Chapter 2

What is evidence and evidence-based practice?

AIMS
When you have read this chapter, you should understand:

● What evidence is
● Where evidence comes from
● How we find the evidence and what we do with it
● What needs to be considered when implementing the evidence into our clinical practice
● What is meant by the hierarchy of evidence
Chapter 2 What is evidence and evidence-based practice?

What is evidence?

Evidence is more than the findings from formal research projects. Rycroft-Malone et al. (2004) suggest that there are four distinct sources of evidence: one is research and the other three are clinical or professional experience, patients and their carers, and the local context in which you practise. This includes things such as audit and evaluation data, local professional networks and feedback from quality assurance programmes.

As healthcare professionals we need to draw upon all of these resources to ensure effective use of evidence in our work. We also need to know where to find it and what to do with it once we have found it. We also need to know how to apply the evidence, and where experience and judgement are central to this.

ACTIVITY 2.1

Are you aware of any audits or quality assurance programmes that have been carried out in your area of work?

Do you know who carried them out and why, and, more importantly, what the results were and the implications for practice?

If not, take some time to find this sort of information out and discover where such information is available in your organisation.

What is evidence-based practice?

We have clarified what we mean by evidence, but another commonly used term in today’s health service is evidence-based practice. Other terms you may have heard are evidence-based care, evidence-based medicine and evidence-based nursing. Essentially they are the same, just terminology being applied to the different professions. The fundamental principle is that, as health professionals, we try and use the best evidence for the effective care of individuals, using it with the person’s best interests in mind, to the best of our ability and in such a way that it is clear to others that we are doing it.
What is evidence-based practice?

There are many definitions of evidence-based care, the first of which is a widely accepted definition by Sackett et al. (1996), defining evidence-based medicine as:

*the conscientious, explicit and judicious use of current best practice in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.*

(Sackett et al., 1996: p. 71)

This definition highlights the need to draw on both the professional’s clinical experience and knowledge and the best external evidence, as neither is enough on its own. Clinical practice will become out of date if new evidence is not drawn upon. However, the clinician must be aware of what evidence is appropriate to their practice and this is an issue discussed later in this chapter. This definition does, however, provide some discussion and debate about the fact that although systematic research is considered the best-quality research (see section on ‘The hierarchy of evidence’, p. 24), it is not always available, especially in some areas of healthcare research such as health psychology and mental health nursing. It should also be ensured that patients are involved in decisions about their care.

An alternative definition provided by Muir Gray is:

*an approach to decision making in which the clinician uses the best evidence available, in consultation with the patient, to decide upon the option which suits the patient best.*

(Muir Gray, 1997)

In the current age of clinical governance, healthcare staff must strive to provide the best quality of care. There are many reasons why healthcare professionals need to engage with evidence-based practice and these include:

- The increasingly complex nature of healthcare decisions
- The Department of Health’s directive that services and treatments should be based on the best evidence of what does and does not work (Department of Health, 1997)
- Compliance with codes of professional conduct
- The healthcare professional’s ability to make informed judgements is of importance to patients to assist healthcare professionals in being valued members of the multidisciplinary team.
Chapter 2 What is evidence and evidence-based practice?

It is important that the evidence used is the most up to date and relevant. Research findings may not always be the best source of evidence in some cases, as there are some areas where research has not been carried out. There may be instances where research has been done, but the data are not relevant for your situation; for example, there may have been lots of research done to show that antibiotic A is the best for an ear infection. Unfortunately, your patient is allergic to antibiotic A. The GP decides to try antibiotic B, which he has found to work quite well from his experience, but it does not have the same research backing as antibiotic A. In this situation it is the next best option and is based on evidence from personal experience and from discussions with other healthcare professionals such as the pharmacist.

The overload of evidence – how do we deal with it?

It will not matter where you work in the health service, be it as a student nurse or as a consultant, a pharmacist or a manager, you will suffer the same snowstorm and overload of information from many different sources. The information, when it comes, is usually on a relevant topic (for example, guidelines on breast screening or information on the management of coronary heart disease) and is important, but the problem is that it has to be placed in the context of your own clinical area. Sometimes we need to be selective over what we read and apply a ‘need to know’ principle, owing to the enormous amount of information and the time pressures we have upon us. It is an impossible task to read every article that is published on a certain topic.

To practise evidence-based care we need to be critical and ask questions about the care we are providing and not just take for granted that it is the best way of doing it. We need to discover the reason that things are done in this way and see if the evidence supporting this is valid. So, when we have this overload of evidence, we need to have a systematic approach to dealing with it and a way of searching through it.
How do we search the evidence?

Evidence-based practice can be broken down into five stages.

1. **The question**: this is the recognition that there is a need for new information, and this information need has to be converted into an answerable question.

2. **Finding the evidence**: this is about searching for the right evidence and there are many databases that can be used to search the evidence. These include CINAHL, MEDLINE, Embase or databases within the Cochrane library. The skill lies in which terms or phrases you input into these databases for information. There is much advice available for you to do this, and any academic library in a university or college will have help and advice at hand. There are summaries available of best evidence and one good example of this is ‘Clinical Evidence’, which summarises the evidence for a broad range of conditions. Also, organisations such as NICE and SIGN produce guidelines with the evidence listed that was used to form them. The Journal of Evidence Based Nursing is another example and provides abstracts on the clinical application of research studies. The internet today aids in the efficiency of searching the literature, but you need to be aware of the process that you need to follow, and the librarian at your local hospital trust or college will assist you with this and provide guidance – a good place to start.

3. **Appraisal**: this is where the evidence you have gathered is critically appraised to determine its validity and potential usefulness. The fact that an article or research study has been published does not necessarily mean that it is valid or reliable, or even applicable to your clinical practice. Once you have found the evidence that will hopefully answer your question, the next stage is to critically appraise it to determine whether it is valid. Does the research answer the question it set out to answer, and does it provide answers to the question that you set out to answer? When appraising the evidence, the main questions to ask about the evidence/research are:
Chapter 2 What is evidence and evidence-based practice?

a. Can the evidence or results of the research study be trusted?
   By this I mean have they been formed through an appropriate methodology during the research process?
b. What is the evidence telling you and what does it mean?
c. Does the research/evidence answer your question?
d. Is it all relevant to your clinical practice?

There are many tools that have been developed to help you critically appraise research and evidence, whether qualitative or quantitative methodologies have been used. These include the CASP tools, which can be found at www.phru.nhs.uk/Pages/PHD/resources.htm and tools designed by the University of Salford, which can be found at www.fhsc.salford.ac.uk/hcprdu/critical-appraisal.htm.

4. Acting on evidence: this is where you have decided, following your critical appraisal, that the evidence is of good quality, and you will decide whether it should be incorporated into your clinical practice.

   To help to incorporate this evidence into your clinical practice, you will need to draw upon your own expertise, experience and knowledge of your patient population and clinical area. You need to consider both the benefits and risks of implementing any changes, as well as the benefits and risks of excluding any alternatives. This decision cannot be made on your own. You need to work collaboratively with your patients, in consultation with the rest of the team and your manager. Change can be difficult to achieve if not approached in an appropriate way, and resistance to change can be a big problem. To minimise this you need to involve everyone concerned from the start, to ensure that change is made and sustained.

5. Evaluation and reflection: this is necessary to determine whether the action you have taken has achieved the desired results, and this is a fundamental part of healthcare practice.

   Reflection and reflective practice are now terms which are well established in healthcare practice. Practitioners are encouraged and expected to reflect upon their role and their encounters with patients, their carers and other members of the healthcare team, to enhance their development. In terms of evidence-based practice, key areas to reflect upon are:
How do we search the evidence?

a. that you are asking an appropriate question; that the question you were requiring an answer to was indeed answerable and explicit enough to enable evidence to be collected;
b. that, in terms of finding the evidence, you searched the most appropriate resources and sites available and how easy or difficult the evidence was to find;
c. when it came to appraising and interpreting the evidence, that an appropriate tool was used and that your skills were adequate to enable an effective appraisal of the evidence and literature to be carried out, or is this an area where you need help and development of your own skills;
d. when you had appraised the evidence and came to act upon it in terms of your clinical practice, that you involved others, both within the healthcare team and also the patients and carers, and that the organisation and management was effective. If not, what could have been done differently? If it was implemented, what were the benefits and how are you going to ensure that this changed practice is sustained?

It must be remembered that evidence-based practice is all about questioning what you are doing. It is a continuous process which not only ensures the provision of best-quality care to patients, but also develops you as a healthcare professional, both personally and professionally.

Evidence-based practice is a continual process – once you have worked through one question, more questions develop that need to be answered. The diagram below illustrates this process.
Chapter 2 What is evidence and evidence-based practice?

The hierarchy of evidence

One final area to mention is the hierarchy of evidence. This considers the best quality of evidence. This is graded in a hierarchy and the level of quality needs to be considered when doing a literature search or searching the evidence base. As discussed right at the start of this chapter, evidence comes in many forms and varies in quality. The hierarchy generally accepted is shown in the table below.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Methodology</th>
<th>Example/description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Systematic reviews and meta-analyses</td>
<td>These are review bodies of data, usually from randomised controlled trials, about a subject area. They use specific methodologies and employ statistical methods in their analysis</td>
</tr>
<tr>
<td>2</td>
<td>Randomised controlled trials [RCTs]</td>
<td>Clinical trials, which have a clear methodology, the use of randomisation of study participants and interventions and the use of control groups. They are usually published in peer-reviewed journals</td>
</tr>
<tr>
<td>3</td>
<td>Case-controlled studies and cross-sectional surveys</td>
<td>These are clinical trials without the randomisation used in RCTs. They will be published in peer-reviewed journals</td>
</tr>
<tr>
<td>4</td>
<td>Non-experimental designs, qualitative studies, e.g. cross-sectional surveys and case studies/reports</td>
<td>Non-numerical data are usually elicited from these studies (qualitative studies). They will be published in peer-reviewed journals. Although ranked fourth, they are important sources of evidence and, depending on the research area, are the only sources of data when quantitative studies are not able to be performed</td>
</tr>
<tr>
<td>5</td>
<td>Expert opinion</td>
<td>This includes opinions from well-respected authorities, based on clinical evidence, descriptive studies or reports from committees. They can include NICE guidelines, evidence-based local procedures and care pathways</td>
</tr>
<tr>
<td>6</td>
<td>Views of colleagues or peers</td>
<td>These views come from personal experience, observation and reflection on clinical practice</td>
</tr>
</tbody>
</table>

This is not to say that evidence at level 6 is useless. Many of the large RCTs are formed from personal observations made during clinical practice, and evidence from all levels plays a part in the overall picture. Obviously, however, you would not change your practice based solely on evidence from level 6. Finally, it is important to say
that this hierarchy is not fixed in stone. It is only a generally recog-
nised and accepted hierarchy. There is some debate over the relative positions of systematic reviews and large RCTs. In some people’s eyes, RCTs are regarded as the most objective method of removing bias and producing comparable groups (as discussed in Chapter 1 on qualitative and quantitative research methodologies).

**Conclusion**

With the ever-increasing use of technology, the access to evidence is becoming easier and easier, as long as the healthcare professional has the skills and knowledge on how to search this evidence and evaluate it once they have retrieved it. All healthcare professionals have a professional duty to keep themselves updated and also to share evidence in the multidisciplinary team in which they work, to enable enhancement and continuation of evidence-based practice and the positive outcomes this should have on patient care and the efficient running of our health service.

**Recap and recall**

- There are four distinct sources of evidence in healthcare, these being from research, from clinical or professional experience, from patients and their carers and from the local context in which you practise, such as internal audits, local professional networks and feedback from quality assurance programmes.

- As healthcare professionals we need to draw on all these sources of evidence. We also need to know where to find the evidence and what to do with it once we have found it and then how to apply it to our own practice.

- Evidence-based practice is all about using the best evidence for the effective care of individuals, using it with the person’s best
Chapter 2  What is evidence and evidence-based practice?

interests in mind, to the best of our ability and in such a way that it is clear to others that we are doing it

● In the current climate of clinical governance, healthcare staff must strive to provide the best-quality care that they can, drawing upon the available evidence

● Healthcare professionals need to engage with evidence-based practice owing to the increasing complexity of healthcare, because the Department of Health are dictating that care and services should be based on the best evidence, because we need to comply with codes of conduct and because we need to make informed judgements about the care we give and be part of an effective multidisciplinary care team

● Evidence-based practice does not mean that evidence is used only to change practice – it is also there to support existing practice and guard it against change

● Evidence-based practice can be broken down into five stages: (1) the question; (2) finding the evidence; (3) appraising the evidence; (4) acting on the evidence; and (5) evaluating the process and reflecting upon it. It is a continual process

● A hierarchy of evidence exists, which ranks the types of evidence in terms of quality. This is not set in stone and there is lots of debate about the ranking of some forms of evidence, such as qualitative evidence. It must be remembered that some areas of research cannot use quantitative methods because of their aims and their intended outcomes. A clinical decision should not only be based on the highest ranking forms of evidence but should pull from all sources and ranks.

**Key terms**

**Case-controlled studies**  This method of research involves the comparison of a case (or person with a certain condition) and a person without the condition, but all other characteristics are similar (pair-matched control).
**Key terms**

**CINAHL** This is a database of references to journals and papers dating back to 1982. The subject coverage focuses on nursing and midwifery journals but also includes primary journals for allied health professionals, such as physiotherapy, health education and nutrition.

**Clinical governance** This is a concept in the NHS designed to introduce a systematic approach to the delivery of high-quality healthcare.

**Cochrane library** An online database of high-quality evidence to inform healthcare decision-making. Includes evidence from meta-analyses and systematic reviews. These are recognised as the gold standard in evidence-based healthcare.

**Critical appraisal** A careful and thorough appraisal and review of strengths and weaknesses of a piece of research.

**Meta-analysis** A statistical technique for combining the findings of two or more clinical trials. It is used to assess the effectiveness of healthcare interventions.

**NICE** National Institute for Health and Clinical Excellence: this is part of the NHS. Its role is to provide patients, healthcare staff and the public with authoritative, robust and reliable guidance on current best practice.

**Non-experimental studies** Research in which data is collected without introducing any treatments or changes, i.e. the participants are being observed or are asked questions.

**Peer-reviewed journals** These journals are viewed as more authoritative and of higher academic quality than journals that have not been peer-reviewed. The journal articles have been reviewed by experts within the field prior to publication.

**Randomised controlled trial (RCT)** A form of experimental design where the study participants are randomly allocated into two groups, the experimental group and the control group. The experimental group receives the intervention or treatment that is being tested, whilst the control group receives an alternative or placebo. The outcomes of the two groups are compared and analysed using statistical methods to see the effect of the intervention.

**SIGN** Scottish Intercollegiate Guidelines Network. Develops evidence in the same way as NICE, for the NHS in Scotland.
Chapter 2 What is evidence and evidence-based practice?

**Systematic review** A method of summarising research evidence. All published and unpublished studies in a particular area are assessed for their scientific rigour and the findings are summarised in an unbiased and balanced manner.

**Post-test**

You might like to test your knowledge and understanding with these questions. You will find the correct answers at the end of the book.

1. What is evidence? What are some of the sources of evidence?
2. Define evidence-based practice.
3. What are the five stages of evidence-based practice?
4. Name two useful online databases that can be used to search the evidence.
5. What do you need to reflect upon in terms of evidence-based practice?
6. What is ranked first in the hierarchy of evidence?
7. What is ranked last in the hierarchy of evidence?

**References and further reading**


Websites


Websites

Department of Health Clinical Governance site  
www.doh.gov.uk/clinicalgovernance

Clinical evidence  
www.clinicalevidence.com/ceweb/about/index.jsp6Feb2006

National Library for Health (NLH)  
www.library.nhs.uk

Centre for evidence-based nursing  
www.york.ac.uk/healthsciences/centres/evidence/cebn.htm

Cochrane collaboration  
www.cochrane.org/index0.htm
Chapter 2  What is evidence and evidence-based practice?

National Institute for Health and Clinical Excellence (NICE)
www.nice.org.uk

Critical Appraisal Skills Programme (CASP)
www.phru.nhs.uk/Pages/PHD/resources.htm

Centre for evidence-based medicine
www.cebm.net/index.aspx?o=1157

University of Salford, critical appraisal tools
http://fhsc.salford.ac.uk/hcprdu/critical-appraisal.htm