Evidence based medicine and the medical curriculum

The search engine is now as essential as the stethoscope

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What we know about diseases, diagnosis, and effective treatments is growing rapidly. Today health professionals cannot solely rely on what they were first taught if they want to do the best for their patients. It has repeatedly been shown that clinical performance deteriorates over time.[1] A commitment to lifelong learning must be integral to ethical professional practice. However, the speed of the increase in knowledge—more than 2000 new research papers are added to Medline each day—represents a challenge.[2] The skills needed to find potentially relevant studies quickly and reliably, to separate the wheat from the chaff, and to apply sound research findings to patient care have today become as essential as skills with a stethoscope.

The advent of "evidence based medicine" saw an explosion of systematic reviews and guidelines but much less change in the medical curriculum.[3 4] Although evidence based guidelines may help clinicians in selected areas, they cannot cover the range of questions or have the timeliness that clinical practice needs. Individual practitioners therefore need to be able to find and use evidence themselves—a 21st century clinician who cannot critically read a study is as unprepared as one who cannot take a blood pressure or examine the cardiovascular system. The medical curriculum should reflect this importance of changing information for today's practitioner—the necessary skills must be taught and assessed with the same rigour as the physical examination.

How and when should these skills be taught? Just as we teach undergraduate students the basics of cardiac anatomy and using a stethoscope, we should also teach them the anatomy of research and the basic knowledge and skills for evidence based practice (as set out in the Sicily statement[5]). These basic skills of using (not doing) research—searching, appraising, and applying research evidence to individual patients—should be taught early and applied as an integral part of learning in all years of the curriculum. But to be integrated with clinical skills they must also be regularly applied in the clinical setting.[6] Graduation should be conditional on students showing that they have the skills to do this; for example, by producing a portfolio of critically appraised topics. The pedagogic approaches used should foster a commitment to lifelong learning.[6]

Postgraduate training and practice should build on this grounding through repeated application in everyday clinical work and the development of more advanced knowledge and skills. Doctors—whether at foundation level or in specialist training—should regularly log and discuss clinical questions, produce critically appraised topics, lead evidence based "journal clubs," and participate in the audit of practice change.[7] Such training has been shown to increase appropriate treatment.[8] However this evidence is from a before-after study not a randomised trial, and further development of, and research on, workplace learning is urgently needed if we are to make best use of the billions of pounds spent annually in medical research.

Several elements are needed to achieve these changes. Firstly, both undergraduate and postgraduate healthcare

courses should explicitly require the development and demonstration of these skills. Embedding the evaluation of these skills into professional examinations and competencies will encourage their uptake and ensure that they have been learnt appropriately. Secondly, we need sufficient numbers of teachers and role models. This requires training and developing a cadre of leaders in clinical epidemiology; this should include people who are already senior to act as role models and those who are training to provide leadership in the future. Ring fenced funding should be provided to support people in training and course development. Thirdly, a catch-up programme of training in evidence based skills should be provided for those who qualified without the opportunity to develop these skills, through, say, a series of short workshops or courses in evidence based practice. Finally, we need further development of the infrastructure, in addition to systems to support evidence based practice and to increase awareness of its importance in managers and others as a way to facilitate responsive change (a prerequisite for responding to evidence).

The proposals above are timely given the changes to postgraduate training[9]; the investment in information technology infrastructure[10]; and the Department of Health's massive investment in the National Library for Health, processes to produce evidenced based national guidance (such as the National Institute for Health and Clinical Excellence), and ways of synthesising evidence (such as the National Coordinating Centre for Health Technology Assessment and the Cochrane Collaboration). The investment has been truly enormous—literally billions of pounds. We believe that a relatively small expenditure on developing the skills of the users of these resources will help translate the resultant evidence based guidance, research findings, and knowledge into changes in practice, thereby improving the quality of health care.

If today's practitioners are to retain their professionalism, clinicians' information and research appraisal skills need to be improved urgently. Otherwise they risk being rapidly overtaken by administrators and patients who may not be able to use a stethoscope but are comfortable using Google, Wikipedia, and the internet.

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