



How to literature search

Evidence based practice – the learning cycle

Our ultimate aim is to help you, as a health professional, to make good clinical decisions. This will enable you to give the best possible care to patients. Your clinical decisions will be based on a combination of your prior clinical expertise and knowledge, your patients' values and circumstances, and best research evidence.

We will provide you with evidence based clinical information. However, it is impossible to provide you with all the clinical knowledge you may need in the future. One reason for this is that medical and nursing knowledge is continually being updated. We therefore encourage you to identify your own learning needs, and seek out information to address them.

Learning is a continuous process in which you:

- Identify clinical questions (ask)
- Answer these questions
- Make clinical decisions
- Evaluate the outcome of clinical decisions.

This cycle applies to your clinical practice and to your academic work. In clinical practice you may need to answer a clinical question quickly about which you are uncertain. In your academic work you will need to investigate a clinical question in more depth, possibly as part of a case study. This section aims to provide you with guidance in both of these contexts.

Reflect on clinical knowledge and learning needs

It is important that you are able to reflect on your own knowledge and learning needs, identifying clinical questions for which you do not know the answer.

Identify the question

The next step is to identify the question you want the answer to, i.e. your clinical question. In clinical practice it could be a question such as 'does control of glucose levels affect long term outcomes in patients with diabetes?' This type of question may be entered into Google or Google Scholar to get a preliminary quick answer. However, a properly formulated question is easier to answer than a more general question and will provide the keywords for your literature search. It is important to divide the question into 'who', 'what' and 'how':

- Who is the patient (e.g. is 'with diabetes' sufficient)?
- What is the intervention (e.g. is 'control of glucose levels' sufficient)?
- How will the effect of the intervention be measured (e.g. is 'long term outcomes' sufficient)?

A better clinical question might be 'In a person recently diagnosed with diabetes, does tight control of blood glucose influence long term outcomes such as mortality?'

In some contexts (e.g. in a clinical consultation) it might be quicker to simply identify the key words. In the above case these might be 'diabetes', 'control', 'glucose', 'mortality'.

Find evidence

Research evidence underpinning clinical practice is continuously being updated. This research evidence can be obtained from a number of sources; some of which are listed below. If you are writing an academic piece of work you will need to access journal articles.

Journals

Journals contain primary and secondary research:

- Primary research reports the study first hand (e.g. clinical trials and surveys)
- Secondary research summarises and draws conclusions from primary research (e.g. systematic reviews)
- Different research questions require different study designs. However, systematic reviews are given the most weight in the majority of cases.

Searching journals using the internet

You can search by using bibliographic databases. The content of the databases overlap; it is therefore advisable to search more than one database if you are conducting a full

search on the literature. You can find tutorials to learn how to search these databases by entering 'tutorial', and the name of the database which you want to search, into the search facility of a search engine such as Google www.google.co.uk.

The following databases can be accessed via the National Library for Health

<http://www.library.nhs.uk>:

- Medline
- Cinahl
- Psycinfo
- Embase
- AMED (Allied and Complementary Medicine)
- British Nursing Index and DH-Data
- King's Fund.

Google scholar provides a database of research articles. Their site gives the following description of this service:

"From one place, you can search across many disciplines and sources: peer-reviewed papers, theses, books, abstracts and articles, from academic publishers, professional societies, preprint repositories, universities and other scholarly organizations".

<http://scholar.google.com/>

Partner organisations of the Open University can access guidance on searching for, and managing, information by going to: **<http://library.open.ac.uk/libpartnerships/>**

This site also provides a link to the Directory of Open Access Journals, and other resources.

Obtaining the full-text article

In many case the database will not provide full text articles free of charge. Reading the abstract will enable you to decide if the research article is relevant. However, you cannot assess the quality of the research by the abstract alone. You should therefore try to obtain the full-text article. There are several ways you might try to obtain full-text articles free of charge:

The Athens Access Management System (AMS)

Several websites, including the National Library for Health provide full-text articles if an Athens number is entered on the website. AMS is a service, available to students and academic staff in UK higher education, which gives access to certain web-based subscription services, such as electronic journals. You may be able to get an Athens password either as an individual or if you belong to an organisation which has an organisational access. Some NHS sites already use Athens, so you may already have an account. Your local NHS librarian will be able to advise you. Alternatively, check the Athens organisation list (on the Athens website) to contact your Athens administrator or to find out if your organisation uses Athens.

<http://www.athensams.net/myathens/>

Membership of Professional Bodies and Associations

This may give you access to journals, for example Clinical and Experimental Allergy is available free to members of the British Society for Allergy and Clinical Immunology.

Members of the RCN can access articles through their library www.rcn.org.uk/library

All nurses working in primary care practices and related organisations in the UK can register free of charge to receive The British Journal of Primary Care Nursing. The cardiovascular and diabetes edition comes out bi-monthly. The registration form is available on www.bjpcn.co.uk.

Pharmaceutical companies

Most pharmaceutical companies have a medical information department and are usually willing to supply references and articles on their products if you are finding it difficult to access this information elsewhere.

Health Library

If you are a nurse working in a hospital setting you should be able to use the medical library in the hospital where you work. Your library will subscribe to a number of medical and nursing journals. A list of these journals will be available from the library, and may also be available on the internet (a good example is Hillingdon Hospital):

http://www.thh.nhs.uk/Departments/library_journals.htm.

These may include:

- British Medical Journal (BMJ)
- Lancet
- New England Journal of Medicine (NEJM)

In addition, they may subscribe to more specialist journals:

- Thorax
- Respiratory Medicine
- European Heart Journal
- Heart.

Most hospital librarians are extremely helpful and most libraries have access to medical databases on CD-ROM or Internet. The librarians are usually willing to show you how to use their computer system if you are not familiar with it. Given time, they will look things up for you in PubMed (www.pubmedcentral.nih.gov), the Index Medicus or on their computer systems. You may also want to look up nursing journals in CINAHL (Cumulative Index to Nursing and Allied Health Literature).

If it is not easy for you to visit a hospital library, it may be worth making enquiries by phone to find out what journals they receive and whether there is a more convenient source. County libraries may have reciprocal arrangements with other libraries that take relevant journals. Some libraries charge for access to their medical libraries. You therefore need to make the necessary arrangements in good time.

If you work in general practice, your practice, or individual doctors within your practice, may subscribe to journals such as the British Medical Journal (BMJ), Lancet or the British Journal of General Practice (BJGP). These are a good source for papers on long term conditions. Useful nursing journals include Nursing Times, Nursing Standard, Practice Nurse, Practice Nursing, Professional Nurse and the British Journal of Community Nursing.

The British Library

Your local council library or health library can usually order research articles from the British Library for a small charge. However these may take several weeks to be delivered. You can access documents directly from the British Library within certain limits - visit www.bl.uk to find out the details.

Pay per view

Articles are available immediately from: www.elsevier.com, www.sciencedirect.com or www.blackwellpublishing.com. These sites can be searched free of charge. You then pay to download the relevant paper.

Searching evidence-based resources

Although we advise you to develop your skill at reading research papers, there may be occasions when you do not have the time to read research articles, for example during a clinical consultation. In this case it might be more appropriate to search **reviews of effectiveness, guidelines, evidence overviews or search gateways to effectiveness resources**. Further information on each of these is given below. You may like to familiarise yourself with these sites so that you feel confident to use a few of them in a clinical context when areas of uncertainty arise.

Reviews of effectiveness

A systematic review is a:

“Review in which literature from multiple sources is systematically searched for, assessed and evaluated to answer clearly formulated questions.”

- The Cochrane Library contains Cochrane reviews and the Database of Abstracts of Reviews of Effects (DARE). These are freely available via the National electronic Library for Health <http://www.library.nhs.uk/>
- Systematic reviews can also be obtained via the Centre for Reviews and Dissemination Database <http://www.york.ac.uk/inst/crdweb/>

Guidelines

Clinical practice guidelines have been defined as:

“systematically developed statements to assist practitioners and patient decisions about appropriate health care for specific circumstances”.

<http://www.openclinical.org/guidelines.html> [Accessed 9 July 2008]

- National Institute for Health and Clinical Excellence (NICE) is an independent organisation responsible for providing national guidance on promoting good health and preventing and treating ill health. www.nice.org.uk

- The Guidelines Finder provides an index to clinical guidelines and currently holds details of over 1500 UK national guidelines with links to Internet downloadable versions of the guidelines. It is updated on a weekly basis.

<http://library.nhs.uk/GuidelinesFinder/>

- The Scottish Intercollegiate Guidelines Network is responsible for development and dissemination of national clinical guidelines containing recommendations for effective practice based on current evidence. **www.sign.ac.uk/**

Evidence Overviews

Evidence overviews summarise the results of research evidence. This will include, but is not restricted to, systematic reviews of randomised controlled trials:

- Bandolier is a monthly independent journal about evidence-based healthcare **www.jr2.ox.ac.uk/bandolier/** The editors write that the *“impetus behind Bandolier was to find information about evidence of effectiveness (or lack of it), and put the results forward as simple bullet points of those things that worked and those that did not: a bandolier with bullets. Information comes from systematic reviews, meta-analyses, randomised trials, and from high quality observational studies”*
- Clinical Evidence provides a regularly updated guide to evidence about the effectiveness of care **<http://www.clinicalevidence.com/>**. They promote informed decision making by summarising what's known, and not known, about more than 200 medical conditions and over 2000 treatments
- The Health Evidence Bulletins Wales act as signposts to the best evidence across a broad range of evidence types and subject areas **<http://hebw.cf.ac.uk/>**
- Evidence-Based Medicine surveys a wide range of international primary care medical journals applying strict criteria for the quality and validity of research. Practising clinicians assess the clinical relevance of the best studies. The key details of these essential studies are presented in a succinct, informative abstract with an expert commentary on its clinical application.

<http://ebm.bmjournals.com/>

Gateways and indexes to effectiveness resources

- National Library for Health **<http://www.library.nhs.uk/>**
- Turning Research into Practice (TRIP) **<http://www.tripdatabase.com/index.html>**. You will need an Athens password to use this resource

- **ATTRACT** This provides clinicians with evidence-based answers to clinical questions. Previous questions and answers are freely available on the website. <http://www.attract.wales.nhs.uk/>

Critical appraisal: judging the quality of research articles

When reading a research paper (both primary research and systematic reviews) you should judge the quality of the research before incorporating the findings into your clinical practice. This ensures that only 'best research evidence' changes your practice.

Medical and nursing research papers have two main types of audiences: health professionals and researchers. The information that these two types of audiences need in a research paper may differ slightly. Health professionals need enough detail to judge the quality of the research and whether the research can be applied to their patients. However, researchers need to know exactly how the study was conducted. This is to enable them to reproduce the study, thereby validating the findings by more than one scientist.

Research papers may therefore use research terms in order to enable other researchers to reproduce the study. However, even if you do not understand all of these terms it should be possible for you to form a judgement about the quality of a piece of research and whether it should change your clinical practice. This will quickly become easier as you become more familiar with reading research papers.

Education for Health also runs a one-day short course on **Reading and Understanding Research Papers**. You can find details by going onto our website, or email the student support service.

You will find that papers are divided into the following parts:

- **Abstract:** This is a summary of the aims, methods and main findings of the research
- **Introduction:** This explains the background to the research, why it is needed and what it aims to find out
- **Methods:** Gives details of how the work was done, including how the data was analysed

- Results: Shows all the findings, together with graphs and tables, but with no commentary on them
- Discussion: Interprets the results
- Conclusion: Describes whether, in the author's opinion, the aims of the study have or have not been met.

Resist the temptation to read only the discussion and conclusions. As a student you need to be able to judge the quality of the research and interpret such papers, not simply to accept the conclusions without question. Therefore, look particularly closely at the methods section. Try to spot any flaws which could affect the validity (soundness) of the results. By asking commonsense questions about the research design you will be able to critically assess the paper.

Examples of the types of questions you could ask are:

- Is the size of the sample large enough to generalise the findings to other similar patients?
- Did the study use patients similar to the one you are interested in?
- Did the design of the study bias the results? For example, in a clinical trial were all the patients receiving the intervention, such as a drug, far younger than patients taking the placebo?

We strongly recommend Trisha Greenhalgh's series of papers in the British Medical Journal (BMJ) on 'How to read a paper'. These are freely available at <http://bmj.bmjournals.com/> by typing 'Greenhalgh' into the search facility as the author, and 'paper' as the keyword. Trisha Greenhalgh has also written a book on this subject:

Greenhalgh T. (2006) *How to read a paper: the basics of evidence-based medicine*. Blackwell Publishing, London.