Evidence-based public health – what level of competence is required?

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Abstract

Background Increasing prominence is being given to the use of best current evidence in decision-making, both in clinical practice and health care management and purchasing. Public health is regarded as a specialty in which evidence-based decision-making may be taken for granted, partly because epidemiology is the principal basic science on which public health has developed. To practise evidence-based decision-making requires both organizations that have systems for finding and appraising evidence and professionals who are skilled in searching, appraising, storing and using knowledge.

Methods A workshop was organized which posed a challenge for participants based on the assumption that a public health specialist could face hostile examination by a lawyer in court on their abilities to find and appraise best current evidence. The findings from this workshop were tested at a second workshop in London. Participants were principally public health specialists from the United Kingdom.

Results Participants were able to identify the core skills that were required for public health specialists and the resources that the individual professional needed to practise evidence-based decision-making. It was also obvious that there was a gap between the level of competence required and the level of competence that many public health professionals actually had. There was also a gap between the resources that were needed by public health professionals wishing to find and appraise the best current evidence.

Conclusions If public health wishes to continue to claim that it is in the forefront of evidence-based decision-making, both the skills of the professionals and the resources available to them need to be improved.

Keywords: public health, epidemiology, management, training

Introduction

Evidence-based health care is characterized by decision-making in which the decision is based on a systematic appraisal of the best evidence available. The evidence alone rarely makes the decision, and those who take the decision also have to take into account the needs and values of the population they serve and the resources available. These three factors are present in almost every decision, but it is the evidence that is the scientific basis of the decision, and public health is the specialty which should not only consider the needs of populations but also manage the evidence to ensure evidence-based decision-making (Fig. 1).

Evidence-based health care and evidence-based clinical practice

The term ‘evidence-based health care’ embraces a wide variety of different activities, each of which should be evidence based. These are illustrated in Fig. 2.

The term ‘evidence-based medicine’ was used to cover all clinical specialties when the first Centre for Evidence-Based Medicine was set up in Oxford, but as other centres develop the term ‘evidence-based clinical practice’ is now more appropriate, with evidence-based medicine meaning the consistent and judicious use of the best evidence available when making decisions with individual patients being seen by general physicians or physicians in one of the sub-specialties of medicine. Evidence-based clinical practice focuses on individual patients. Some trainees and consultants in public health medicine still see individual patients, and when doing so may need the skills and resources of evidence-based medicine, but most of the work of a consultant in public health, and the specialty itself, is based on populations or groups of patients. The skills involved in appraising and implementing the best evidence available are similar for both individual patients and populations, but they are subtly different, and the remainder of this paper focuses on the skills that are needed when making decisions about groups of patients or populations.

The negligent public health professional

If the management of evidence is one of the course skills of public health then there must be some standards of practice which could be construed as being negligent. It is reported that US lawyers have been sued for failing to search the relevant databases sufficiently thoroughly to establish whether or not there was legal precedent for a particular situation, and the same could occur in public health in the United Kingdom. The
The skills required in the management of evidence are the skills of searching, appraising and storing evidence, and the skills required and, where possible, the standards of practice that should be expected of the public health professional, were discussed in the workshop.

**SAS skills**

For each of the three main skills of searching, appraising and storing (SAS) a number of components were identified, and for some of these it was possible to set measurable levels of performance. These are set out in Tables 1–3.

**The defence against negligence**

The public health professional who does not have these skills could plead that their training had been deficient and steps obviously have to be taken to improve training; for example, only a small proportion of public health professionals can use reference management software. However, even if everyone had had the best possible training, resources are required to practise evidence-based decision-making which are not universally available. Thus the ability to acquire, develop, use and improve the skills of searching, appraising and storing requires databases, the ability to access those databases, and a new form of organization for public health. These three factors are all prerequisites for evidence-based public health.

Every public health professional has access to the databases set out in Table 4.
The decision-maker should be able to:
- describe sources of information other than their local library which they have used when their librarian was not available
- describe at least two databases of relevance to their field of work
- define what is meant by terms commonly used in searching, e.g. explode, MeSH, Boolean operators
- conduct a search using more than one search item, preferably against a gold standard search by a trained searcher

**Table 1 Searching**

Resources

To access these databases, the public health professional who is expected to manage evidence requires a computer with a modem, a subscription to a provider with a link to the Internet, a software browser, and conversions management software. Perhaps most important of all, they require access to the skills of a librarian, who must be fully competent in the field of electronic as opposed to paper information, for it is the librarian who will have to help the public health professional develop the skills they need to find, appraise, store and use information in those times when information is needed but a librarian is not available. Evenings and weekends are often times when evidence has to be gathered for decision-making.

**The Chief Knowledge Officer**

It is said that some US private companies are now appointing or designating a Chief Knowledge Officer, a board-level player of equivalent status to the other chief officers of the company and directly accountable to the Chief Executive Officer. The job of the Chief Knowledge Officer is to manage the knowledge in the organization, to pick up new knowledge and make sure that the organization is acting upon it, and to develop systems for managing knowledge.

The Director of Public Health should be the Chief Knowledge Officer of a Health Authority, but how well do we manage knowledge within Departments of Public Health? What decision has the department made, for example, about the balance that should be struck between searching and scanning electronic as opposed to paper information, for it is the librarian who will have to help the public health professional develop the skills they need to find, appraise, store and use information in those times when information is needed but a librarian is not available. Evenings and weekends are often times when evidence has to be gathered for decision-making.

**Table 2 Appraisal skills**

Every decision-maker should:
- have a set of criteria against which they can appraise the type of research papers they commonly use, e.g. systematic reviews, randomized trials, case control studies, cohort studies, surveys
- be able to present an appraisal of a research paper which clarified the strengths and weaknesses of the paper
- write a review of a number of papers that they have appraised

**Table 3 Storing skills**

All professional decision-makers should have a system for storing the knowledge and evidence that is essential to their practice in a way which can be retrieved whatever the reason for the search; they should:
- have, or have access to, a computer-based reference management system
- be able to input individual records to that system
- be able to download the results of a search to their system
- be able to perform searches on their system using more than one search item
Table 4 Databases to which public health professionals should have access

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<th>Database</th>
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<td>The Cochrane Database of Systematic Reviews</td>
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<td>The database of reviews of effectiveness produced by the Centre for Reviews and Dissemination in York</td>
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<tr>
<td>Medline</td>
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<tr>
<td>Embase</td>
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<tr>
<td>Specialized databases available on the Web</td>
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<tr>
<td>The National Research Register</td>
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in the allocation of time, and therefore resources, in the department? Within scanning, whether three journals are scanned or thirty, how is responsibility for scanning allocated and how are the important papers found by scanning related to the work of the department and therefore the authority? The development of systems for managing knowledge is necessary for every organization but is particularly important for those departments which claim to be the best at managing knowledge and who have a lead for this function within the organization.

References

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