

Evidence-based medicine and general practice

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SUMMARY

Evidence-based medicine (EBM) aids clinical decision making in all fields of medicine, including primary care. General practice is characterized by particular emphasis on the doctor-patient relationship and on biomedical, personal and contextual perspectives in diagnosis. Most evidence available to general practitioners (GPs) addresses only the biomedical perspective and is often not directly applicable to primary care, as it derives from secondary or tertiary care. Emphasis on the biomedical domain and the randomized controlled trial (RCT) alone reflects a reductionist approach that fails to do justice to the philosophy of general practice. The art of medicine is founded on context, anecdote, patient stories of illness and personal experience, and we should continue to blend this with good quality and appropriate research findings in patient care.

Keywords: Evidence-based medicine; research; diagnosis.

Introduction

'The wise man is not learned, the learned man is not wise'
(Tao te Ching, quoted in Benjamin Hoff, *The Tao of Pooh*.
London: Methuen, 1984).

The principles of EBM have existed in the areas of critical appraisal and clinical epidemiology for decades, although EBM itself was first described in detail in America in 1992.¹ Since then it has become the latest focus in the search for improved health care. Further articles described how to use the principles on a practical basis,²⁻⁸ and a journal now exists to promote EBM further in routine clinical practice.⁹ There are five basic tenets of EBM:

- Clinical decisions should be based on the best available scientific evidence
- The clinical problem determines the evidence to be sought
- Identifying the best evidence involves epidemiological and biostatistical ways of thinking
- Conclusions based on the available evidence are useful only if put into action for individual patients or for population health care decisions
- Performance should be constantly evaluated.⁹

Identifying evidence to support or refute patterns of health care has certain advantages: best care is suggested by the results of an appropriate literature review; it promotes uniformity of care so that best care can become standard care; it allows individual clinicians to become aware of the range of certainty and

uncertainty in clinical decision making; and it suggests areas of clinical uncertainty that require more definitive evidence than anecdote or 'usual' practice.⁹

These advantages apply equally to primary, secondary, and tertiary care, and recent editorials and correspondence pages have discussed the role of EBM in clinical practice. They conclude that best external evidence should always be integrated with clinical expertise; doctors should not disparage or neglect their pragmatic clinical skills and experience. Such neglect or disparagement runs the risk of alienating those who may otherwise embrace its principles.¹⁰⁻¹⁵

Evidence-based medicine in practice

The main principle of EBM is that clinical decision making should be influenced by rational analysis of evidence and previous experience; an approach that has been with the profession since Hippocrates. Recent studies showed that decision making can usually be supported retrospectively by evidence in both primary care and general medicine, even without a prior commitment to EBM.^{16,17} However, accessing evidence to answer clinical questions is not such a straightforward issue, especially in primary care.

Decision making depends on both *accessing* and *interpreting* evidence. In primary care, GPs have less than five hours a week for reading, educational courses, and teaching.¹⁸ When they do access the literature to find evidence about clinical problems, they should be aware of certain limitations, especially in general practice, where until recently there have been few journals publishing primary care work and research. Negative findings are less likely to be published: 25-50% of studies on a given topic may not get published.¹⁹ There are also problems in accessing prior relevant work. Depending on the topic, databases such as Medline have only a 50-80% recall of relevant literature, and many areas of 'grey literature' (reports, theses, conference proceedings, and press releases) are difficult to access electronically.¹⁹

If review articles are available and accessible, practitioners may find contradictory use of papers in a clinical debate. Papers may be quoted in differing ways, or not quoted at all. For example, in the debate about screening and intensive management in patients over 75 years of age, the same three original papers²⁰⁻²² were used variously by different authors to demonstrate both benefit²³ and no definite benefit;²⁴ other authors omitted discussion of these papers completely.²⁵ The quality of review articles is inversely related to the expertise of the reviewer in the clinical topic, and practitioners are justified in maintaining some scepticism about their conclusions.^{26,27}

What doctors read is influenced by the bias and experience they bring from their own practice. There are biases in implementing research findings in clinical practice, deriving mostly from peer influences rather than the research evidence itself.²⁸⁻³² These peers, who may include 'experts' or opinion leaders, have their own bias in interpreting available data. Thus, considerable 'spin' is put on recommendations made from original data and how this may be implemented in practice.

For example, the Medical Research Council's (MRC) trial of mild hypertension in patients under 60 years suggested a benefit of one prevented stroke per 800 patient-years on drug treatment; however, one in three patients experienced side effects from the medication.³³ Some doctors may judge the cost-benefit ratio suf-

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ficient to warrant drug treatment, while others may interpret it to support non-pharmacological approaches for those with mild hypertension.

Advice about smoking provides another example. The most widely quoted study showed that brief advice to give up smoking, with a warning of follow-up, resulted in 5% more smokers quitting.³⁴ Not all clinicians view this as an efficient use of time: while 5% has good implications for the public health, some may view it as too small a benefit for the outlay in time and discussion with an individual patient, given competing demands in the consultation.

Interpretation of data is even more difficult for patients, who usually acquire medical information through the media, and may bring their concerns and requests for more information to their GP. The scare over third-generation oral contraceptive pills and venous thrombosis provides an example.³⁵⁻³⁹ Early research findings were presented to the UK population even before the original papers were published, producing a furore out of all proportion to the 'risks' identified by the researchers. These results were presented without acknowledging the potential benefits in terms of lipids and cardiovascular risk, and without considering the effects of likely non-compliance, which routinely follow such scares.⁴⁰ Genetic screening is another area that is increasingly controversial.⁴¹

It becomes clear that applying EBM principles to patient care raises genuine difficulties. EBM has been considered from the primary care perspective before, as a discussion of how available knowledge can be integrated with the philosophy of primary care,⁴² but we will discuss how the particular characteristics of primary care lead to further concerns about the implementation of EBM, and highlight possible strategies to address the problem.

General practice: biomedical, personal, and contextual

General practice is characterized by particular emphasis on the doctor-patient relationship and on biomedical, personal, and contextual perspectives in diagnosis (the triple diagnosis).^{43,44} Practitioners are accustomed to holistic clinical decision making, integrating a wide range of different types of knowledge and emotions,⁴⁵ treating individuals in their usual context, and addressing their particular concerns on the situation.⁴⁴ Analysis of these characteristics of general practice identifies certain limitations in the applicability of EBM.

EBM predominantly addresses the biomedical perspective of diagnosis, principally from a doctor-centred paradigm. The profession defines a problem, recognizes a lack of evidence available to inform a solution, and then commissions research to provide that evidence. A role for patients in deciding on the most important questions they want answered, and a place for 'quality-of-life' measures are less easy to achieve. In contrast, several conditions respond better to more patient-centred care, including headache, blood pressure control, diabetic control, and breast cancer.⁴⁶⁻⁵⁰

Doctors also need evidence that is derived from a patient-centred paradigm and that recognizes the personal and contextual elements to decision making in practice.⁴⁴ Examining these elements, another concern about EBM becomes apparent: the RCT is often unhelpful in these investigations,^{27,51,52} even though it is promoted as the gold standard of research methodology.⁵³

The research methods used to obtain data in the personal and contextual dimensions may require different strategies, allowing for more 'circumstantial' evidence than the 'watertight' evidence of the RCT.⁵² (Circumstantial and watertight are terms applicable to legal evidence.) Some clinicians regard only RCT evidence as

acceptable, though the original proponents of EBM would not concur.

An example — excessive drinking

There is a substantial body of opinion and evidence about 'brief intervention' for excessive drinkers, suggesting that it is effective and should be widely implemented in primary care.⁵⁴ General practitioners recognize considerable personal and contextual elements in the diagnosis of excessive drinking, and these influence their patient management. Evidence about interventions for these other elements is likely to be less 'rigorous' than the RCT.

For example, 'personal' factors may include depression or stress at work, for which counselling may be more appropriate than the brief intervention; evidence for this would often be derived from non-randomized, non-controlled studies such as cohort studies or descriptive research. 'Contextual' diagnosis may include substantial social disorganization and lack of resources, for which a social work approach may be appropriate; evidence for this intervention could be derived from practice- or area-specific descriptive studies. An understanding of which 'level' of intervention is most appropriate, and most valued by patients, may be gained from qualitative studies, with interviews to assess their priorities, readiness, and motivation for intervention.

The triple diagnosis

The above discussion demonstrates that more is required than a simple biomedical approach or the use of RCTs to assist practitioners in decisions on managing excessive drinkers. The evidence should be accrued using different methods, each appropriate to a different aspect of the triple stage diagnosis. We have provided one example but there are countless others, such as 'minor' illness or chronic disease management, where the triple stage diagnosis (and therefore triple stage research planning) needs to be considered.

However, the costs and commissioning of research are likely to focus on more obviously cost-effective treatments, primarily using biomedical indices as definitive outcome measures. This may be to the detriment of studies looking at 'softer' measures of psychosocial well-being, such as quality-adjusted life years,⁵⁵ where relative novelty adds to the difficulties in interpretation. The pharmaceutical industry is also likely to direct its finances towards trials of specific therapies, and these will probably be based on drug treatments at the expense of exploring non-pharmacological approaches.²⁷ Biomedical data are easier to research in general practice, which hinders the acquisition of evidence from the other two dimensions.

A note of optimism does come from the increasing research priority for primary care in the UK.^{56,57} Increased priority and funding do not necessarily result in better research because research does not always address the needs of practitioners, and health services research is not an alternative to research in the context of primary care^{58,59} — but they are a necessary first step.

If these deficiencies can be addressed, the decision-making process employed for an individual patient will be able to consider the circumstances of the patient, the clinician, and the clinical problem. The application of EBM principles in general practice will be based on a more comprehensive range of evidence and will assist the real-life clinical decision making in which the balance of ethical principles varies at different times. These principles include the sometimes conflicting concepts of 'rule utility' (maximizing benefit for a group of patients) and 'act utility' (optimizing the choice of interventions for an individual).⁴⁵

Every GP can think of clinical instances where this weighing up of the balance of utilities occurs. As illustrations, Lamberts

and Hofmans-Okkes identify tangible therapeutic dilemmas: a 55-year-old woman with a myocardial infarction who also has terminal pancreatic carcinoma; considering how to help a 40-year-old man with a new diagnosis of HIV; and the 'best' treatment for a 70-year-old male stroke victim with a recurrent urinary tract infection.⁴⁵ One that has troubled us is deciding whether or not to use anti-coagulation for elderly patients in residential care who have atrial fibrillation.^{60,61}

Appropriate evidence

The difficulties produced by the lack of evidence relevant to the personal and contextual diagnoses are complicated by concerns about the applicability of the available biomedical evidence to general practice, as much of the information is not obtained from primary care. Many examples exist where hospital-based evidence is handed down to primary care clinicians as a 'must use' policy. Starfield gives examples (including childhood anaemia and management of pelvic inflammatory disease) where textbooks quote figures from hospital-based clinic settings which are transposed directly into the entirely different setting of primary care.⁶² McWhinney provides examples in which the differing denominators of populations can make investigations (such as ECGs for chest pain and investigations for rectal bleeding) mandatory in hospital, but at the very least difficult to interpret in a primary care situation.⁴⁴

Evidence-based medicine can imply a simplistic and mechanistic world-view in which cause and effect are easily distinguished. Systems theory teaches us that the world is more complex and that we must appreciate the context, framework, and setting in which decision making occurs.⁴⁴ We must study the validity of applying evidence from secondary or tertiary care settings in primary care.

The art of medicine

Medicine has long been noted as a profession that combines the best knowledge available with an appreciation of a good 'bedside manner'. The motto of the Royal College of General Practitioners (*Cum Scientia Caritas*) enshrines this, promoting science and caring as the twin bases of good quality general practice.

Balint showed that GPs are not uncaring, unemotional professionals, but can use emotions and a sense of awareness of all that takes place in meetings with patients to assist diagnosis.⁶³ Much of this work is difficult to investigate with traditional scientific methods, but is still relevant today, especially in this era of increasing knowledge.

Recently, it has been re-emphasized that primary care medicine combines a rational scientific method and a less rigorous 'art'.⁶⁴⁻⁶⁷ The art of medicine is founded upon context, anecdote, patient stories of illness, and personal experience; these are classified as 'lower quality' in the hierarchy of evidence, but have an equally valid contribution to medical decision making and should be integral to our practice.

Conclusions

The advocates of EBM recognize that it does not provide answers to all problems, as research provides imperfect evidence for each unique scenario. Doctors should interpret the evidence in each instance, weighing up the evidence for or against certain therapies, and tailoring it to a patient's context and preferences. Ultimately, the doctor will arrive at an *opinion* on the evidence.

We laud the principles of EBM but have identified concerns that arise from over-reliance on it in primary care. EBM could be over-emphasized in all medical fields, with a consequent trend towards a biomedical approach; in general practice this would hinder further progress in developing its philosophy and practice. The full three-stage diagnostic process of biomedical, personal, and contextual diagnosis is central to optimal general practice. When applied to primary care, we suggest that EBM should promote studies that do not solely use RCT methods to investigate the personal and contextual domains; qualitative and case-control study methods are also valid and important areas for study. General practitioners have other concerns about the evidence available for use in primary care, as much of it comes to us from a hospital-based setting, and may not be relevant to general practice patients.

General practitioners should make no apologies for the inevitable and difficult process of interpreting and integrating scientific evidence, personal experience, and knowledge of our patients. It is this integration of 'stories', anecdotes, case histories, and evidence that is one of the successes of primary care.⁶⁸ A positive approach could be to put the flesh of clinical stories, case histories, qualitative research, and other rich sources of information onto the hard bones of EBM.

With reference to the *Tao of Pooh* quotation at the beginning of this paper, clinicians should continue to temper learning with wisdom — itself a product of personal experience and individual insight. We do not advocate ad hoc, individualistic clinical freedom but rather call for continued attention to the philosophy of general practice and the triple stage diagnosis, to patient participation in care, and to the appropriate use of the principles of evidence-based medicine.

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