Evidence-based Practice

From "Key Concepts in Public Health"

DEFINITION

One of the earliest and certainly the most influential definitions of evidence-based practice (EBP) is by Sackett et al. (1996): 'Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.' The focus of this definition is clearly on the use of research to inform decision-makers and enhance their decision-making capabilities. The decision-makers appear here to be the clinicians, those responsible for the care of individual patients, and indeed the experience and judgement of clinicians is an integral part of the process. However, an unrepresented group in this definition are patients, users or clients and it is essential that their subjective values, preferences, beliefs and opinions are incorporated into the decision-making process.

KEY POINTS

- The philosophical change underpinning EBP is a move from expert opinion, from an entrenched approach of doing what has always been done, to accessing evidence and using it, together with clinical judgement and patient opinion, to inform care.

- This philosophical change is a response to: variations in clinical practice, exponential increase in evidence and the need to keep up to date with the evidence, the inadequacies of relying on traditional reviews of the literature and the increased expectation of openness and involvement of public, patients and users.

- The processes for undertaking EBP are to: produce a research question, search and appraise the evidence, select and option, implement it and evaluate performance.

DISCUSSION

The exponential growth and impact of EBP has been an almost unprecedented phenomenon (Trinder and Reynolds, 2000). EBP is the cornerstone of current health policy and has been instrumental in acting as a model for similar developments in other disciplines: evidence-based education (Davies, 1999), evidence-based social work (e.g. Journal of Evidence Based Social Work), and evidence-based information systems (Atkins and Louw, 2000) to name just a few. It has also precipitated the introduction of numerous new journals (e.g. Evidence Based Nursing and Evidence Based Mental Health), evidence-based bulletins (such as Bandolier, and the pre-eminent source of good quality research, the Cochrane Library - http://www.cochrane.org/).

EBP has become fundamental in the research and practice of healthcare because it meets the needs of providers, consumers and commissioners to influence care. Every healthcare consumer or practitioner is in a position to assess the quality of research evidence and establish for themselves the effectiveness of particular interventions (Sackett and Parkes, 1998; Bandolier, 2000; MacRae et al., 2004), and thus participate in their own decision-making about healthcare provision (Gray, 2004).

Asking a question
A fundamental skill needed to practise EBP is to be able to ask a focused research question. A useful framework exists for this purpose, and it is worth attempting to use this framework for any kind of question, therapy, exposure to disease, diagnostic test, prognostic factor, risk factors, treatment or perceptions. The framework is known as PICO: Population (or Patient), Intervention, Comparison and Outcome, and the Comparison component is optional (see Table 35.1).

Searching for the evidence

It is possible to undertake either an extensive search or ‘quick and dirty’ searches. The type is dependent on the purpose of the search and undertaking a systematic review will require a more elaborate and far-reaching search than would be necessary to answer an immediate question about a specific patient query.

The Cochrane Library provides excellent quality evidence and should therefore be the first area to search as well as evidence-based sources such as Bandolier. Other key areas to search are: electronic databases (such as Medline, PubMed, Cinahl, Psychlit), grey literature (conference proceedings and theses, accessible via electronic databases such as Sigle or Zetoc), references of references and contacting authors (to find out if they know of any studies that have been undertaken but not published, possibly as a result of publication bias - the problems of studies with negative outcomes not being published: Dickersin and Min, 1993).

<table>
<thead>
<tr>
<th>Example 1: RCT of a therapy</th>
<th>Population</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Outcome</th>
</tr>
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<tbody>
<tr>
<td>Amongst adults wishing to give up smoking</td>
<td>do nicotine replacement patches given by a GP</td>
<td>compared to nicotine replacement patches given by a specialist smoking cessation adviser</td>
<td>lead to higher quit rates?</td>
<td></td>
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<tr>
<th>Example 2: Qualitative study</th>
<th>Population</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do pregnant women who are offered HIV tests feel?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<th>Example 3: Prognosis observational study. (Must be prospective as it would be difficult to establish the accuracy of the alcohol intake)</th>
<th>Population</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amongst people who are diagnosed as hepatitis C positive</td>
<td>what level of alcohol intake</td>
<td>increases the risk of cirrhosis of the liver?</td>
<td></td>
<td></td>
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<tr>
<th>Example 4: Diagnostic test</th>
<th>Population</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amongst females at risk of chlamydia, does an endocervical swab compared to a PCR urine test</td>
<td>produce the same number of true positives and true negatives?</td>
<td></td>
<td></td>
<td></td>
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Levels of evidence

There are a number of ‘hierarchies of evidence’ and many are remarkably similar. Most omit any reference to qualitative studies, which is unfortunate as it negates the importance of these works and reinforces the conviction amongst many that they are second best. However, it is inappropriate to combine quantitative and qualitative studies in one hierarchy. For this reason two hierarchies are presented here. Figure 35.1 is a
hierarchy of evidence from quantitative studies while Figure 35.2 from Salmond's (2007) ‘pyramid of evidence’ is based on evidence from experience. In this instance, qualitative studies are valued and evidence from quantitative studies is considered less significant.

Pyramid of evidence - quantitative studies

**Appraising the evidence**

There is a useful definition of critical appraisal which at first glance seems an unachievable task for those who are not research literate. ‘Critical appraisal is the process of systematically examining research evidence to assess its validity, results and relevance before using it to inform a decision’ (Hill and Spittlehouse, 2003). However, there are many checklists which provide the assistance that enables people with only the slightest initiation of research methods to critically appraise a research study. The checklists are specific to different types of study and are available from (as examples) Greenhalgh (2006), Crombie (1996), and numerous websites (e.g. http://www.sign.ac.uk/guidelines/full-text/50/annexc.html; http://www.shef.ac.uk/scharr/ir/units/critapp/index.htm).
Pyramid of evidence - description of experience (Source: Salmond, 2007)

Systematic reviews

The quantity of research papers is as extensive as their quality. Assessing the quality of one paper does not establish certainty of evidence, even where the standard is acceptable, simply because there may be other papers with the same research question which reach different conclusions. The proliferation of papers and journals is overwhelming (Davidoff et al., 1995). Neither practitioners, undertaking normal work activities, nor patients/consumers can be expected to read, appraise and amalgamate all the existing studies in the world literature on a specific research question.

It is for this reason that systematic reviews have become so prolific. Over ten years, the number of systematic reviews has grown to the extent that there are around 5,000 completed systematic reviews, all of which have gone through extensive and rigorous review procedures, within the Cochrane Library Database of Systematic Reviews. Systematic reviews meet the need of finding, appraising and amalgamating all studies that look at a specific question in either published or unpublished format in any language (Centre for Reviews and Dissemination, 2001). The resulting single publication presents a clear search strategy: a list of all included studies which reach a pre-established quality standard, justification for all excluded studies, and some form of synthesis of all the data, either as a meta-analysis or a narrative, with a final 'bottom line' conclusion.

Good systematic reviews of randomised controlled trials are regarded as being at the apex of the hierarchy of evidence (Greenhalgh, 2006). Findings from these systematic reviews take precedence over all other single studies, though some regard large randomised controlled trials as of equal value. The weight that systematic reviews carry therefore places a responsibility on the author or team of authors to produce a piece of research that is exceptional in its rigour and minimisation of bias.

Implementation and evaluation

As with all projects which are undertaken rigorously, implementing, disseminating and evaluating the processes and outcomes at different points of follow-up are essential.

CASE STUDY

An important public health problem that emerged in recent years was the fear amongst some parents that providing their children with the MMR vaccination would result in Crohn’s disease or autism. This well known phenomenon was the result of a study published in the Lancet by Wakefield et al. (1998).

There is a wealth of discussion about this paper, and entering MMR into Google is sufficient to identify a
whole range of sources for further deliberation, including statistics, and articles that refute or support the facts. How can one assess which articles or opinion pieces are valid? The answer is that critical appraisal skills enable the reader to assess validity. In this case, much of the work is already done, and a response by Professor Trish Greenhalgh goes through a critical appraisal checklist with responses (http://briandeer.com/mmr/lancet-greenhalgh.htm).

FURTHER READING


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