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What has evidence based medicine done for us?

It has given us a good start, but much remains to be done

In this theme issue we ask how the evolution of evidence based medicine (EBM) has made a difference to the way we practice medicine and whether it has improved care for patients. So what is the evidence so far? The material we have collected shows that the answer is not straightforward, and it is still early days to be definitive about the success of the EBM movement. However, we hope this issue will fuel the debate by reflecting on the progress that has been made in practising and teaching EBM over the last 10 years and by drawing attention to those areas with which we continue to struggle.

EBM is now an integral part of many undergraduate, postgraduate, and continuing education activities.[1–4] Coomarasamy and Khan identified 23 studies of educational interventions involving EBM in the postgraduate environment and found that clinically integrated teaching improved knowledge, skills, attitudes, and self reported behaviours (p 1017).[2] Teaching EBM is also being incorporated successfully into journal club environments, with positive effects on changing practice and improving the care of patients.[4]

Accurate, accessible, and continually updated sources of evidence such as the *Cochrane Library* and *Clinical Evidence* are now available widely, and freely to some middle and low income countries. Garner et al outline how sources such as the *Cochrane Library* are being used in a collaborative effort to translate evidence into practice in middle and low income countries.[5] Perhaps as important as identifying where evidence exists, sources of evidence also highlight gaps in the evidence that inform the focus of future research.

Sceptics would argue that producing research is one thing but showing that it changes practice is another. However, a cluster randomised trial published in this issue shows that a collaborative quality improvement intervention to promote surfactant therapy in neonates lead to improved outcomes (p 999).[6] Significantly more infants in the intervention group received surfactant in the delivery room, and fewer received the dose more than two hours after birth. Results from trials such as this one provide encouraging evidence that efforts to change behaviour, though difficult, are possible even when applied across multiple health settings.

Despite these advances several challenges remain. Few articles address the impact of teaching EBM on clinical outcomes, and in particular those that matter to patients as well as clinicians. Coomarasamy and Khan did not identify any studies in their systematic review that evaluated the impact of postgraduate teaching of EBM on clinical outcomes,[2] and scant data exist on changing behaviours other than from self reports. Although this has not been a requirement for other modes of medical practice or education, its importance should not be neglected. We suggest that to facilitate these efforts, those who teach EBM around the world establish a collaborative network not only to share educational materials but also to evaluate educational interventions and determine their impact on important clinical outcomes (p 1029).[7]

Another barrier is that providing evidence from clinical research is a necessary but not sufficient prerequisite to change behaviour and improve patient care. A study by Sheldon et al on the impact of guidance from the National Institute for Clinical Excellence on prescribing practice and use of evidence based interventions in the United Kingdom found that implementation was variable.[8] Proponents of knowledge translation would argue that changing behaviour is not a simple task and involves a complex process requiring comprehensive approaches directed towards all relevant stakeholders including patients, healthcare professionals, managers, and policy makers.[9] In particular more emphasis needs to be placed on understanding and incorporating patients' values (which often differ widely from those of their doctors) into the process and working together towards a mutual evidence based decision.[10]

We now have too many sources of evidence, compiled with a variable mix of scientific rigour and opinion, resulting in confusing messages. Sometimes evidence may favour an intervention, but health policy may prevent clinicians from providing it.[11] Little wonder that the uptake of evidence is so piecemeal. The challenge will be to provide immediate access to high grade evidence in user friendly formats that are tailored to meet the needs of stakeholders.

Finally, some practitioners are concerned about the legal implications that EBM poses. Could they be considered negligent by the courts for not applying evidence based guidance in decision making? This fear could result in the inappropriate, broad brush application of guidelines to every patient whereby the art of practising medicine is replaced purely with science—a soul destroying prospect for any clinician. These and other legal challenges that EBM practitioners have faced (and might face in the future) are reviewed by Hurwitz.[12]

But we should not let these challenges deter us; this issue shows that EBM has achieved milestones since its evolution a decade ago. We already have enough evidence to answer most of the common clinical

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questions practitioners face, so the focus of the next 10 years should be on how to use it and how best to measure how we are doing.

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Evidence based policy making

Is about taking decisions based on evidence and the needs and values of the population

Evidence based medicine or evidence based clinical practice is the judicious application of best current knowledge to the condition and values of the individual patient. Evidence can also be used for groups of patients or populations and the terms used to describe these activities vary from one document to another, sometimes being called evidence based health care, evidence based management, evidence based public health, or evidence based policy making. An example of evidence based policy making is the United Kingdom's decision to introduce screening for Down's syndrome.[1 2] The common feature to all these debates is the use of evidence to make decisions about groups of patients or populations.

Evidence based policy making sets the context in which evidence based clinical practice can take place. If the policy is not to offer screening for breast cancer to women under the age of 50, the clinician does not have to interpret the evidence about the benefits and harms of screening such women. Critics say that this is a form of rationing. Supporters say it is a process to maximise the value obtainable from the available resources. A clinician may have a view about the evidence and may need to explain to a woman who believes that it should be offered how to make her point known to the local provider of health services or local member of parliament, but no scope for evidence based clinical practice exists if the policy clearly states that a service should not be provided. This may pit the clinician against the policy maker but that can be a clear and creative tension rather than a fudge.

Strong similarities exist between evidence based clinical practice and evidence based policy making. The first is that, in both contexts, decisions are based on evidence and not made by evidence. Secondly, in both types of decision making two other factors are present. In evidence based clinical practice the clinician has to relate the evidence to the condition of the individual patient, taking into account, for example, other risk factors or diseases that the patient may have, and then has to help the patient reflect on the options they face, taking into account their values about benefits and harms.

In evidence based policy making, analogues of these two variables can also be seen. In evidence based policy making the policy maker has to consider the needs of the population. The evidence about breast cancer screening is the same in Hong Kong as in the United Kingdom, but because the incidence of breast cancer is much lower in Hong Kong the implication of the evidence is different. In evidence based policy making, the policy maker is rarely able to sit back and look at a single systematic review or cost benefit analysis and decide whether or not this drug or that intervention should be funded. Usually the request for funding has to be considered in the context of many other problems and demands for resources.

Evidence based policy making would be easier if clear programme budgeting existed, so that demands such as those for increased investment in statins could be considered against other types of expenditure on cardiovascular disease, but because very few healthcare systems have programme budgeting this is rarely possible.

Thus, and quite properly, evidence based policy making has to consider not only the evidence and needs of the population but also the values of that population. The policy debate about the development of drugs and services for patients with rare diseases highlights some of these issues of value. From the utilitarian perspective, the case for investing in common diseases is strong, but if a high value is placed on justice or fairness increased investment may be made in rare diseases, even though the cost per patient treated, and therefore the value assigned to a beneficial outcome for a patient with a rare disease, becomes, by this process, higher than the value ascribed to the same outcome for someone with a common condition.

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