Essential elements in developing evidence-based practice


Summary
This article addresses the principles of evidence-based practice and considers the essential elements involved in the process. The overall aim of the article is to equip nurses with the necessary knowledge and skills to use evidence-based practice competently and to make a positive contribution to patient outcomes.

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FOSTERING A CULTURE of evidence-based practice in nursing is essential if the prospect of delivering clinically effective health care is to be realised. Evidence-based practice has the potential to yield improved patient outcomes (Killeen and Barnfather 2005, Proffetto-McGrath 2005, Craig and Smyth 2007). A meta-analysis of 84 studies to measure the impact of research-based nursing on patient outcomes found that patients who received research-based nursing interventions could expect better outcomes than the patients who received standard nursing care (Heater et al 1988). Many believe that their practice is, to a large degree, evidence based (McKenna et al 2004), when this is not necessarily the case. Such beliefs can arise from a lack of understanding of what evidence-based practice is, coupled with the fact that it is often considered synonymous with using research (McKenna et al 1999, Goode 2003, Foster 2004).

While critical appraisal and the use of research are integral to the process of evidence-based practice, the process itself is much greater and more patient-centred than research use alone. Furthermore, it has been demonstrated that there is a paucity of evidence-based practice in nursing (Gournay 2001, Jolley 2002, Pearson 2003, McKenna et al 2004). Nurses do not always possess adequate knowledge and the skills necessary to find the evidence on which to base their practice (Pravikoff et al 2005). The application of policies that are based on research findings alone does not necessarily mean that practice is evidence based (Leuf er and Cleary-Holdforth 2007). This reiterates the pressing need for nurses to gain a clear understanding of what evidence-based practice is, how to engage in this patient-centred process and how to integrate the findings into individualised patient care to ensure the best outcomes in practice.

Definition
The evidence-based practice movement originated with Archie Cochrane, a British epidemiologist, who recognised that while much individual research had been undertaken on particular areas of medicine, the findings of these studies had not been collectively reviewed and had only been considered individually. When studies are examined in isolation there is limited capacity to implement findings confidently and effect change in policy and practice, thereby hindering decision making and progress in health care.

Professor Cochrane’s work inspired the creation of the Cochrane Collaboration, which sets the standard for systematic reviews and provides a repository of up-to-date, reliable information on the effectiveness of healthcare interventions (Pearson et al 2007). The Cochrane Database of Systematic Reviews, part of the Cochrane Library, is a collection of reviews that is freely available to all members of the multidisciplinary team. The evidence-based practice movement today continues to promote the values that were espoused by Professor Cochrane and advocates the critical appraisal of best available evidence to underpin practice decisions.

Melnyk and Fineout-Overholt (2005) define evidence-based practice as: “…a problem-solving approach to clinical practice that integrates a systematic search for, and critical appraisal of,
the most relevant evidence to answer a burning clinical question, one’s own clinical expertise, patient preferences and values’.

Implicit in this definition is the assumption that evidence-based practice is the tireless pursuit of the best evidence, clinical expertise and patients’ preferences to inform and enhance patient care. Central to this is the inclusion of patient preferences to support decision making (Sackett et al 2000). This approach not only espouses use of good quality evidence to underpin practice, but also values the individual as a recipient of care and a partner in the planning of care.

Patient preferences are key to this approach. It is therefore important that the uniqueness of each patient is not lost amid the quest for robust evidence (Franks 2004). This definition of evidence-based practice places significant value on the experience and expertise of the practitioner coupled with his or her clinical judgement and decision-making skills.

Teaching the fundamentals of evidence-based practice to nurses is imperative to enable them to recognise and deliver high quality care that is evidence based. Fostering in nurses the culture, knowledge and capabilities to execute evidence-based practice will produce a nursing profession that will influence policy and practice for future generations.

The execution of evidence-based practice relies on a sound knowledge of what it is and the skills to apply it in practice. Skills of question framing, database searching, critical appraisal, implementation, evaluation and dissemination are essential to ensure an evidence-based profession. The process of evidence-based practice should be as simple as possible. To this end, the steps involved in evidence-based practice are outlined. The process of evidence-based practice is underpinned by five steps (Melnyk and Fineout-Overholt 2005):

- Asking the important clinical question.
- Collecting the most relevant and best evidence.
- Critically appraising the evidence.
- Integrating the evidence with one’s own clinical expertise and patient preferences to make a practice decision.
- Evaluating the outcomes of that decision.

**Asking the important clinical question**

Clinical questions emerge from various sources and for a variety of reasons. All are driven by practitioners’ intellectual curiosity and need for answers to these questions. The manner in which these questions are articulated is key to the success, or otherwise, of the overall outcome. The importance of this cannot be over-emphasised.

While this step can appear arduous and time-consuming as a novice, it will pay dividends and is something that becomes less arduous and less time-consuming with practice. Refining the question so that it is focused and specific will ensure that searching relevant databases and literature yields the evidence needed. It will also reduce the likelihood of an unrefined search producing either no related material or an abundance of irrelevant information.

In such circumstances the quest for information becomes an unmanageable task that could quickly be abandoned, leaving important questions unanswered. An example of a poorly structured clinical question could include: ‘How often should patients who are confined to bed rest be turned?’ This type of question is likely to yield excessive amounts of information on the broad topic of patient repositioning but little in the way of specific guidance on current best practice relating to the frequency recommended. The use of a question-framing format is recommended to encourage effective searching and yield the best and most relevant evidence available.

Many authors advocate using a question-framing format known as PICO. This is an acronym representing the four elements that should be included when asking a clinical question (Dawes et al 2005, Melnyk and Fineout-Overholt 2005, Gerrish and Lacey 2006, Craig and Smyth 2007). They are:

- **P** – population of interest.
- **I** – intervention.
- **C** – comparison.
- **O** – outcome.

The following are examples of potential clinical questions structured using the PICO format and include a revised version of the question about turning patients who are confined to bed rest. For example: in patients who are confined to bed (P), what is the effect of two-hourly turns (I) on skin integrity (O) compared with four-hourly turns (C)? Or the following example: in an acute medical ward (P) does single-nurse drug administration (I) increase the risk of drug errors (O) compared with dual-nurse administration (C)?

In some cases it might not be necessary, feasible or appropriate to have a comparison component in the question. For example: how do adolescents (P) who have been diagnosed with epilepsy (I) perceive the impact of this condition on their social functioning (O)? Once the clinical question has been framed, it is then possible to progress onto the second step of the evidence-based practice process.
Collecting the most relevant and best evidence

This step requires knowledge of what evidence is and what constitutes quality evidence. Dale (2005) suggests that relevant and best evidence are intimately linked. Traditionally the best evidence was deemed to be that derived from rigorous scientific research methods, such as randomised controlled trials.

**Quantitative evidence** The nature of the question determines the nature of evidence that should be sought. Therefore, if the information being sought concerns the effectiveness of a clinical intervention, for example the effectiveness of patient-controlled analgesia post-operatively, one would seek the answer in quantitative evidence. An example of how this question might be phrased for searching purposes using PICO format is: ‘In post-operative patients (P) what is the effect of using patient controlled analgesia (I) on post-operative pain levels (O) compared with intramuscular analgesia as and when required (C)?’

**Qualitative evidence** If the question concerns patients’ experiences or perceptions, for example of pain management or quality of life aspects, one would seek the answer in qualitative evidence. An example of this type of question phrased using PICO format is: ‘How do oncology patients (P) diagnosed with terminal cancer (I) perceive (O) others’ perceptions of their physical limitations (C)?’

Some forms of quantitative and qualitative evidence are more robust than others. For example, in qualitative evidence a meta-analysis of qualitative studies is a stronger form of evidence than a single qualitative study or evidence from an expert committee or authority. It might not always be possible to use the most robust form of evidence because it may not exist.

In such cases, the practitioner must rely on the ‘best available’ evidence as opposed to the ‘best possible’ evidence to make evidence-based decisions in practice (McKenna et al 1999).

The key point is the untiring pursuit of the best available evidence. To guide the pursuit of the most relevant and best evidence, hierarchies of evidence have been recommended by various authors in the field (Guyatt and Rennie 2002, Melnyk and Fineout-Overholt 2005, Gerrish and Lacey 2006). Many of these hierarchies have been adapted from the work of Gray (1997) (Table 1).

One of the criticisms of such a hierarchy of evidence is that it neglects evidence from sources other than medical science (Dale 2005). For example, qualitative research is excluded. Perhaps it might be more appropriate to refer to Table 1 as a ‘hierarchy of quantitative evidence’. While such a hierarchy might be appropriate to answer questions that arise in medicine, it falls short of meeting the information needs of nurses and patients. Qualitative studies, such as those underpinned by phenomenological or grounded theory methodologies for example, are equally as valuable and necessary as systematic reviews or randomised controlled trials in answering the questions that arise in nursing. This is essential to inform holistic and patient-centred care. To this end Fineout-Overholt et al (2005) have developed a hierarchy to assist the search for best available qualitative evidence (Table 2).

**Where to search for the evidence** Knowing where and how to search for the evidence are key elements of this part of the evidence-based practice process. A literature search that is tailored and comprehensive will underpin the entire process and enable prompt identification of relevant evidence and appropriate answers to the questions posed (Craig and Smyth 2007). Specific skills are required to undertake these elements.

While it is beyond the scope of this article to provide an in-depth description of searching electronic databases, a brief introduction to the basics is provided. The subject librarian in a healthcare and/or educational institution is invaluable in enhancing one’s searching skills. His or her role in developing practitioners’ skills in strategic database searching should not be overlooked.

Relevant electronic databases are the most expeditious way to undertake a literature search. Commonly used databases in health care include: Cumulative Index of Nursing and Allied Health Literature (CINAHL); The American Psychological Association’s PsycINFO; Medline; The Cochrane Library; Excerpta Medica Database (Embase); Database of Abstracts of Reviews of Effects (DARE); and Dissertation Abstracts Online. A primary objective in database searching is to use the key search terms of the

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**TABLE 1**

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<tr>
<th>Hierarchy of evidence</th>
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(Adapted from Gray 1997)
clinical question raised in an effort to yield results that reflect the topic of interest. This is where structuring the clinical question using a format such as PICO is invaluable. While this step can be time-consuming and demanding it is crucial to the success of the remainder of the process. With ongoing commitment and dedication, this stage becomes less onerous and yields beneficial results.

Critically appraising the evidence

The purpose of critical appraisal is to determine the relevance of the material collected in relation to the clinical question raised. In other words, does the evidence provide the answer to the question raised and how confidently can the evidence be applied to practice? The development of critical appraisal skills enables a nurse to make a judgement about whether the evidence is applicable and appropriate to practice or whether it should be discarded (Booth 2006). Having the skills to discern what renders the evidence useful is one of the cornerstones of evidence-based practice.

Fineout-Overholt et al (2005) suggest some broad questions to guide critical appraisal of the material collected:

- What are the results of the study?
- Are the results of the study valid and reliable? Was robust methodology used to obtain the results or findings?
- Are the results clinically relevant to the patient?

Answering these questions enables nurses to ascertain the value of a given study in their day-to-day practice, thereby enabling them to make informed decisions about patient care in the clinical setting. Other questions that can be used by nurses in practice to determine the appropriateness and applicability of the evidence amassed to inform their decision making include those proposed by Glasziou et al (1998). They suggest that the following questions should be asked: Is my patient or this problem so different from those in this study that the results cannot be applied? Is the care or treatment feasible in my setting? What are the likely benefits and harms from the treatment? How will my patient’s values influence the decision? Questions such as those proposed by Fineout-Overholt et al (2005) and Glasziou et al (1998) provide nurses with the initial information to enable them to rise to the challenge of applying the evidence to patient care.

Integrating the evidence

Integrating the research evidence to make a practice decision is a significant challenge. It relies on several factors not least of which are the practitioner’s clinical expertise and the patient’s preferences. This approach is in keeping with the values of nursing which espouse holism and patient-centredness. The challenges for clinicians in integrating evidence and practice are numerous. They include: poor critical appraisal skills; poor access to quality information; lack of leadership; tradition; fear of interprofessional role erosion; power imbalance; lack of motivation, vision, strategy or direction among managers; and the influence of funding sources and key stakeholders such as pharmaceutical companies (Balas and Boren 2000, Giliska 2005, DiCenso et al 2005, Pravikoff et al 2005, Craig and Smyth 2007).

Striking a balance to ensure that the best available evidence is used to improve patient care delivery is essential. The judgement and decision-making capabilities that are inherent in clinical expertise enable the practitioner to discern the quality of the evidence appraised and its applicability to the individual patient. What difference will the evidence make to the patient’s progress, condition or outcomes? Once this question is answered the next priority is to determine whether this is congruent with the patient’s own preferences and values and, if not, what compromise – based on the evidence – can be reached. The challenge is for nurses to underpin their work with a framework based on evidence while simultaneously balancing the demands of clinical practice. All forms of evidence must be given equal consideration if the ultimate goal of improved patient outcomes is to be realised.

Evaluating the outcomes

Evaluation of the impact of an intervention is a crucial aspect in the process of evidence-based practice. It is imperative that this step is not overlooked because it will serve to inform clinical
practice in the future and it should be decided at the outset of the process. Methods of evaluation will vary depending on the intervention or change in practice that was implemented. They can include: physiological and psychological measures; functional improvement; decreased cost or length of stay; nursing retention or job satisfaction; and patient satisfaction surveys. In this way it can be determined if the ultimate goals of improved patient care and improved practice have been realised.

Conclusion

Evidence-based practice has been demonstrated to yield improved patient outcomes (Killeen and Barnfather 2005, Profetto-McGrath 2005, Craig and Smyth 2007). The evidence-based practice movement continues to promote the values that were espoused by Archie Cochrane and advocates the critical appraisal of best available evidence to underpin practice decisions. Fostering the culture, knowledge and capabilities to execute evidence-based practice will ensure the progression of a nursing profession that will influence policy and practice for future generations. The execution of evidence-based practice relies on a sound knowledge of what it is and the skills that are needed to apply it in practice. The process of evidence-based practice is underpinned by five steps – question framing, database searching, critical appraisal, implementation and evaluation – which are essential to ensure an evidence-based profession. These skills are the cornerstones of evidence-based practice and, if used effectively, will enhance patient care and outcomes.

References


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