Essential differences between research and evidence-based practice

The UK government’s plans for clinical governance include the use of evidence-based practice in decision-making. However, there is considerable uncertainty in nursing about the differences between evidence-based practice and research. Ros Carnwell reviews a range of definitions of research and evidence-based practice, and delineates their defining features.

Evidence-based practice is a key strategy within the development of national service frameworks, in which patients will be given information about what they can expect from the health service (DoH 1997). Such evidence will also form the basis of clinical guidelines produced by the National Institute for Clinical Excellence. The Commission for Health Improvement will oversee the implementation of these clinical guidelines. Thus, evidence-based practice is fundamental to recent government health reforms. More specifically, the contribution of nursing to evidence-based practice is affirmed in the government’s plans for clinical governance, which is central to quality improvement (DoH 1999). The use of evidence-based practice is crucial, therefore, to development of practice in nursing, midwifery and health visiting. However, despite the significance of evidence-based practice within government reforms, there remains some uncertainty about its meaning.

The term evidence-based practice is now used as frequently, if not more frequently, than its predecessor, research-based practice. It is worrying, however, that the two terms are often used interchangeably. Nurses often refer to evidence-based practice without demonstrating recognition of its defining features. This article will first examine definitions of research, how these differ from definitions of evidence-
based practice, and the implications of these definitions for practice. The distinctions between research and evidence-based practice will then be considered, with reference to the processes involved.

**Definitions of research and evidence-based practice**

Several definitions of research exist. Clifford (1997), for example, defines research as ‘a planned, logical process, [which] may be undertaken for the purpose of analysing relationships between events, or for predicting outcomes’. Polit and Hungler (1987) define research as ‘systematic inquiry that uses orderly scientific methods to answer questions or solve problems’. Narrower definitions of health services research include the Medical Research Council’s (1993) definition, which includes ‘investigation of the effectiveness and efficiency of services’ and a definition posed by Corbett (1999) as ‘the quest for new knowledge in order to prove or disprove a given hypothesis’. An additional purpose of research is to ‘contribute in some way to our understanding of the world’ (Hart 1998). Based on these definitions then, it can be concluded that research is a systematic, planned, investigation of a specified problem, with a predetermined outcome, which will contribute to our understanding of the phenomena in question. Thus, the research project begins with identifying a problem to be investigated and ends with an outcome in the form of results and recommendations.

Just as there are several definitions of research, there are a number of definitions of evidence-based practice. Sackett et al (1996), for example, define evidence-based practice as ‘the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients’. The use of the evidence for decision-making, rather than the creation of the evidence through the research process therefore seems to be a fundamental difference between research and evidence-based practice. This will be discussed later in this article. Decisions have to be made, therefore, about what constitutes best evidence. Hicks (1997) suggests that account should be taken of ‘all valid, relevant information’ when making decisions that affect the
care of patients. Thus, best evidence might be defined as that which is valid and relevant to the patient. Important to this definition is the distinction between evidence that is valid, and that which is relevant to the patient. Evidence that is valid, for example, might not be relevant for a particular patient, and likewise, evidence that is relevant to the patient might prove to be invalid. It is the integration of these two factors, then, that is fundamental to evidence-based practice. Indeed McKibbon et al (1995) refer to the need to collect, interpret and integrate ‘valid, important and applicable patient-reported, clinically-observed, and research-derived evidence. The best available evidence, moderated by patient circumstances and preferences, is applied to improve the quality of clinical judgements’. Improving quality of care might, by necessity, result in changing current practice.

These definitions of evidence-based practice, then, seem to suggest that different types of evidence can be equally valid i.e. evidence that is derived from research and that which is observed in practice or reported by patients. Lockett (1997), however, offers an alternative definition of evidence-based medicine, which fails to recognise the significance of non-research-based evidence. Lockett defines evidence-based medicine as ‘the process of systematically finding, appraising, and using contemporaneous research findings as a basis for clinical decisions’ (Lockett 1997). Despite the limited definition of best evidence Lockett does add to the other definitions the need to be systematic in the search for best evidence, and to appraise up-to-date information. For the purpose of this article, then, evidence-based practice will be defined as the systematic search for, and appraisal of, best evidence in order to make clinical decisions that might require changes in current practice, while taking into account the individual needs of the patient.

It seems, then, that there are sufficient definitions available to provide a clear understanding of both research and evidence-based practice. What these definitions do not do, however, is to distinguish the differences between research and evidence-based practice. Before discussing the processes involved in conducting research and evidence-based practice studies, the distinctions between definitions of evidence-
based practice and research will be considered.

The essential differences, then, between features within definitions of research and evidence-based practice, are produced in Table 1.

<table>
<thead>
<tr>
<th>Research</th>
<th>Evidence-based practice</th>
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<tr>
<td>Systematic and planned investigation</td>
<td>Systematic search for, and appraisal of best evidence</td>
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<tr>
<td>Specification of a problem to be investigated</td>
<td>Use of evidence for making clinical decisions, the evidence often being produced by research</td>
</tr>
<tr>
<td>Statement of predetermined outcome (e.g. results and recommendations)</td>
<td>Account taken of individual needs of the patient, as well as research-based evidence</td>
</tr>
<tr>
<td>Contribute to understanding of the world</td>
<td>Bring about changes in practice</td>
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As indicated in Table 1, there are three essential differences between research and evidence-based practice. Although both are systematic, each has a different purpose. Research is used to conduct an investigation, the results of which will add to existing evidence. Evidence-based practice, on the other hand, aims to search for and appraise best evidence, some of which will be provided by research. Another important distinction between research and evidence-based practice pertains to the different endpoints of each. Research, for example, ends with the outcome specified at the beginning of the study, which might involve a statement of relationships between variables, a description or exploration of current practice, or the results of the testing of a particular hypothesis or theory. These would then be used to provide suggestions for further research or recommendations for changes in practice, but normally would go no further than this in changing practice, unless, for example, action research was being used.

Evidence-based practice, on the other hand, ends by making clinical decisions, which might involve changing practice in the light of...
available evidence. The third essential difference relates to the use of existing evidence. Research is less concerned with existing evidence, relying instead on other research evidence in order to build up sufficient justification to conduct the investigation. In comparison, evidence-based practice relies on a variety of evidence, including that arising from patients’ individual needs.

So, what are the implications of these differences for practice? Fundamentally, research is certainly needed to generate new knowledge. Although practice is often changed on the basis of research evidence, this is not the fundamental purpose of most types of research. Furthermore, sufficient attention is often not paid to the validity of research used to inform practice. Evidence-based practice, however, as the term suggests, has its roots in practice, and draws on research (along with other evidence) to bring about changes in practice.

Processes involved in evidence-based practice and research
Understanding the different definitions does go some way to unravelling the distinctions between research and evidence-based practice. These distinctions can be identified still further, however, by understanding the different processes involved.

Much of the terminology used in evidence-based practice is borrowed from research. This can be confusing for those new to evidence-based practice. This section will attempt to unravel these distinctions by using the standard research terminology and then applying it to evidence-based practice. Typically a research study will contain certain subheadings, which reflect the research process and these will differ from those a research study as follows:

Title, Abstract and Introduction
As can be seen in Table 2, the research and evidence-based practice study will commence with a title. The precise nature of the title will, however, differ according to whether a research study or evidence-based practice study is being undertaken. A research study examining pain control in labour might, for example, read as follows: ‘An
investigation into the effectiveness of different types of pain control in labour.' By comparison, an evidence-based practice study examining the same issue might be as follows: ‘Managing changes in pain control in labour in the light of best evidence’. A key to the distinctions between research and evidence-based practice can, therefore, be seen in the title. Research often investigates a phenomenon, whereas evidence-based practice uses the findings of research investigations, together with other evidence, to bring about change.

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<th>Evidence-based practice examples</th>
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<tbody>
<tr>
<td>Title</td>
<td>An investigation into…</td>
<td>A strategy to change, in the light of best evidence.</td>
</tr>
<tr>
<td>Abstract</td>
<td>Summarise what was done and what was found</td>
<td>Summarise what was done, what was found and what changes were brought about</td>
</tr>
<tr>
<td>Introduction</td>
<td>Rationale for the selection of the topic in light of existing gaps in research</td>
<td>Existing evidence used to set the context from a variety of sources is used to set the context</td>
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<tr>
<td>Problem</td>
<td>Research question/ hypothesis</td>
<td>Evidence-based practice question or hypothesis</td>
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<td>Objectives</td>
<td>To: • explore relationships between gender and age in relation to… • develop predictive models of such relationships</td>
<td>To: • conduct a systematic review of… • compare best evidence with current practice in… • devise a strategy to change practice in… in the light of best evidence</td>
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The next requirement of a research study is the abstract. This will not differ significantly from that used for an evidence-based practice study. Both abstracts will summarise the nature of the problem, what was done, and what was found. The evidence-based practice study will
go further, however, by stating what changes were brought about in the light of best evidence.

Following the abstract, the introduction provides the background and context to the study and a problem, question or hypothesis is stated, together with the aims of the study. An interesting distinction between research and evidence-based practice lies in the context of the problem to be studied. In a research study, the problem often emerges from professional interest, which is then supported by gaps in current research-based literature. In evidence-based practice, the problem is more likely to be grounded in practice, such as awareness that staff in other disciplines use alternative approaches in the delivery of health care, feedback from patients expressing dissatisfaction with care, or from professional articles indicating changing trends elsewhere. The aims and/or objectives of the study might also be included in the introduction. In a research study these might be concerned with discovering relationships between variables and developing predictive models, whereas in evidence-based practice, objectives will focus more closely on finding the best evidence and using this to change practice in a specified field.

The Literature Review
The literature review (Table 3) will then provide an account of the current knowledge on the subject. This is one of the important differences between research and evidence-based practice studies. A literature review for a research study will provide a detailed account of the relevant literature on the subject of interest. Essentially, the literature review will provide a justification of further study, and will guide the chosen methodology (Hart 1998). Articles will be included or excluded from the review based on specified criteria, such as years or countries of publication, and key search terms will be identified. The literature reviewed for a research study, however, will be relatively opportunistic in that themes emerge and will be identified as they pertain to the research problem. Thus, although the literature review for a research study is well structured it cannot be described as systematic.
Literature reviews for evidence-based practices are systematic. They too, use key terms, and use inclusion and exclusion criteria. There is, however, much more reliance on critical appraisal of all the evidence. The NHS Executive Anglia and Oxford (1999) provide a framework for appraising different types of research, including a clinical trial as well as qualitative research. Using such a framework, a systematic review of the literature would consider whether results of a trial are valid, the extent and precision with which treatment effects are stated, and whether results would help locally. Qualitative research would be appraised in the light of the clarity of aims, the relevance of the methodology, and the clarity of the sampling, data collection and analysis strategy. Ethical issues and interpretation and transferability of data would also be appraised.

Unlike the research literature review, the systematic nature of the review for evidence-based practice would rely on literature as evidence rather than a framework to underpin further research. This means that only articles found worthy following appraisal would be included in the review. Articles might be excluded, for example, if they used a certain sampling strategy. Likewise, articles might only be included if the population sampled were within a specified age range. A systematic review of literature relating to the effectiveness of an influenza vaccine, for example, might usefully exclude all research based on samples of people less than 70 years of age. Specifying such criteria at the outset is, therefore, one of the systematic components of

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<tr>
<td>Literature review</td>
<td>Structured but opportunistic. Exclusion/inclusion criteria less rigorous. Literature used to justify the need for research</td>
<td>Systematic literature review including strategy for inclusion and exclusion. Literature used as part of evidence on which to base clinical decisions</td>
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| Table 3 – Examples of the conduct of a literature review in research and evidence-based practice |
the evidence-based practice literature review. Following this, eliminating articles that do not meet the criteria, continues the systematic nature of the review. This more rigorous elimination of articles is less critical for a research study as the literature has a different purpose—i.e. to provide a background and justification for further research, rather than as the basis for clinical decisions.

**Methodology**

Having completed the review of the literature, the methodology section will explain how the study was conducted (Table 4). This again differs between the research study and the evidence-based practice study. A research study will explain the research approach used. An ethnographic approach, or an experimental approach, for example, would be explained and justified. Sample selection will also be explained, including the population studied and how a section of this population was sampled. In research, sampling differs between qualitative and quantitative approaches, larger sample sizes and issues of generalisability being particularly important to the latter. Once the sample has been identified in a research study, the way in which it will be accessed, and how the data will be collected and analysed will need to be explained. Interviews, for example, might be used in qualitative studies, and analysed using content analysis, whereas questionnaires might provide the method of data collection for quantitative studies, which might be analysed using a computerised statistical package.

By contrast, the evidence-based study methodology will include two main strategies. The first strategy will address how other (unpublished) evidence was established, including patient preferences and views of experts. The second strategy will describe how current practice was determined. This might include observation of what was happening in the work situation, conversations with colleagues, a documentary analysis and a review of data produced from the Clinical Audit Department. Audit is an important data collection method in evidence-based practice, as there is much evidence collected, for example, through patient/client satisfaction surveys, incidence of specific events (e.g. patient falls on wards, or false positive smear tests), or patient/client complaints.
### Issues in research

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<tr>
<td>Methodology</td>
<td>Research approach used e.g. experimental, survey or ethnography.</td>
<td>Design strategy for establishing other evidence (e.g. patient preferences) and determining current practice (e.g. audit data)</td>
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<td>Population</td>
<td>Often concerned with generalising results to a given population e.g. all nurses in UK.</td>
<td>Focus on specific patient/client groups, about whom clinical decisions are to be made, e.g. all patients suffering from a specific condition and their relatives</td>
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<td>Sampling</td>
<td>Might involve a random sample taken from the UKCC register. This would ensure a high degree of generalisability</td>
<td>Might involve sampling of audit data, e.g. every 10th complaint relating to a specified area</td>
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<tr>
<td>Data collection methods and methods of analysis</td>
<td>Interviews and observation (in ethnography) or questionnaires and scales (in surveys or experiments) might collect data. Interviews could be analysed by content analysis, questionnaires by statistical methods</td>
<td>Relies more on existing data, and only if there is an absence of data available, should new data be collected. Details would need to be provided, however, on how details of current practice were established. Only existing data would be analysed e.g. secondary analysis of existing published work</td>
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<tr>
<td>Ethical issues</td>
<td>Data collection instruments normally require approval from an ethical committee. Issues of consent, confidentiality, anonymity, freedom from harm and benefits of the research always need to be addressed</td>
<td>If accessing patient records or reviewing audit data the normal considerations of confidentiality and anonymity apply</td>
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Such data provides an important source of evidence. Care should be taken in conducting evidence-based practice studies to use such existing evidence, rather than to be tempted to collect evidence, for example, through designing questionnaires. To do so is likely to involve ethical implications and often replicates data that already exists.

A consideration of what was observed, and what clinical audit data was reviewed, involves issues of which population was studied and how a sample was selected from the population. An observation of current practice in oncology, for example, might involve a population of all patients attending for oncology treatment during a six month time period. This population could be sampled by observing the treatment plan and length of stay of every fifth patient in the population.

An important component of both research and evidence-based practice is ethical issues. Ethical issues, such as confidentiality and anonymity apply equally to the collection of data using questionnaires in research, and to use of audit data, in evidence-based practice studies. However, the development of instruments used for research purposes, must be subject to ethical scrutiny prior to their use on patients or clients. This might apply equally to evidence-based practice, if observation of current practice relied on the use of an instrument not currently in use. When designing an instrument for data collection for either purpose, therefore, each item included in the instrument must be ethically sound.

**Presentation and Discussion of Findings**
Following the discussion of methodological issues, findings of the study will be presented and discussed and comparisons will be made with relevant findings from the literature (Table 5). Again, these processes differ between research and evidence-based practice. Research findings might involve lengthy quotes from field notes or interviews in an ethnographic study, or in surveys or experimental research, tables of statistics, or bar charts and pie charts are common. In evidence-based practice projects, the findings are presented in a similar manner, although the source of the data is different. Audit data might, for example, require further statistical analysis, while data derived from observation of practice, or clinical guidelines, might be
The interpretation of data is equally as important as the presentation of findings. It is at this stage that sense is made of the evidence in
relation to the purpose of the study. In research studies, the data is interpreted in light of the research problem, question or hypothesis stated at the outset. In evidence-based practice, on the other hand, the focus is on the evidence from the various sources. Interpretation, therefore, involves looking for convergence or disagreement of data from different sources.

Once the data is interpreted, the next section involves a discussion of the main findings. In research studies, the discussion is used to compare findings of the research with findings from other studies mentioned in the literature review. Implications for practice are also considered. In evidence-based practice studies, the discussion focuses on evidence from current practice, which is compared with ‘best evidence’ from the literature and clinical guidelines. On the basis of this evidence deficiencies in current practices are therefore identified.

The discussion section will be followed by a conclusion. In a research study this will include a summary of the main findings and a list of recommendations. By comparison, the summary of the main findings of an evidence-based practice study will be used as the basis of an action plan. The action plan will specify precisely what changes are needed in current practice and how these will be brought about. The end point of an evidence-based practice study is therefore quite different from that of a research study. This final stage of evidence-based practice relies heavily on knowledge of change processes and leadership skills in order to manage change in care delivery.

Conclusion

Evidence-based practice is increasingly replacing research as a way of ensuring clinical effectiveness and decision making in the NHS. Research remains an important process of discovering knowledge, but if this knowledge is not used in practice, then the process is ineffective. Evidence-based practice can therefore be complementary to research by ensuring that valid and relevant research is placed in the context of other types of evidence to influence decision-making.

Nursing skills and competencies in understanding research should be directed to systematically reviewing the literature, appraising the
evidence, and developing strategies bring about changes in clinical practice.

Ros Carnwell BA, MA, PhD, RGN, RHV, Cert Ed (FE) is Reader in Primary Care Nursing at the School of Nursing and Midwifery, University of Wolverhampton, Walsall

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