	Circulation		

Journals for Continuing Review

Acta Obstet Gynecol Scand	Arch Neurol	Fertil Steril	J Infect Dis
Age Ageing	Br J Dermatol	Gastroenterology	J Reprod Med
Am J Cardiol	Br J Psychiatry	Gut	Med Care
Am J Gastroenterol	Br J Rheumatol	Heart (formerly Br Heart J)	Med J Aust
Am J Public Health	Can Fam Phys	J Am Acad Dermatol	Neurology
Am J Respir Crit Care Med	Can Med Assoc J	J Am Coll Cardiol	Spine
Ann Emerg Med	Chest	J Am Geriatr Soc	Stroke
Ann Med	Clin Invest Med	J Clin Epidemiol	Thorax
Arch Fam Med	Crit Care Med	J Fam Pract	