

## Evidence-Based Nursing

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## Introduction to evidence-based nursing

*"No man, not even a doctor, ever gives any other definition of what a nurse should be than this-'devoted and obedient'. This definition would do just as well for a porter. It might even do for a horse. It would not do for a policeman."*

## Florence Nightingale, 1860<sup>1</sup>

Florence Nightingale would probably not recognise the nurse of today. As we move into the next millennium, we expect nurses to care with their hearts and minds; identify patients' actual and potential health problems; and develop research-based strategies to prevent, ameliorate, and comfort. We increasingly expect them to undertake work historically done by doctors; we also expect them to be empathic communicators who are highly educated, critical thinkers, and abreast of all the important research findings.

Research makes a difference. In a meta-analysis designed to determine the contribution of research-based practice to patient outcomes, Heater and colleagues reported that patients who receive research-based nursing care make "sizeable gains" in behavioural knowledge, and physiological and psychosocial outcomes compared with those receiving routine nursing care.<sup>2</sup>

The process of incorporating good quality research findings into nursing practice is, however, not straightforward. Bostrom and Suter found that only 21% of 1200 practising nurses had implemented a new research finding in the previous six months.<sup>3</sup> Luker and Kenrick used qualitative techniques in an exploratory study of community nurse decision-making in the United Kingdom and determined that the nurses had an awareness of research but did not perceive it as informing their practice.<sup>4</sup> This work also supported previous reports that nurses have difficulty in accessing and appraising published research, either because they do not have access to journals and libraries, or because they have not been taught how to find and appraise research.<sup>5, 6, 7</sup>

Estabrooks asked staff nurses about the frequency with which they used various sources of knowledge. Most frequently used knowledge sources were found to be experiential, nursing school (even though the average length of time since completing their basic nursing education program was 18 years), workplace sources, physician sources, intuitions, and what has worked for years. Literature (whether in textbook or journal form) was rated in the bottom 5 for frequency. She also asked them to identify the one most common source from which they learned about research findings. While 38.7% identified nursing journals, additional analyses revealed that the primary journals the nurses were reading were not research journals, but rather trade magazines published by nursing professional organisations.<sup>8</sup>

More than 400 nursing journals are listed in Ulrich's International Periodicals Directory,<sup>9</sup> many of which publish original research, and in a range of languages. Nurses working individually cannot hope to find and read even the highest quality research published each year, particularly when much of the research relevant to nursing is published in non-nursing journals.

When clinical nurses have been taught how to identify and appraise research critically they have responded with enthusiasm, but they have had difficulty in learning and applying these skills in practice, partly because of shifting patterns and workloads.<sup>10</sup> Nurses who were interviewed in a qualitative study of their information needs said that they needed reference sources to be accurate and concise. This is consistent with a survey of midwives working in the northwest of England, who reported great difficulty in assessing the quality of journal articles. These midwives asked for research reports to be more concise, free from jargon, and self-explanatory.<sup>11</sup>

Research utilisation has been defined as the use of research findings in any or all aspects of one's work as a registered nurse or at its simplest, the use of research.<sup>12</sup> If we use this same definition for 'evidence-based nursing', its meaning is broader than that of 'research utilisation'. The practice of evidence-based nursing involves the following steps: formulation of an answerable question to address a specific patient problem or situation;<sup>13</sup> systematic searching for the research evidence that could be used to answer the question;<sup>14, 15</sup> appraisal of the validity, relevance and applicability of the research evidence; integration of the research evidence with other information that might influence the management of the patient's problems: clinical expertise, patient preference for alternative forms of care, and available resources;<sup>16</sup> implementation of the evidence-based practice decision; and finally, evaluation of the outcome of the decision.

### **Resources to facilitate evidence-based nursing**

During the last decade, major initiatives have been introduced to help clinicians become evidence-based practitioners. The following is a brief description of some of these efforts:

#### Evidence-Based Journals

Rather than publishing original research, the objective of these journals is to summarise those studies that are valid and clinically useful. Currently, these journals consist of *ACP Journal Club*, *Evidence-Based Medicine*, *Evidence-Based Cardiovascular Medicine*, *Evidence-Based Health Policy and Management*, *Evidence-Based Mental Health*, and *Evidence-Based Nursing*. While they are all similar in format, we will provide a brief description of Evidence-Based Nursing. The specific purposes of this journal are: to identify, using predefined criteria, the best quantitative and qualitative original and review articles on the meaning, cause, course, assessment, prevention, treatment, or economics of health problems managed by nurses and on quality assurance; to summarise this literature in the form of "structured abstracts" that describe the question, methods, results, and evidence-based conclusions of studies in a reproducible and accurate fashion; and to provide brief commentaries written by practising nurses on the context of each article, its methods, and clinical applications that its findings warrant.

The authors of this module are all involved in the production of Evidence-Based Nursing. Alba DiCenso, Nicky Cullum, and Donna Ciliska are co-editors; Susan Marks and Ann McKibbin are research associates and Carl Thomson is an associate editor. In addition to the abstracts, Evidence-Based Nursing includes an "EBN Notebook" in which we publish short papers about the research process. We have included copies of some of these published to date in this module. Topics include: asking answerable questions; searching for the best evidence, and identifying the best research design to fit the question (Part 1: quantitative designs and Part 2: qualitative designs).

#### Systematic reviews

We are now at the point in health care research where important questions have often been addressed by more than one study. A systematic review is a method of summarising the findings of all methodologically sound studies addressing the same research question. In a systematic review, eligible research studies are viewed as a population to be systematically sampled and surveyed. Individual study characteristics and results are then abstracted, quantified, coded, and assembled into a database that, if appropriate, is statistically analysed much like other quantitative data. The statistical combination of the results of more

than one study, or meta-analysis, effectively increases the sample size and results in a more precise estimate of effect than can be obtained from any of the individual studies used in the meta-analysis.

The Cochrane Collaboration is an international organisation that aims to help people make informed decisions about health by preparing, maintaining, and ensuring the accessibility of rigorous, systematic, and up-to-date reviews (including meta-analyses where appropriate) of the benefits and risks of health care interventions.<sup>17</sup> The Cochrane Library is the product of the Collaboration's work and includes reports and protocols of over 1000 systematic reviews produced within the Collaboration, abstracts of over 1800 reviews summarised and critically appraised by the Centre for Reviews and Dissemination at the University of York, UK, and citations for over 200,000 randomized controlled trials.

#### Centres for Evidence-Based Nursing

In the past few years, a number of countries, including the UK, Canada, Germany, New Zealand, Australia and others, have created Centres for Evidence-Based Nursing. While the specific goals of these centres vary, most seek to educate nurses through workshops or through formal courses to be evidence-based nurses in practice, education and research; to conduct original research and systematic reviews; and to design and evaluate strategies for disseminating research findings to nurses.

#### Evidence-based practice guidelines

Clinical practice guidelines are "systematically developed statements to assist practitioner decisions about appropriate health care for specific clinical circumstances"<sup>18</sup> Guidelines can be used to reduce inappropriate variations in practice and to promote the delivery of high quality, evidence-based health care. Guidelines should be based on the best available research evidence, should be developed with representation from as many interested parties as possible, should be tested by professionals uninvolved in their development and in the healthcare setting for feasibility, and should be reviewed regularly and modified to incorporate new knowledge.<sup>19</sup>

These are exciting times in nursing. With the increased emphasis on graduate education for nurses, many important research questions related to the practice of nursing are being addressed using rigorous research methods. There is a strong motivation among nurses to apply the findings of research to their practice through evidence-based nursing. To complement these developments, a variety of resources have emerged to help nurses become evidence-based practitioners.

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<sup>1</sup> Nightingale F. Notes on nursing what it is and is not. London: Churchill Livingstone, 1946. (First published in 1859)

<sup>2</sup> Heater BS, Becker AM, Olson R. Nursing interventions and patient outcomes. A meta-analysis of studies. *Nurs Res* 1988;37:303-7.

<sup>3</sup> Bostrom J, Suter WN. Research utilisation: making the link to practice. *Journal of Nursing Staff Development* 1993;9:28-34.

<sup>4</sup> Luker KA, Kenrick M. An exploratory study of the sources of influence on the clinical decisions of community nurses. *J Adv Nurs* 1992;17:457-66.

<sup>5</sup> Ketefian S. Application of selected nursing research findings into nursing practice: a pilot study. *Nurs Res* 1975;24:89-92.

<sup>6</sup> Blythe J, Royle JA. Assessing nurses' information needs in the work environment. *Bull Med Libr Assoc* 1993;81:433-5.

<sup>7</sup> Pearcey PA. Achieving research-based nursing practice. *J Adv Nurs* 1995;22:33-9.

<sup>8</sup> Estabrooks CA. Will evidence-based nursing practice make practice perfect? *C J Nurs Res* 1998;30:15-36.

<sup>9</sup> Ulrich's international periodicals directory. New York: Bowker, 1996.

<sup>10</sup> Royle JA, Blythe J, Ingram C, DiCenso A, Bhatnager N, Potvin C. The research utilization process: the use of guided imagery to reduce anxiety. *Canadian Oncology Nursing Journal* 1996;6:20-5.

- 11** Meah S, Luker KA, Cullum NA. An exploration of midwives' attitudes to research and perceived barriers to research utilisation. *Midwifery* 1996;12:73-84.
- 12** Sackett DL, Rosenberg W, Gray JAM, Haynes RB. Evidence-based medicine: What it is and what it isn't. *BMJ* 1996;312:71-2.
- 13** Flemming K. Asking answerable questions. *Evidence-Based Nursing* 1998;1:36-7.
- 14** McKibbon KA, Marks S. Searching for the best evidence. Part 1: where to look. *Evidence-Based Nursing* 1998;1:68-70.
- 15** McKibbon KA, Marks S. Searching for the best evidence. Part 2: searching CINAHL and Medline. *Evidence-Based Nursing* 1998;1:105-7.
- 16** DiCenso A, Cullum N, Ciliska D. Implementing evidence-based nursing: some misconceptions. *Evidence-Based Nursing* 1998;1:38-40.
- 17** Jadad AR, Haynes RB. The Cochrane Collaboration - Advances and challenges in improving evidence-based decision making. *Medical Decision Making* 1998;18:2-9.
- 18** Field MJ, Lohr KN. *Clinical practice guidelines: directions for a new program*. Washington, DC: National Academy Press, 1990.
- 19** Thomas L. *Clinical practice guidelines*. *Evidence-Based Nursing* 1999;2:38-9.

### Other resources for evidence-based nursing

We've enclosed 2 notes that have appeared in *Evidence-Based Nursing* and also provide a list of some others that you may find useful.

1. DiCenso A, Cullum N, Ciliska D. Implementing evidence-based nursing: some misconceptions [editorial]. *Evidence-Based Nursing* 1998 Apr;1:38-40.
2. Anne Mulhall, Nursing, research, and the evidence [editorial]. *Evidence-Based Nursing* 1998 Jan;1:4-6.
3. Flemming K. Asking answerable questions [editorial]. *Evidence-Based Nursing* 1998 Apr;1:36-7.
4. McKibbon KA, Marks S. Searching for the best evidence. Part 1: where to look [editorial]. *Evidence-Based Nursing* 1998 Jul;1:68-70.
5. McKibbon KA, Marks S. Searching for the best evidence. Part 2: searching CINAHL and Medline [editorial] *Evidence-Based Nursing* 1998 Oct;1:105-7.
6. Roberts J, DiCenso A. Identifying the best research design to fit the question. Part 1: quantitative designs [editorial]. *Evidence-Based Nursing* 1999 Jan;2:4-6.
7. Ploeg J. Identifying the best research design to fit the question. Part 2: qualitative designs [editorial]. *Evidence-Based Nursing* 1999 Apr;2:36-7.

### **DiCenso A, Cullum N, Ciliska D. Implementing evidence-based nursing: some misconceptions [editorial]. *Evidence-Based Nursing* 1998 Apr;1:38-40.**

During the brief time that we have been engaged in developing *Evidence-Based Nursing* we have been fascinated by the reactions of friends, professional colleagues, and the media. The overwhelming majority of responses to the concepts of evidence-based nursing and the creation of this journal have been positive. But there have also been misgivings, sometimes generated by misunderstandings. This editorial addresses the following criticisms which we have encountered in person and in print: (1) evidence-based practice isn't new: it's what we have been doing for years, (2) evidence-based nursing leads to 'cookbook' nursing and

a disregard for individualised patient care and, (3) there is an over-emphasis on randomised controlled trials and systematic reviews in evidence-based health care. We intend the paper to generate, rather than close the debate!

### **Evidence-based practice isn't new; it's what we have been doing for years**

The plea that 'each nurse must care enough about her own practice to want to make sure it is based on the best possible information' is not new. It was written more than 15 years ago. In the same article, Hunt noted that the phrase 'nursing should become a research-based profession' had already become a cliché!<sup>1</sup> Over 20 years ago, Gortner et al lamented the lack of research evidence in many areas of nursing practice,<sup>2</sup> and the year after, Roper spoke of nursing performing 'far too many of its tasks on a traditional base and not within a framework of scientific verifications'.<sup>3</sup>

While the recognition of the importance of evidence-based practice is not new, much of the past 20 years has focused on the identification of the barriers to evidence-based practice and the consideration of strategies to overcome these barriers. These barriers include time constraints, limited access to the literature, lack of training in information seeking and critical appraisal skills, a professional ideology that emphasises practical rather than intellectual knowledge, and a work environment that does not encourage information seeking.<sup>4</sup>

We have learned that it is not sufficient to give nursing students a few lectures on the process of doing research and then expect them to use that knowledge throughout their careers in an ongoing process of gathering and interpreting research evidence and implementing findings. Nurses and midwives have been telling researchers for years that they want to deliver research based care, but that they find it difficult to access the research. In a study of health agencies in Ontario, Canada, Mitchell et al found that only 35% of small hospitals (<250 beds) had nursing research journals in their libraries; 38% of health agencies based change in nursing practice on the research process; 15% implemented research utilisation programmes for staff nurses; and 97% wanted assistance in teaching their nursing staff about research utilisation.<sup>5</sup>

Although we have advocated evidence-based nursing for many years, we have struggled with how to make it happen. This struggle is not unique to nursing but common to all health professions, including medicine. Challenged to address this important issue, an international commitment to evidence-based health care has resulted in a number of initiatives to improve access to research findings such as the Cochrane Collaboration, the Evidence-Based Medicine Working Group, critical appraisal skills teaching programmes, centres for evidence-based practice, research utilisation conferences, and evidence-based journals.

### **Evidence-based nursing leads to 'cookbook' nursing and a disregard for individualised patient care**

In practising evidence-based nursing, a nurse has to decide whether the evidence is relevant for the particular patient. The incorporation of clinical expertise should be balanced with the risks and benefits of alternative treatments for each patient and should take into account the patient's unique clinical circumstances including comorbid conditions and preferences. Those who judge evidence-based nursing as cookbook nursing are ignoring this important component.

The figure shows a simple model for clinical decisions with 4 components that might influence the

management of the patient's problems: clinical expertise, patient preference for alternative forms of care, clinical research evidence, and available resources. It is important to note that clinical expertise and patient preference may override the other components of the model for a given decision. For example, clinical expertise must prevail if the nurse decides that the patient is too frail for a specific intervention that is otherwise 'best' for his condition, and the patient's preference will dominate when he declines a treatment that clinical circumstances and research evidence indicate is best for his condition. All of these factors, however, have to be considered in the light of the fact that resources for health care are limited. Most decisions in health care have resource implications; there are likely to be occasions when the potential benefit of an intervention is judged to be outweighed by the potential costs. While individual clinical nurses may not make this judgment, they need to be aware of this important dimension.

In professional training and beyond, we learn the basic mechanisms of disease and pathophysiology and acquire skills in assessment, planning, intervention, and evaluation. We refine these skills by accumulating clinical expertise through observing the correlates and consequences of our actions in dealing with many patients. Many elements of clinical assessment and management require the advanced knowledge that nursing education provides and the expertise that comes with experience.

Evidence from research can help to perfect the expertise but cannot do the examination or sort through the myriad of quantitative and qualitative information that nurses collect during the clinical encounter. Clinical expertise is the crucial element that separates evidence-based nursing from cookbook nursing and the mindless application of rules and guidelines.

Patients have always exercised their preferences for care by choosing alternative treatments, refusing treatment, preparing advance directives ('living wills'), and seeking second opinions. Today's patients have greater access to clinical information than ever before, and some become more knowledgeable about their conditions than their care providers; particularly those with chronic conditions. Although the patient's role in clinical decisions is usually not formalised and is sometimes ignored by care providers, it is an important component of most clinical decisions. Clearly, the best possible scenario is one in which the patient is able to play a full part in making decisions about his or her own health care, having been given an accurate assessment of the current state of knowledge.

Imagine the older person in hospital after a stroke. The nurse caring for this person uses highly developed communication skills, intuition, and clinical experience to get to know the patient and his family. The nurse begins to understand how the patient feels about what is happening to him, and what his goals for rehabilitation might be. As she establishes this rapport, she is in a position to determine if the patient is depressed, anxious, and/or eager to learn about his condition. The relationship that a nurse builds with her patients is important to patients, as shown by Kralik et al in this issue (p63). However, these relationships are enhanced if the nurse is also able to ensure that the caring practices and interventions she uses are safe and effective. Knowing which exercises are effective for patients with hemiplegia, knowing how to prevent their pressure sores, and how to teach them to transfer from a bed to a chair will contribute to high quality patient care.

### **There is an over-emphasis on randomised controlled trials and systematic reviews in evidence-based health care**

Evidence-based health care is about applying the best available evidence to a specific clinical question. The randomised controlled trial (RCT) is the most appropriate design for evaluating the effectiveness of a

nursing intervention, for example the effectiveness of nicotine inhalers in helping patients quit smoking (see Hjalmarson et al in this issue, p45), or the effectiveness of different pressure relieving aids in preventing pressure sores (Vyhlidal et al in this issue, p51). The reason that the RCT is the most appropriate design is that through random assignment of patients to comparison groups, known and unknown confounders are distributed evenly between the groups ensuring that any difference in outcome is due to the intervention.

In a 1997 issue of the British Journal of Nursing, White stated that: 'Perhaps the most obviously flawed assumption is that examining research using RCTs is the best way to evaluate the effectiveness of interventions and a better basis for clinical decision-making than the clinical experience of the practitioner.'<sup>7</sup>

We strongly disagree with White's assertion. History has shown numerous examples of healthcare interventions which, on a patient by patient basis, might appear to be beneficial, but when evaluated using randomised trials have been shown to be of doubtful value, or even harmful. Examples include the use of cover gowns by nurses when caring for normal newborns in the nursery,<sup>8</sup> and shaving before surgery.<sup>9</sup> Few of us would want to begin a drug regimen that has not been proved to be safe and effective in a RCT.

More recently, there has been an emphasis on systematic overviews of the research literature. In an overview, eligible research studies are viewed as a population to be systematically sampled and surveyed. Individual study characteristics and results are then abstracted, quantified, coded, and assembled into a database that, if appropriate, is statistically analysed much like other quantitative data. The statistical combination of the results of more than one study, or meta-analysis, effectively increases the sample size and results in a more precise estimate of treatment effect than can be obtained from any of the individual studies used in the meta-analysis. There are 3 overviews in this issue of Evidence-Based Nursing which address the effectiveness of distance medicine technology (Balas et al, p58), compression treatment for venous leg ulcers (Fletcher et al, p50), and psychosocial interventions for children with chronic illnesses (Bauman et al, p43). Through rigorous systematic overviews, nurses are provided with a summary of all the methodologically sound studies related to a specific topic. In most cases, this is much more powerful than the results of any one single study.

Just as randomised trials and systematic overviews are the best designs for evaluating nursing interventions, qualitative studies are the best designs to better understand patients' experiences, attitudes, and beliefs. Results of intervention studies may inform nurses about the optimal effects of an intervention in a sample of patients, but they do not explore and explain the barriers to patient compliance with the intervention, nor how the treatment affects the patient's everyday life, the meaning of illness for the patient, or the adjustment required to accommodate a lifelong treatment regimen. Rigorous qualitative research is based on explicit purposive strategies, in depth analysis of data, and a commitment to examining alternative explanations. In this issue of Evidence-Based Nursing, qualitative studies examine parents' experiences with a critically ill child in the paediatric intensive care unit (Mu and Tomlinson, p60); patients' experiences of nursing (Kralik et al, p63); experiences of long term oxygen therapy (Ring and Danielson, p64); women's role as carers (Wuest, p62); and patterns of violence experienced by homeless battered women (Clarke, p61).

Through Evidence-Based Nursing we hope to convey that good evidence does involve more than RCTs and systematic overviews. Each research design has its purpose, its strengths, and its limitations. The key is ensuring that the right research design is used to answer the question posed.



The ultimate goal of nursing is to deliver to patients the best available care. Despite numerous barriers to using research there continues to be strong motivation among nurses to learn the skills required to practice evidence-based nursing. The application of research findings to practice goes hand in hand with clinical expertise and with patient preferences and values. The types of study designs that form the basis for evidence-based practice will vary depending on the nature of the question asked.

We have attempted to identify and address common misconceptions about evidence-based nursing. Readers are encouraged to comment and to let us know if there are additional impediments to this relatively new initiative in nursing.

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- <sup>1</sup> Hunt J. Indicators for nursing practice: the use of research findings. *J Adv Nurs* 1981;6:189-94.
  - <sup>2</sup> Gortner SR, Bloch D, Phillips TP. Contributions of nursing research to patient care. *J Adv Nurs* 1976;1:507-18.
  - <sup>3</sup> Roper N. Justification and use of research in nursing. *J Adv Nurs* 1977;2:365-71.
  - <sup>4</sup> Royle JA, Blythe J, Ingram C, et al. The research utilisation process: the use of guided imagery to reduce anxiety. *Canadian Oncology Nursing Journal* 1996;6:20-5.
  - <sup>5</sup> Mitchell A, Janzen K, Pask E, et al. Assessment of nursing research utilization needs in Ontario health agencies. *Can J Nurs Admin* 1995;8:77-91.
  - <sup>6</sup> Haynes RB, Sackett DL, Gray JAM, et al. Transferring evidence from research into practice. 1. The role of clinical care research evidence in clinical decisions [[editorial]]. *ACP Journal Club* 1996 Nov-Dec;125:A14-6.
  - <sup>7</sup> White S. Evidence-based practice and nursing: the new panacea? *British Journal of Nursing* 1997;6:175-7.
  - <sup>8</sup> Rush J, Fiorino-Chiovitti R, Kaufman K, et al. A randomised controlled trial of a nursery ritual: wearing cover gowns to care for healthy newborns. *Birth* 1990;17:25-30.
  - <sup>9</sup> Hoe NY, Nambiar R. Is preoperative shaving really necessary? *Ann Acad Med Singapore* 1985;14:700-4.

## **Anne Mulhall, Nursing, research, and the evidence [editorial]. Evidence-Based Nursing 1998 Jan;1:4-6.**

Why has research-based practice become so important and why is everyone talking about evidence-based health care? But most importantly, how is nursing best placed to maximise the benefits which evidence-based care can bring?

Research has been used to legitimise nursing as a profession, education has been radically reformed to reflect a research base, and academic nurses have built their careers around it. However, despite the length of time that research has been on the agenda and the influential bodies involved, only a moderate proportion of nurses use research as a basis for practice.<sup>1</sup>

### **What has gone wrong?**

Part of the difficulty is that although nurses perceive research positively,<sup>2</sup> they either cannot access the information, or cannot judge the value of the studies which they find.<sup>3</sup> This journal has evolved as a direct response to the dilemma of practitioners who want to use research, but are thwarted by overwhelming clinical demands, an ever burgeoning research literature, and for many, a lack of skills in critical appraisal.

Evidence-Based Nursing should therefore be exceptionally useful, and its target audience of practitioners is a refreshing move in the right direction. The worlds of researchers and practitioners have been separated by seemingly impenetrable barriers for too long.<sup>4</sup>

Tiptoeing in the wake of the movement for evidence-based medicine, however, we must ensure that evidence-based nursing attends to what is important for nursing. Part of the difficulty that practitioners face relates to the ambiguity which research, and particularly `scientific' research, has within nursing. Ambiguous, because we need to be clear as to what nursing is, and what nurses do before we can identify the types of evidence needed to improve the effectiveness of patient care. Then we can explore the type of questions which practitioners need answers to and what sort of research might best provide those answers.

### **What is nursing about?**

Increasingly, medicine and nursing are beginning to overlap. There is much talk of interprofessional training and multidisciplinary working, and nurses have been encouraged to adopt as their own some tasks traditionally undertaken by doctors. However, in their operation, practice, and culture, nursing and medicine remain quite different. The oft quoted suggestion is that doctors `cure' or `treat' and that nurses `care', but this is not upheld by research. In a study of professional boundaries, the management of complex wounds was perceived by nurses as firmly within their domain.<sup>5</sup> Nurses justified their claim to `control' wound treatment by reference to scientific knowledge and practical experience, just as medicine justifies its claim in other areas of treatment. One of the most obvious distinctions between the professions in this study was the contrast between the continual presence of the nurse as opposed to the periodic appearance of the doctor. Lawler raises the same point, and suggests that nurses and patients are `captive' together.<sup>6</sup> Questioning the relevance of scientific knowledge, she argues that nurses and patients are `focused on more immediate concerns and on ways in which experiences can be endured and transcended'. This highlights the particular contribution of nursing, for it is not merely concerned with the body, but is also in an `intimate' and ongoing relationship with the person within the body. Thus nursing becomes concerned with `untidy' things such as emotions and feelings, which traditional natural and social sciences have difficulty accommodating. `It is about the interface between the biological and the social, as people reconcile the lived body with the object body in the experience of illness.'<sup>7</sup>

### **What sort of evidence does nursing need?**

These arguments suggest that nursing, through its particular relationship with patients and their sick or well bodies, will rely on many different ways of knowing and many different kinds of knowledge. Lawler's work on how the body is managed by nurses illustrates this.<sup>6</sup> She explains how an understanding of the physiological body is essential, but that this must be complemented by evidence from the social sciences because `we also practice with living, breathing, speaking humans.' Moreover, this must be grounded in experiential knowledge gained from being a nurse, and doing nursing. Knowledge, or evidence, for practice thus comes to us from a variety of disciplines, from particular paradigms or ways of `looking at' the world, and from our own professional and non-professional life experiences.

### **Picking the research design to fit the question**

Scientists believe that the social world, just like the physical world, is orderly and rational, and thus it is possible to determine universal laws which can predict outcome. They propose the idea of an objective reality independent of the researcher, which can be measured quantitatively, and they are concerned with minimising bias. The other major paradigm is interpretism/naturalism which takes another approach, suggesting that a measurable and objective reality separate from the researcher does not exist; the researcher cannot therefore be separated from the 'researched'. Thus who we are, what we are, and where we are will affect the sorts of questions we pose, and the way we collect and interpret data. Furthermore, in this paradigm, social life is not thought to be orderly and rational, knowledge of the world is relative and will change with time and place. Interpretism/naturalism is concerned with understanding situations and with studying things as they are. Research approaches in this paradigm try to capture the whole picture, rather than a small part of it.

This way of approaching research is very useful, especially to a discipline concerned with trying to understand the predicaments of patients and their relatives, who find themselves ill, recovering, or facing a lifetime of chronic illness or death. Questions which arise in these areas are less concerned with causation, treatment effectiveness, and economics and more with the meaning which situations have--why has this happened to me? What is my life going to be like from now on? The focus of these questions is on the process, not the outcome. Data about such issues are best obtained by interviews or participant observation. These are aspects of nursing which are less easily measured and quantified. Moreover, some aspects of nursing cannot even be formalised within the written word because they are perceived, or experienced, in an embodied way. For example, how do you record aspects of care such as trust, empathy, or 'being there'? Can such aspects be captured within the confines of research as we know it?

Questions of causation, prognosis, and effectiveness are best answered using scientific methods. For example, rates of infection and thrombophlebitis are issues which concern nurses looking after intravenous cannulas. Therefore, nurses might want access to a randomised controlled trial of various ways in which cannula sites are cleansed and dressed to determine if this affects infection rates. Similarly, some very clear economic and organisational questions might be posed by nurses working in day surgery units. Is day surgery cost effective? What are the rates of early readmission to hospital? Other questions could include: what was it like for patients who had day surgery? Did nurses find this was a satisfying way to work? These would be better answered using interpretist approaches which focus on the meaning that different situations have for people. Nurses working with patients with senile dementia might also use this approach for questions such as how to keep these patients safe and yet ensure their right to freedom, or what it is like to live with a relative with senile dementia. Thus different questions require different research designs. No single design has precedence over another, rather the design chosen must fit the particular research question.

### **Research designs useful to nursing**

Nursing presents a vast range of questions which straddle both the major paradigms, and it has therefore embraced an eclectic range of research designs and begun to explore the value of critical approaches and feminist methods in its research.<sup>8</sup> The current nursing literature contains a wide spectrum of research designs exemplified in this issue, ranging from randomised controlled trials,<sup>9</sup> and cohort studies,<sup>10</sup> at the scientific end of the spectrum, through to grounded theory,<sup>11</sup> ethnography,<sup>12</sup> and phenomenology at the interpretist/naturalistic end.<sup>13</sup> Future issues of this journal will explore these designs in depth.

## Maximising the potential of evidence-based nursing

Evidence-based care concerns the incorporation of evidence from research, clinical expertise, and patient preferences into decisions about the health care of individual patients.<sup>14</sup> Most professionals seek to ensure that their care is effective, compassionate, and meets the needs of their patients. Therefore sound research evidence which tells us what does and does not work, and with whom and where it works best, is good news. Maximum use must be made of scientific and economic evidence, and the products of initiatives such as the Cochrane Collaboration. However, nurses and consumers of health care clearly need other evidence, arising from questions which cannot be framed in scientific or economic terms. Nursing could spark some insightful debate concerning the nature and contribution of other types of knowledge, such as clinical intuition, which are so important to practitioners.<sup>15</sup>

In summary, in embracing evidence-based nursing we must heed these considerations:

- Nursing must discard its suspicion of scientific, quantitative evidence, gather the skills to critique it, and design imaginative trials which will assist in improving many aspects of nursing
- We must promulgate naturalistic/interpretist studies by indicating their usefulness and confirming/explaining their rigour in investigating the social world of health care
- More research is needed into the reality and consequences of adopting evidence-based practice. Can practitioners act on the evidence, or are they being made responsible for activities beyond their control?
- It must be emphasised that those concerns which are easily measured or articulated are not the only ones of importance in health care. Space is needed to recognise and explore the knowledge which comes from doing nursing and reflecting on it, to find new channels for speaking of concepts which are not easily accommodated within the discourse of social or natural science--hope, despair, misery, love.

<sup>1</sup> Bostrum J, Suter WN. Research utilisation: making the link with practice. *J Nurs Staff Dev* 1993;9:28-34.

<sup>2</sup> Lacey A. Facilitating research based practice by educational intervention. *Nurs Educ Today* 1996;16:296-301.

<sup>3</sup> Pearcey PA. Achieving research based nursing practice. *J Adv Nurs* 1995;22:33-9.

<sup>4</sup> Mulhall A. Nursing research: our world not theirs? *J Adv Nurs* 1997;25:969-76.

<sup>5</sup> Walby S, Greenwell J, Mackay L, et al. *Medicine and nursing: professions in a changing health service*. London: Sage, 1994.

<sup>6</sup> Lawler J. *The body in nursing*. Edinburgh: Churchill Livingstone, 1997.

<sup>7</sup> Lawler J. *Behind the screens nursing*. Edinburgh: Churchill Livingstone, 1991.

<sup>8</sup> Street AF. *Inside nursing: a critical ethnography of clinical nursing practice*. New York: State University Press of New York, 1992.

<sup>9</sup> Madge P, McColl J, Paton J. Impact of a nurse-led home management training programme in children admitted to hospital with acute asthma: a randomised controlled study. *Thorax* 1997;52:223-8.

<sup>10</sup> Kushi LH, Fee RM, Folsom AR, et al. Physical activity and mortality in postmenopausal women. *JAMA* 1997;277:1287-92.

<sup>11</sup> Rogan F, Shmied V, Barclay L, et al. Becoming a mother: developing a new theory of early motherhood. *J Adv Nurs* 1997;25:877-85.

<sup>12</sup> Barroso J. Reconstructing my life: becoming a long-term survivor of AIDS. *Qual Health Res* 1997;7:57-74.

<sup>13</sup> Thibodeau J, MacRae J. Breast cancer survival: a phenomenological inquiry. *Adv Nurs Sci* 1997;19:65-74.

<sup>14</sup> Sackett D, Haynes RB. On the need for evidence-based medicine. *Evidence-Based Medicine* 1995;1:5-6.

<sup>15</sup> Gordon DR Tenacious assumptions in Western biomedicine. In: Lock M, Gordon DR, eds. Biomedicine Examined. London: Kluwer Academic Press, 1988;19-56.

## Sample scenarios, searches, completed worksheets and CATs for Evidence-Based Nursing

### A. Diagnosis

#### Clinical scenario

You are a nurse practitioner in a primary care setting. You are familiar with a number of validated instruments to detect depression. However, a colleague describes a 2-question instrument that she feels is as effective in detecting probable cases of major depression and would be much quicker to use. You decide to investigate the instrument and its properties further.

You pose the question, in patients with suspected depression what is the accuracy of a two-question case-finding instrument for depression compared with six previously validated instruments?

#### Searching terms and evidence source:

You search MEDLINE using the terms "depression" or "depressive disorder" and come up with 10537 articles. Because you are interested in finding this 2-question tool, you add "sensitivity and specificity" and "questionnaire". When these terms are joined, you still have 58 articles - too many to quickly find the tool. When you join the above search terms with "primary care" as a text word, or "primary health care", the results are narrowed to six, a more manageable retrieval situation. From the six, you find the following paper: Whooley MA, Avins, AL, Miranda J, Browner WS. Case-finding instruments for depression: Two questions are as good as many. J Gen Intern Med 1997;12:439-45.

Read the article and decide,

1. Is the evidence from this study valid?
2. If valid, is this evidence important?
3. If valid and important, can you apply this evidence in caring for your patient?

### Completed Worksheet

#### Citation

Whooley MA, Avins, AL, Miranda J, Browner WS. Case-finding instruments for depression: Two questions are as good as many. J. Gen Intern Med 1997;12:439-45.

**Are the results of this diagnostic study valid?**

Was there an independent, blind comparison with a reference ("gold") standard of diagnosis?	<b>Yes. They used a computerized version (QDIS) of the National Institute of Mental Health Diagnostic Interview Schedule (DIS) which has a sensitivity of 80% and a specificity of 84% compared with DSM-III criteria for depression. It is a 20-minute diagnostic interview that was administered by one of 3 trained psychology students who were blind to the results of the case-finding instruments. The DIS has good test-retest reliability. When a subset of 20 patients were interviewed by all 3 interviewers, the inter-rater reliability was very good (kappa=0.88).</b>
Was the diagnostic test evaluated in an appropriate spectrum of patients (like those in whom it would be used in practice)?	<b>No. The sample consisted of 590 consecutive patients visiting an urgent care clinic. Prevalence of depression in this sample was 18%, which is higher than other primary care settings. 97% of patients were men, and of these &gt;70% were not working even though the mean age was 53. Further testing in a more typical primary care setting, with more equal distribution of men and women, and more employed people is warranted.</b>
Was the reference standard applied regardless of the diagnostic test result?	<b>Yes. Each patient completed the reference standard interview (the 2-question instrument and the 6 case-finding instruments) during one sitting lasting approximately 45 minutes. The results of one test had no influence on whether another test was performed.</b>

**Are the valid results of this diagnostic study important?**

Your calculations:

		Target Disorder Depression		Totals
		Present (case)	Absent (control)	
Diagnostic Test Result 2-question instrument	Positive	<b>93</b> a	<b>189</b> b	a + b = 282
	Negative	c <b>4</b>	d <b>250</b>	c + d = 254
Totals		a + c = 97	b + d = 439	a + b + c + d = 536

$$\text{Sensitivity} = a/(a+c) = 93/97 = 96\%$$

Specificity =  $d/(b+d) = 250/439 = 57\%$

Likelihood Ratio for a positive test result =  $LR+ = \text{sens}/(1-\text{spec}) = 0.96/1-0.57 = 2.2$

Likelihood Ratio for a negative test result =  $LR- = (1-\text{sens})/\text{spec} = 1-0.96/0.57 = 0.07$

Positive Predictive Value =  $a/(a+b) = 93/282 = 33\%$

Negative Predictive Value =  $d/(c+d) = 250/254 = 98\%$

Pre-test Probability (prevalence) =  $(a+c)/(a+b+c+d) = 97/536 = 18.1\%$

Pre-test-odds =  $\text{prevalence}/(1-\text{prevalence}) = 0.181/0.819 = 0.22$

Post-test odds =  $\text{Pre-test odds} \times \text{Likelihood Ratio} = 0.22 \times 2.2 = 0.48$

Post-test Probability =  $\text{Post-test odds}/(\text{Post-test odds} + 1) = 0.48/1.48 = 0.32$

**Can you apply this valid, important evidence about a diagnostic test in caring for your patient?**

Is the diagnostic test available, affordable, accurate, and precise in your setting?	<b>The test is definitely affordable in terms of client and practitioner time and tools. It correctly identified those with depression 96% of the time and correctly ruled out depression when it did not exist in 57% of the cases. Translation of test properties to another clinical setting would vary with prevalence.</b>
Can you generate a clinically sensible estimate of your patient's pre-test probability (from practice data, from personal experience, from the report itself, or from clinical speculation)?	<b>This report would help to generate such an estimate only if the population was primarily unemployed men. A chart review would give an estimate of pre-test probability.</b>
Will the resulting post-test probabilities affect your management and help your patient? (Could it move you across a test-treatment threshold?; Would your patient be a willing partner in carrying it out?)	<b>The post-test probability is 0.33, meaning that the patient is more likely to be depressed if the results of the test are positive, and should be considered for further assessment. The patients would be very likely to answer two questions. If the test was negative, this would virtually rule out depression and the post-test probability of depression would be about 1%.</b>
Would the consequences of the test help your patient?	<b>Needs more testing for reliability; need to combine with additional assessment; not yet known whether early detection of depression will improve outcome.</b>

## Additional Notes

Whooley et al suggest administering the questionnaire only to high-risk patients if it is too time consuming to administer to all patients. However, it was not tested in this way, and would need further testing on high-risk populations. Because of the high false-positive rate, other assessment would need to be done in conjunction with this test, if used for case-finding.

## Depression - 2 questions can rule out the diagnosis

### Clinical Bottom Line

Negative responses to the 2-question case-finding instrument can rule out depression.

### Citation

Whooley MA, Avins AL, Miranda J, Browner WS. Case-finding instruments for depression. Two questions are as good as many. *J Gen Intern Med.* 1997;12:439-45.

### Clinical Question

In patients with suspected depression what is the accuracy of a 2-question case-finding instrument for depression compared with 6 previously validated instruments?

### Search Terms

"depression" or "depressive disorder" and "sensitivity and specificity" and "questionnaire" and "primary care" or "primary health care" in MEDLINE.

### The Study

590 consecutive patients (mean age 53 years, 97% men) who visited an urgent-care clinic at a Veterans Affairs Hospital in the United States were given a self-report questionnaire that included the 2-question instrument taken from the Primary Care Evaluation of Mental Disorders Procedure: "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" and "During the past month, have you often been bothered by little interest or pleasure in doing things?" The patients also completed 6 other validated instruments for detecting depression. The diagnostic standard was the National Institute of Mental Health Diagnostic Interview Schedule that was administered by trained psychology students who were blinded to the results of the case-finding instruments. Prevalence of depression in this sample was 18%, which is higher than other primary care settings.

### The Evidence



		Target Disorder Depression		Totals
		Present (case)	Absent (control)	
Diagnostic Test Result 2-question instrument	Positive	<b>93</b> a	<b>189</b> b	a + b = 282
	Negative	<b>4</b> c	<b>250</b> d	c + d = 254
Totals		a + c = 97	b + d = 439	a + b + c + d = 536

Sensitivity =  $a/(a+c) = 93/97 = 96\%$

Specificity =  $d/(b+d) = 250/439 = 57\%$

Likelihood Ratio for a positive test result =  $LR+ = \text{sens}/(1-\text{spec}) = 0.96/1-0.57 = 2.2$

Likelihood Ratio for a negative test result =  $LR- = (1-\text{sens})/\text{spec} = 1-0.96/0.57 = 0.07$

### Comments

Sample was not representative of most primary health care agencies (predominantly unemployed men with a high prevalence of depression). Would want to test the instrument on a more representative sample.

### Appraised by

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## B. Prognosis

### Clinical scenario

You are a nurse caring for a 28-year old woman who has just had a D & C following a spontaneous miscarriage. She was 10 weeks pregnant and this was her first pregnancy. In a team meeting, one of your colleagues vaguely recalls seeing an article about grief after miscarriage and you decide to track it down to determine whether your patient is at risk of severe or prolonged grief.

You formulate the question, in healthy women who have recently had a miscarriage, what is the usual grieving process and are any factors associated with longer than normal grieving?

#### Searching terms and evidence source:

Both a MEDLINE search and a search in Best Evidence produced the same citation. Search terms in MEDLINE were "grief" as a subject heading and text word; "abortion" as a subject term or "pregnancy loss" as a text word; and "risk" as an index term or text word. The Best Evidence search used just the terms "grief" and "pregnancy loss".

Read the article and decide,

1. Is the evidence from this study valid?
2. If valid, is this evidence important?
3. If valid and important, can you apply this evidence in caring for your patient?

## Completed Worksheet

#### Citation

Janssen HG, Cuisinier MC, de Graauw KP, Hoogduin KA. A prospective study of risk factors predicting grief intensity following pregnancy loss. Arch Gen Psychiatry. 1997;54:56-61.  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9006401&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9006401&dopt=Abstract))

#### Are the results of this prognosis study valid?

Was a defined, representative sample of patients assembled at a common (usually early) point in the course of their disease?	<b>Yes. Data on baseline variables for 227 women who had a miscarriage were collected before the miscarriage. These women had volunteered to be part of a long-term study about how they coped with normal pregnancy, delivery, and complications. Baseline data included information on reproductive history, factors around this pregnancy, sociodemographic data, and personal history.</b>
Was patient follow-up sufficiently long and complete?	<b>Yes. 94% of all women who had a miscarriage after a singleton pregnancy completed all questionnaires (at baseline before the miscarriage, just after the miscarriage, and 6, 12, and 18 months after the miscarriage).</b>
Were objective outcome criteria applied in a "blind" fashion?	<b>No, but outcomes were measured in many ways using several standardised and validated forms.</b>

If subgroups with different prognoses are identified, was there adjustment for important prognostic factors?	<b>Repeated measure analyses factored in differences in baseline characteristics.</b>
Was there validation in an independent group ("test-set") of patients?	<b>No.</b>

#### Are the valid results of this prognosis study important?

How likely are the outcomes over time?	<b>Data were not presented this way. However, grief intensity was predicted by length of pregnancy before the loss, time since the loss, preloss neuroticism, preloss psychiatric symptoms, and absence of living children. Childless and older women showed more intense grief. Grief intensity, active grief, difficulty with coping, and despair decreased with time.</b>
How precise are the prognostic estimates?	<b>No confidence intervals provided.</b>

#### If you want to calculate a Confidence Interval around the measure of Prognosis:

Clinical Measure	Standard Error (SE)	Typical calculation of CI
Proportion (as in the rate of some prognostic event, etc.) where: the number of patients = n the proportion of these patients who experience the event = p	$\sqrt{\frac{p \times (1 - p)}{n}}$ where p is proportion and n is number of patients	If p = 24/60 = 0.4 (or 40%) & n=60 $SE = \sqrt{\frac{0.4 \times (1 - 0.4)}{60}} = 0.0063$ 95% CI is 40% +/- 1.96 x 6.3% or 27.6% to 52.4%
n from your evidence: _____ p from your evidence: _____	$\sqrt{\frac{p \times (1 - p)}{n}}$ where p is proportion and n is number of patients	Your calculation: SE: _____ 95% CI:

#### Can you apply this valid, important evidence about prognosis in caring for your patient?

Were the study patients similar to your own?	<b>Yes, on many factors, especially age. The biggest difference was nationality. There is, however, no reason why women from a developed countries would differ in ways that would make the research irrelevant.</b>
Will this evidence make a clinically important impact on your conclusions about what to offer or tell your patient?	<b>Yes, helpful to know that grief is more intense in women who have no other children, and that grief lessens with time.</b>

## Grief after pregnancy loss - predicted by length of pregnancy, neuroticism, psychiatric symptoms, and absence of other children

### Clinical Bottom Line

Patients with pre-pregnancy neuroticism or psychiatric symptoms, and without other children are at increased risk of a more intense grief reaction.

### Citation

Janssen HJ, Cuisinier MC, de Graauw KP, Hoogduin KA. A prospective study of the risk factors predicting grief intensity following pregnancy loss. Arch Gen Psychiatry. 1997;54:56-61.  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9006401&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9006401&dopt=Abstract))

### Clinical Question

In healthy women who have had a miscarriage, what is the usual grieving process and are any factors associated with longer than normal grieving?

### Search Terms

Both MEDLINE and Best Evidence retrieve the same citation. MEDLINE search terms were "grief" as an index term AND ("abortion" as an index term OR "pregnancy loss" as a text phrase) AND "risk" as an index term or text word). The Best Evidence search terms were "grief" and "pregnancy loss".

### The Study

The Study Patients: 227 women (mean age 29 years) who had volunteered for a study on coping with normal pregnancy, delivery, and complications and who reported a miscarriage. 91% of the losses occurred at < 20 weeks of pregnancy. 97% of the women were married or in stable relationships, 32% had no other children, and 41% had a previous pregnancy loss. Follow-up at 18 months after miscarriage was 94%.

Prognostic Factors: Risk factors were assessed using the Dutch version of the Symptom Checklist-90

(psychiatric symptoms) and the Dutch Personality Questionnaire (neuroticism, low self-esteem, social inadequacy, general inadequacy, and aggrievedness). Information was also collected on quality of partner relationships, education, employment, religious background, social support, feelings about the pregnancy, pregnancy and conception variables, family demographics, and physical symptoms.

The Outcome: Grief and its categories (active grief, difficulty coping, and despair) measured by the Perinatal Grief Scale immediately after the miscarriage and at 6, 12, and 18 months.

Study Feature	Yes	No	Can't tell
Well-defined sample at uniform (early) stage of illness?	<b>X</b>		
Follow-up long enough?	<b>X</b>		
Follow-up complete?	<b>X</b>		
Blind and objective outcome criteria?		<b>X</b>	
Adjustment for other prognostic factors?	<b>X</b>		
Validation in an independent "test-set" of patients?		<b>X</b>	

### The Evidence

Multivariate analysis showed that grief intensity was higher for women who had been pregnant longer ( $p < 0.001$ ), had pre-loss neurotic personalities ( $p < 0.001$ ), had pre-loss psychiatric symptoms ( $p = 0.02$ ), and did not have other living children ( $p = 0.01$ ). Grief intensity, active grief, difficulty coping, and despair decreased with time ( $p < 0.001$  for all 4 comparisons).

### Comments

Bottom line is that all factors except previous pregnancy loss predicted grief intensity on univariate analysis.

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## C. Therapy

## Clinical scenario

You are a school nurse who regularly visits a number of elementary and middle schools (children aged 5 to 13 years) in your region. It is cold and flu season once again. One of the teachers stops you in the hall to ask you a question about his 10- year old daughter who also has a cold. He has heard that zinc lozenges can help to relieve cold symptoms and wonders if they really do work and if it is OK to give them to children.

With him you formulate the question, in children with colds are zinc lozenges safe and effective for relief of cold symptoms?

### Searching terms and evidence source:

You do a search of the Cochrane database (Issue 1, 1999) to see if any systematic reviews are available on the topic. Using the search terms "zinc" and "cold", you find no reviews. You then do a quick search of Best Evidence 3 using the same search terms and find 1 study that looked at the effectiveness of zinc lozenges for colds - unfortunately, the sample consisted of adults only. Not to be discouraged, you decide to do a search in MEDLINE using PubMed (available on the Internet). You do an Advanced Search using the terms "zinc AND cold\*" and come up with 233 citations - a bit more than you have time to review. You add the search term "child\*" to your previous search and your search result is reduced to 13 citations. Having been a good student of critical appraisal, you know that the best evidence to support a decision about treatment effectiveness usually comes from randomized controlled trials. So once more, you limit your search result by adding the term "randomized controlled trial" - 4 trials remain. One of these trials, a study by Macknin et al (JAMA 1998;279:1962-7 [[www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9643859&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9643859&dopt=Abstract)]) seems to be right on target.

Read the article and decide,

1. Is the evidence from this randomised trial valid?
2. If valid, is this evidence important?
3. If valid and important, can you apply this evidence in caring for your patient?

## Completed Worksheet

### Citation

Macknin ML, Piedmonte M, Calendine C, Janosky J, Wald, E. Zinc gluconate lozenges for treating the common cold in children. A randomized controlled trial. JAMA 1998;279:1962-7. ([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9643859&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9643859&dopt=Abstract))

### Are the results of this single preventive or therapeutic trial valid?

Was the assignment of patients to treatments randomised?  And was the randomisation list concealed?	<b>Yes</b>  <b>Yes. Computer generated randomisation code given to pharmacist who prepared medication packages.</b>
Were all patients who entered the trial accounted for at its conclusion? -and were they analysed in the groups to which they were randomised?	<b>Yes, all children were accounted for. 117/124 children (94%) allocated to the intervention completed the trial and 122/125 children (98%) allocated to placebo completed the trial. Authors stated that analyses were conducted using intention-to-treat principles.</b>
Were patients and clinicians kept "blind" to which treatment was being received?	<b>Yes, both study personnel and participants were blinded to allocation. Medication packages were identical in appearance except for the identifying code.</b>
Aside from the experimental treatment, were the groups treated equally?	<b>Yes.</b>
Were the groups similar at the start of the trial?	<b>At baseline, groups were similar for age; sex; race; body surface area; allergies; smoking; smoking in the home; history of colds, infections, and complications; and temperature. 25% of the intervention group took vitamin supplements compared with 16% of the placebo group (p=0.08). Students were asked to stop taking zinc-containing vitamins or mineral supplements during the study. 7.5% of the intervention group had a history of asthma compared with 14% of the placebo group (p=0.10); analysis showed that this imbalance had no effect on outcome.</b>

#### Are the valid results of this randomised trial important?

Main outcome was time to resolution of cold symptoms. Secondary outcomes included school absences and adverse effects.

Median time to resolution of cold symptoms did not differ between groups (9 days for both groups).  
{Because time to resolution of cold symptoms is a continuous variable, RRR, ARR, NNT cannot be calculated.}

School absences (number of children	Relative Risk Reduction	Absolute Risk	Number
-------------------------------------	-------------------------	---------------	--------

with absences)		RRR	Reduction ARR	Needed to Treat NNT
Placebo CER	Zinc lozenges EER	(CER-EER)/CER	CER-EER	1/ARR
20.8%	18.5%	$(20.8\% - 18.5\%) / 20.8\% = 11.1\%$ 95% CI -46.7 to 45.9	20.8% - 18.5% = 2.3%	1/2.3% = 44 pts 95% CI 8 to infinity
Adverse effects (e.g., bad taste reactions; nausea; mouth, tongue or throat irritation; and diarrhoea)		Relative Risk Increase RRI	Absolute Risk Increase ARI	Number Needed to Harm NNH
Placebo CER	Zinc lozenges EER	(CER-EER)/CER	CER-EER	1/ARI
79.8%	98.6%	$(79.8\% - 88.6\%) / 79.8\% = 11.0\%$ 95% CI -21.7 to 3.7	79.8% - 88.6% = 8.8%	1/8.8% = 11 pts 95% CI 6 to infinity

### Can you apply this valid, important evidence about a treatment in caring for your patient?

Do these results apply to your patient?	
Is your patient so different from those in the trial that its results can't help you?	<b>Similar - Grades 1 to 12 students in 2 suburban school districts in Cleveland, Ohio, USA.</b>
How great would the potential benefit of therapy actually be for your individual patient?	
Method I: <b>f</b>	Risk of the outcome (school absence) in your patient, relative to patients in the trial. expressed as a decimal: <b>1</b>  NNT/f = <b>44/1 = 44</b> (95%CI 8 to infinity)  (NNT for patients like yours)



Method II: <b>1 / (PEER x RRR)</b>	Your patient's expected event rate if they received the control treatment: PEER: _____  1 / (PEER x RRR) = 1/ _____ = _____  (NNT for patients like yours)
Are your patient's values and preferences satisfied by the regimen and its consequences?	
Do your patient and you have a clear assessment of their values and preferences?	<b>Patient values/preferences unknown but these could be discussed with the child and parent; however, I would want a treatment that does more good than harm.</b>
Are they met by this regimen and its consequences?	<b>No (based on my values/preferences) - no apparent benefit in terms of symptom relief and school absences, and potential for adverse effects.</b>

**Additional Notes**

Interestingly, the article that you identified from your search of Best Evidence that evaluated the effectiveness of zinc lozenges in adults with cold symptoms found that zinc lozenges WERE effective. (see Mossad SB, Macknin ML, Medendorp SV, Mason P. Zinc gluconate lozenges for treating the common cold. A randomized, double-blind, placebo-controlled study. Ann Intern Med. 1996;125:81-8 [www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\_uids=8678384&dopt=Abstract]).

## Cold symptoms: Zinc lozenges did not reduce cold symptoms in children and adolescents

### Clinical Bottom Line

Zinc gluconate lozenges were not effective for reducing symptoms of the common cold in children and adolescents.

### Citation

Macknin ML, Piedmonte M, Calendine C, Janosky J, Wald, E. Zinc gluconate lozenges for treating the common cold in children. A randomized controlled trial. JAMA 1998;279:1962-7.  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9643859&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9643859&dopt=Abstract))

### Clinical Question

In school age children with colds, are zinc lozenges safe and effective for relief of cold symptoms?

### Search Terms

Medline (using PubMed) with the search terms zinc AND cold\* AND child\* AND randomized controlled trial.

### The Study

Double-blinded concealed randomised controlled trial with intention-to-treat.

Students in Grades 1 to 12 (median age 13 y) who had at least 2 of the following symptoms within the previous 24 hours: cough, headache, hoarseness, muscle ache, nasal congestion, nasal drainage, scratchy throat, sore throat, or sneezing.

Control group (n=125): 3.75 g hard candy lozenges containing sucrose, corn syrup, aminoacetic acid, cherry flavouring oils and placebo (calcium lactate pentahydrate). All students took 3 lozenges each school day; students in grades 1-6 took 2 lozenges each night, and 5 each day on the weekend; students in grades 7 - 12 took 3 lozenges each school night and 6 each day on the weekend. Students were given enough lozenges for 21 days of treatment and instructed to take the lozenges until their cold symptoms completely resolved for 6 hours.

Experimental group(n=124): Same as for control regimen except that lozenges contained zinc gluconate trichydrate, 10 mg instead of placebo.

### The Evidence

Outcome	Time to	RRR	95% CI	ARR	95% CI	NNT	95% CI
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	<b>Outcome</b>						
School absences (number of children)	N/A	10%	-38% to 57%	0.020	-0.080 to 0.120	50	NNH = 13 to INF;  NNT = 8 to INF
At least 1 adverse effect	Resolution of symptoms	-12% (RRI)	-23% to 0%	-0.092 (ARI)	-0.182 to -0.002	-11 (so an NNH of 11)	-441 to -6

### Comments

Other outcomes - Time to resolution of cold symptoms was 9 days in both groups

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## D. Harm

### Clinical scenario

You are a nurse practitioner working in a family practice setting. One of your patients is a 28-year old woman who has been taking oral contraceptives (OCs) for the past 6 years. She telephones you to say that she is growing increasingly anxious about taking OCs because recently she has read in magazines and heard from friends that they may increase the risk of cardiovascular disease. She has never smoked, is in good health, and has no history of cardiovascular disease in her family. She asks to see you to discuss whether she should discontinue taking the OCs and begin using a different birth control method.

You admit to yourself that it has been some time since you reviewed the literature on this topic and at that time, most of the studies were case controls. You recall from an editorial in Evidence-Based Nursing (1999;2:4-6) that case control studies are weaker than randomized controlled trials or cohort studies because they begin with the outcome of interest (e.g., cardiovascular disease) and look back for exposure to the causative agent (e.g., OCs). The limitations of this retrospective design are the difficulties in: establishing that the exposure actually occurred before the outcome (temporality); obtaining accurate information about exposure to a causative agent that occurred in the past (relies on accuracy of people's memory or on completeness and accuracy of medical records); and identifying a control group that is similar in all other factors that may have influenced the outcome.

In preparation for your appointment with your patient, you decide to formulate a question and search for prospective studies. You formulate the question, "In women taking oral contraceptives, is there an association between their use and cardiovascular disease?"

#### Searching terms and evidence source:

You begin an advanced search on PubMed using the search terms "oral contracept\*" AND "cardiovascular disease" AND "risk factor\*". Combining these 3 terms yields a total of 832 citations. To further narrow your search, you enter the terms "cohort stud\*" AND "prospective" (because you have learned that for studies of harm, prospective cohort studies have fewer methodological problems than case-control or cross-sectional studies) - 10 citations are identified. The first citation you look at seems promising -- Mant J, Painter R, Vessey M. Risk of myocardial infarction, angina and stroke in users of oral contraceptives: an updated analysis of a cohort study. Br J Obstet Gynaecol 1998;105:890-6.  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9746383&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9746383&dopt=Abstract))

Read the article and decide,

1. Is the evidence from this randomised trial valid?
2. If valid, is this evidence important?
3. If valid and important, can you apply this evidence in caring for your patient?

## Completed Worksheet

### Citation

Mant J, Painter R, Vessey M. Risk of myocardial infarction, angina and stroke in users of oral contraceptives: an updated analysis of a cohort study. Br J Obstet Gynaecol 1998;105:890-6.  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9746383&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9746383&dopt=Abstract))

### Are the results of this harm study valid?

Were there clearly defined groups of patients, similar in all important ways other than exposure to the treatment or other cause?

**17, 032 women were recruited from 17 family planning clinics in England and Scotland between 1968 and 1974. All women were British, married, Caucasian, and between 25 and 39 years old at study entry. 15, 292 women (90%) were followed to age 45 at which time they were divided into 3 groups: never-users of OCs (n=5881); users of OCs for > 8 years (n=3520); and the remainder (n=5891). Although data were not provided to compare the similarity of groups on the following variables, event rates were adjusted for these potential confounders:**

	<b>age, social class, smoking and obesity for all outcome diagnoses, and parity for myocardial infarction and angina only. The potential confounder of comorbidity was addressed by conducting a restricted analysis excluding women with hypertension, diabetes, or hyperlipidaemia. The authors noted that they did not examine the effects of alcohol, diet, and exercise as potential confounders. Although not specifically stated, it is fairly certain that the women were free of the outcomes of interest (myocardial infarction, angina, ischaemic stroke, subarachnoid haemorrhage, intracerebral haemorrhage, and transient ischaemic attack) at study entry.</b>
Were treatment exposures and clinical outcomes measured the same ways in both groups (e.g., was the assessment of outcomes either objective (e.g., death) or blinded to exposure)?	<b>Yes. Women were followed annually by interview at the family planning clinic or by postal questionnaire for changes in contraceptive practices and reasons for hospital referrals. Nonresponders were telephoned or visited. Only hospital-confirmed diagnoses of cardiovascular events were recorded.</b>
Was the follow-up of study patients complete and long enough?	<b>Women were recruited between 1968 and 1974 and followed until 1994; therefore, follow-up ranged from 20 to 26 years. 15, 292 of the 17, 032 women (90%) were still participating at age 45.</b>
Do the results satisfy some "diagnostic tests for causation"?	
Is it clear that the exposure preceded the onset of the outcome?	<b>Yes. Women were assessed for OC use prior to experiencing the cardiovascular events of interest.</b>
Is there a dose-response gradient?	<b>No, there was no significant relation between duration of OC use and risk of cardiovascular disease.</b>
Is there positive evidence from a "dechallenge-rechallenge" study?	<b>No</b>

Is the association consistent from study to study?	<b>Yes. The results of this study concur with the results of the only other prospective study of OCs conducted in the UK. Both studies observed an increased risk of MI in OC users who were heavy smokers and an increased risk of ischaemic stroke in current users of OCs but not ex-users. The results are also consistent with the recent WHO Collaborative case control studies.</b>
Does the association make biological sense?	<b>Yes. The pathology of OC-related heart disease is connected with changes in coagulation.</b>

### Are the valid results from this harm study important?

		Adverse Outcome		Totals
		Present (case)	Absent (control)	
Exposed to the Treatment	Yes (Cohort)	a	b	a + b
	No (Cohort)	c	d	c + d
Totals		a + c	b + d	a + b + c + d

Although we are told the number of women who used and didn't use OCs and the number who experienced cardiovascular events, it would be inaccurate to complete the table using these raw data. The authors have very appropriately adjusted rates and relative risks for age, parity, social class, obesity, and comorbidity. Based on the adjusted analyses, there was no increased risk of myocardial infarction (RR=1.5, 95% CI 0.6 to 3.2) except in heavy smokers. An increased risk of myocardial infarction was observed in OC users who were heavy smokers compared with non-users (RR=4.9, 95% CI 1.2 to 23.6). There was no increased risk of angina (RR=0.5, 95% CI 0.1 to 1.4), but there was an increased risk of ischaemic stroke (RR=2.9, 95% CI 1.3 to 6.7) that did not persist once OCs were discontinued.

### Should these valid, potentially important results of a critical appraisal about a harmful treatment change the treatment of your patient?

Can the study results be extrapolated to your patient?	<b>Yes. The results for non-smokers can be extrapolated to this patient.</b>
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<p>What are your patient's risks of the adverse outcome?</p> <p>To calculate the NNH<sup>1</sup> for any Odds Ratio (OR) and your Patient's Expected Event Rate for this adverse event if they were NOT exposed to this treatment (PEER):</p> $NNH = \frac{PEER(OR - 1) + 1}{PEER(OR - 1) \times (1 - PEER)}$	<p><b>This patient is not at increased risk of angina and because she is not a smoker, she is also not at increased risk of myocardial infarction. Her OC use is associated with an increased risk of ischaemic stroke but this needs to be considered in the context of the very low absolute risk of cardiovascular disease in this population. The NNH is 5880; that is, 5880 women would need to take OCs for 1 year to cause 1 additional stroke.</b></p>
<p>What are your patient's preferences, concerns and expectations from this treatment?</p>	<p><b>Need to be determined.</b></p>
<p>What alternative treatments are available?</p>	<p><b>There are numerous other birth control methods; however, most are not as effective or convenient as OCs.</b></p>

<sup>1</sup> The Number of Patients you Need to treat to Harm one of them.

#### Additional Notes

1. Women already known to be at risk for myocardial infarction or stroke are unlikely to be prescribed OCs.
2. 68% of the woman's years of exposure to OCs in this study was to pills with 50 µg of oestrogen, which is higher than the standard doses in use today. By 1987 only 2.7% of OCs prescribed in the UK contained 50 µg of oestrogen.

## Cardiovascular Disease - Oral contraceptive may increase risk

### Clinical Bottom Line

Increased risk of stroke in patients taking OCs. Lower dose pills are now in common use and may be safer than the higher dose pills examined in this study. Even with the older higher dosages, the absolute risks of ischaemic stroke in OC users are low; 5880 women would need to take OCs for 1 year to cause 1 additional stroke.

### Citation

Mant J, Painter R, Vessey M: Risk of myocardial infarction, angina and stroke in users of oral contraceptives: an updated analysis of a cohort study. *Br J Obstet Gynaecol* 1998;105:890-6.  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9746383&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9746383&dopt=Abstract))

### Clinical Question

What is the association between oral contraceptive use in women and the risk for cardiovascular disease?

### Search Terms

PubMed was searched using the terms "oral contracept\*" AND "cardiovascular disease" AND "risk factor\*" AND "cohort stud\*" AND "prospective".

### The Study

17,032 women aged 25 to 39 years were recruited between 1968 and 1974 from 17 family planning clinics in England and Scotland. They provided information annually about contraception method. 15,292 (90%) were still participating at age 45. Women were categorised in terms of OC use. Hospital-confirmed diagnoses of cardiovascular events (myocardial infarction, angina, ischaemic stroke, subarachnoid haemorrhage, intracerebral haemorrhage, and transient ischaemic attack) were recorded.

### The Evidence

Outcome	Relative Risk*	95% Confidence Interval
MI	1.5	0.6 to 3.2
Angina	0.5	0.1 to 1.4
Ischaemic Stroke	2.9	1.3 to 6.7

\* Adjusted for age, parity, social class, smoking, comorbidity



## Comments

Risk of MI was significantly increased in heavy smokers who used OC compared with non-users

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Appraised February 1999. Expiry date: 2000

## E. Systematic Reviews

### Clinical scenario

As a nurse practitioner in a primary health care practice, you see many adult patients with asthma. The primary health care team wants to discuss strategies to improve care for these patients. They are particularly interested in whether both regular review by a health practitioner and patient education should be continued or whether giving patients written materials is just as effective. You offer to search the literature on the topic and report back at the next team meeting.

You pose the question, "Is a self-management programme that includes asthma education plus regular review by health professionals, effective in improving health outcomes for adults with asthma?"

### Searching Terms and Evidence Source:

["asthma" OR "wheeze"] AND "patient education" in the Cochrane Library. The Cochrane Library is the most comprehensive source of updated systematic reviews, and this simple search identifies the following review which appears to be very relevant to the question: Gibson PG, Coughlan J, Wilson AJ, et al. Self-management education and regular practitioner review for adults with asthma (Cochrane Review, latest update 29 May 1998). In: The Cochrane Library. Oxford: Update Software.

Read the article and decide,

1. Is the evidence from this randomised trial valid?
2. If valid, is this evidence important?
3. If valid and important, can you apply this evidence in caring for your patient?

## Completed Worksheet

**Citation**

Gibson PG, Coughlan J, Wilson AJ, et al. Self-management education and regular practitioner review for adults with asthma (Cochrane Review, latest update 29 May 1998). In: The Cochrane Library. Oxford: Update Software.

**Are the results of this systematic review of therapy valid?**

Is it a systematic review of randomised trials of the treatment you are interested in?	<p><b>Yes. The review covers:</b></p> <ul style="list-style-type: none"> <li>• <b>asthma education (written, verbal, visual, audio, interactive, non-interactive, structured or unstructured communication of information to improve patient knowledge and understanding of asthma)</b></li> <li>• <b>self-monitoring (regular measurement of either peak expiratory flow or symptoms)</b></li> <li>• <b>regular review (regular consultation with a practitioner to review the patient's asthma status and medications)</b></li> <li>• <b>written action plan (an individualised plan that helps patients to self-manage medication modifications when asthma worsens and informs them about how to access the health care system when asthma worsens)</b></li> <li>• <b>optimal self-management (regular medical review plus self-monitoring plus an individualised written action plan)</b></li> </ul>
Does it include a methods section that describes:	
Finding and including all the relevant trials?	<p><b>Yes. A comprehensive search strategy was described, which covered a number of databases including MEDLINE, CINAHL, and EMBASE. Respiratory journals and meeting abstracts were hand searched and reference lists of articles were scanned. Surprisingly the Cochrane Controlled Trials Register was not mentioned as a source.</b></p>
Assessing their individual validity?	<p><b>Yes. Each trial was appraised for validity by 2 independent reviewers using criteria such as allocation concealment, blinding of interventions and outcome assessment, and attrition.</b></p>
Were the results consistent from study to study?	<p><b>The review looked at a variety of outcomes for a range of variations on self-management education and regular review (see above). There was significant heterogeneity for many of the outcomes assessed, although most results were qualitatively similar (i.e., the</b></p>

	<b>direction of effect is consistent). Heterogeneity was largely because of variations in the interventions.</b>
Are the valid results of this systematic review important?	<b>Yes. 24 RCTs met the inclusion criteria. Self-management education that included a written action plan, self-monitoring, and regular medical review, led to a reduction in the proportion of patients reporting hospitalisations and emergency department visits for asthma, unscheduled doctor visits for asthma, days lost from work because of asthma, and episodes of nocturnal asthma. The number of patients who would need to receive the self-management education in order to prevent 1 additional hospital admission (NNT) is 25; to prevent 1 additional emergency hospital visit is 17; and to prevent 1 unscheduled doctor visit is 11.</b>

**Can you apply this valid, important evidence from a systematic review in caring for your patients?**

Do these results apply to your patients?	<b>Yes, probably. The population of patients in the trials reviewed was probably heterogeneous in that the review included studies of asthma patients aged over 16 years of age. There was little description of the patients in the individual studies.</b>
Are your patients so different from those in the systematic review that its results can't help you?	<b>Probably not.</b>
How great would the potential benefit of therapy actually be for your individual patient?	<b>Compared with usual care, the provision of asthma self-management education that includes self-monitoring, regular medical review, and a written action plan significantly improves health outcomes in adults with asthma.</b>

**Are your patient's values and preferences satisfied by the regimen and its consequences?**

Do your patient and you have a clear assessment of their values and preferences?	<b>Needs to be assessed in each patient.</b>
Are they met by this regimen and its consequences?	<b>Needs to be assessed in each patient.</b>

**Asthma in adults: Self-management education and regular review improves health outcomes.**

**Clinical Bottom Line**

Patients with asthma who receive self-management education are less likely to be admitted to hospital, have fewer visits to the emergency department, fewer unscheduled visits to the doctor, fewer days off work or school, and less nocturnal asthma. Reductions are greater when self-management education includes a written action plan, self-monitoring, and regular medical review.

### **Citation**

Gibson PG, Coughlan J, Wilson AJ et al. Self-management education and regular practitioner review for adults with asthma (Cochrane Review, latest update 25 May 1998). The Cochrane Library. Oxford: Update Software.

### **Clinical Question**

Is a self-management programme that includes asthma education plus regular review by health professionals, effective in improving health outcomes for adults with asthma?

### **Search Terms**

["asthma" OR "wheeze"] AND "patient education" in the Cochrane Library.

### **The Review**

Data Sources: MEDLINE, EMBASE, CINAHL; hand searches of respiratory journals and conference abstracts; reference lists of articles.

Study Selection: Systematic review of randomised controlled trials (RCTs) and controlled clinical trials (CCTs) that studied the effects of asthma education and self-management on health outcomes of people with asthma who were over 16 years of age. Studies were eligible if they measured any of the following health outcomes: asthma admissions, emergency department visits, unscheduled doctor visits, days off work or school, lung function, peak expiratory flow, use of rescue beta-agonists, use of oral corticosteroids, symptom scores, or quality of life scores.

Data Extraction: Data were extracted on study quality, patient and disease characteristics, educational interventions, health outcomes, intermediate outcomes such as knowledge and skills, type of control, and duration of intervention. Interventions were categorised as education, self-monitoring, regular review, written action plan, and optimal self-management.

Multiple independent reviews of individual reports? yes

Tested for heterogeneity? yes

### **The Evidence**

<b>Outcome</b>	<b>CER</b>	<b>EER</b>	<b>RRR</b>	<b>OR (95% CI)</b>	<b>ARR</b>	<b>NNT (95% CI)</b>
Hospital admissions	0.094	0.053	0.44	0.58 (0.38 to 0.89)	0.041	25 (15-74)
Emergency hospital visits	0.286	0.226	0.21	0.71 (0.57 to 0.9)	0.00	17 (10-58)
Unscheduled doctor visits	0.374	0.276	0.26	0.57 (0.4-0.82)	0.098	11 (7-35)

### Comments

See also Gibson PG, Coughlan J, Wilson AJ et al. The effects of limited (information only) education programs on health outcomes of adults with asthma (Cochrane Review, latest version ). In: The Cochrane Library. Oxford: Update Software.

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## F. Qualitative Research

### Clinical scenario

You are a community nurse working with Vera, an 88 year old female. She lives in her own home and has done so for 35 years but her two daughters are often present. You know the family well as you have been coming in for over a year to dress Vera's venous leg ulcer and to help manage her chronic pain from osteoporosis. Twice in the last year she has fallen and she recently fell again sustaining severe bruising to her face and left side. Both the family and (independently) Vera have suggested to you that she is finding it difficult to cope and that a spell in a nursing or residential home might be a possible solution. On your last visit, Vera's daughter stated that she is planning to broach the subject with her mother and wondered what factors Vera is likely to be considering and what areas of concern the family should expect Vera to raise when they discuss the future with her. You explain that you do not have much experience in this area, and that you would like to discuss it at the next visit after you have had time to reflect and examine the experiences of others.

You formulate the question, In elderly people living at home, what are the likely issues they will be considering when deciding to seek out long-term care services?

### Searching terms and evidence source

You decide to search the CINAHL (Cumulated Index of Nursing and Allied Health Literature) database to identify

qualitative studies that have considered this topic. Qualitative studies often address questions about how people experience and feel about things that are happening in their lives. Using the subject headings "long term care" AND "decision making" (exploded), you come up with 117 citations. Adding the subject heading "qualitative studies" narrows the list to 10 citations, which includes the following study: Forbes S, Hoffart, N. Elder's decision making regarding the use of long-term care services: a precarious balance. Qualitative Health Research 1998, 8:736-50. ([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10558344&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10558344&dopt=Abstract))

Read the article and decide,

1. Is the evidence from this randomised trial valid?
2. If valid, is this evidence important?
3. If valid and important, can you apply this evidence in caring for your patient?

## Completed Worksheet

### Citation

Forbes S, Hoffart, N. Elder's decision making regarding the use of long-term care services: a precarious balance. Qualitative Health Research 1998, 8:736-50. ([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10558344&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10558344&dopt=Abstract))

### Are the results of this study valid?

Are the aims of the study clearly stated?	<b>Yes. "To explore factors that influenced decision making regarding the use and non-use of long-term care services."</b>
Is a qualitative methodology appropriate?	<b>Yes. The authors sought to focus on elder beliefs, attitudes, and values by describing elders' perspectives of decision-making processes using a naturalistic research design.</b>
Is the study's sampling strategy appropriate to address the aims?	<b>Yes. They showed evidence of reflexivity in sampling (i.e., sampling procedures changed in response to the emerging needs of the study) and purposive techniques to select information-rich informants.</b>
Are the study's data collection strategies appropriate?	<b>Yes. They used semi-structured interviews to obtain accounts of elders, and collected data until they reached theoretical saturation (process of collecting data to a point where no new themes are generated).</b>
Is there a rigorous process of data analysis evident?	<b>Yes. The research team used techniques of constant comparison, negative case analysis, explicit coding definitions and subject-verification. One negative case highlighted by the authors is not really described in any detail.</b>

Do the researchers consider the effects on the study of the relationship between themselves and the informants?	<b>No. This is an important omission because qualitative data collection techniques such as interview and observation have enormous potential to influence the accounts or behaviour of study participants. For discussion in the context of appraising qualitative research see Giacomini and Cook (forthcoming).</b>
Are the findings clear and easy to understand?	<p><b>Yes. The results are contained in 2 sections: beliefs, attitudes and values; and the decision making process.</b></p> <p><b>Beliefs, such as:</b></p> <ul style="list-style-type: none"> <li>• <b>Money is necessary to remain independent</b></li> <li>• <b>Nursing homes are where people go to die</b></li> <li>• <b>It is hard to give up your independence and depend on someone else</b></li> <li>• <b>Receiving help means you are less of a person</b></li> </ul> <p><b>Attitudes: acceptance (passive and active), non-acceptance of change/fight, perseverance, self-responsibility, and reciprocity.</b></p> <p><b>Values: independence, sense of self, security, work ethic, privacy, quality of life, and trust.</b></p> <p><b>The decision making process: this is based around key decision points such as health need, supervision needs, required levels of formal or informal support, and affordability. The decision process can be visualised as a scale that requires balancing, with the attitudes, values, and beliefs of the individual acting as determinants of this 'balancing act'.</b></p>
Do the researchers justify the data interpretation used in the analysis?	<b>Yes. The quotations used are reinforced by the use of contextual information and vignettes.</b>

**Are the results of this study important?**

How relevant and useful is the article to your patient/clinical problem/clinical scenario or to you as a practitioner?	<b>The article is very relevant and provides useful results. Perhaps if combined with survey data examining the probabilities that elderly people in this situation would align themselves with such beliefs and attitudes, the usefulness could be enhanced.</b>
How important are the findings to your practice? (do they directly address the aims? Add new policy/ practice insights or suggest specific further research?)	<b>The findings do directly address the research aims and also my clinical question; therefore they are important.</b>

**Can I apply these valid, important findings to my patient or their family?**

Are the findings of this study logically transferable to other groups of patients?	<b>Yes. The study was well conducted and the analysis put forward appears cogent.</b>
Is my patient so different from those in the study that the findings can't help?	<b>No. There are real similarities between the types of individuals described in the study and my patient and her family. The use of demographic data and descriptive vignettes of some of the individuals makes the process of deciding whether or not they are similar much easier. One important difference, however, is the fact that the study was conducted in the United States with its differing health care and social security systems. Conceivably there might be differences in the weighting associated with some of the decision points (such as affordability) in UK patients.</b>
Do the patient and/or family have a clear assessment of their values and preferences?	<b>No. I need to assess these with Vera and her family (independently and as a family) and to use them as a framework to structure my feedback of the appraisal of this paper.</b>
Are the suggested course of action and its consequences acceptable to the patient and/or family and you?	<b>Not known at this stage, but I shall endeavour to make sure that any unacceptability or agreement is built into my plan of care in relation to the decisions Vera and her family must make.</b>

**Comments**

The appraisal questions are derived from:

The Critical Appraisal Skills Programme: Making sense of evidence about effective health care. Oxford: CASP, 1998.

Popay J, Rogers A, Williams G. Rationale and standards for the systematic review of qualitative literature in health services research. *Qualitative Health Research* 1998;8:341-51  
([www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10558335&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10558335&dopt=Abstract))

Giacomini MK, Cook DJ. A user's guide to qualitative research in health care: part 1: are the results of the study valid? Evidence Based Medicine Working Group, McMaster University, Hamilton, Ontario CA. (forthcoming)



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