Finding the Evidence

A key step in the information production process

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Introduction

Evidence-based practice is the "integration of best research evidence with clinical expertise and patient values." It means that when health professionals make a treatment decision with their patient, they base it on their clinical expertise, the preferences of the patient, and the best available evidence. We apply the same principles when we choose a new car, a restaurant at which to dine, or film to watch at the cinema. To find out whether they are good or not, we read restaurant reviews, watch specialist car programmes, ask friends, and refer to past experience.

Sir Muir Gray, Chief Knowledge Officer of the NHS, coined the phrase, "knowledge is the enemy of disease", meaning the more we know about a condition, the more we can overcome it.

In health care, there are three types of knowledge:
- knowledge derived from research, sometimes called evidence;
- knowledge derived from audit and routinely collected data, sometimes called statistics;
- knowledge derived from the experience of patients/service users and professionals.

All of these types of knowledge may be used in the development of information but this guidance focuses on evidence - knowledge derived from research, focusing on an approach to evidence which aims to ensure information:
1. is balanced and reduces bias
2. acknowledges uncertainty
3. is produced using an explicit process for deriving evidence, including reference to the strategy, search and review dates of the source material
4. uses consistent language
5. is impartial

Health and care information products should be based on the best available knowledge, but there is a wide range of relevant information sources in the form of databases, clinical search engines, professional organisations, patient support groups, networks, libraries, etc, all containing varying levels of evidence. These resources can provide access to research, such as systematic reviews and randomised controlled trials from journal articles, books, conference proceedings, reports, etc. Many sources will be reliable, but others may contain poorer quality information. Some sources may contain both good and poor quality research.

Finding the best evidence requires knowledge of the best quality, most appropriate sources, and how to use them. This guide aims to familiarise information producers with the different health and care information sources available, and talks through the process of searching them effectively, and then appraising the results to make sure they are good quality.

Applying knowledge to the information production process

Ideally, all good-quality information about health and care interventions will accurately reflect the most up-to-date scientific evidence. When dealing with the effectiveness of treatments, systematic reviews of randomised controlled trials (RCTs) provide the most reliable source of evidence. Randomised controlled trials and double blind trials use research methods aimed at reducing bias, and are considered the most reliable form of primary research in the field of health interventions.

However, in practice there are many situations where relevant research studies have not yet been done. When this is the case, it will be appropriate to base your information on the best available evidence, or on the experience and expertise of health and care professionals, or the personal experiences of patients or service users – this is perfectly valid approach so long as you clearly acknowledge this.

1. Balance and reducing bias

There are often contradictions in collected evidence on any subject. You should try not to select sources that promote only a single view (selection bias). Instead, you should try to reflect the balance and quality of the evidence.

To help you to select source materials that give balanced information, you should use a reputable source of summarised evidence, for example, the following, which are all freely available:

• NICE Evidence Search, which publishes Evidence Updates containing the best available evidence on the major health conditions, based on systematic and comprehensive searching of the research evidence. NICE Evidence Search also provides access to guidelines, Cochrane systematic reviews, Clinical Knowledge Summaries, health technology assessments, and care pathways.
• TRIP Database, which provides access to evidence synopses, guidelines, Cochrane systematic reviews, health technology assessment reports, randomised controlled trials, and case reports.
• Cochrane Library, which contains high quality systematic reviews.
• Campbell Collaboration, which produces systematic reviews on social welfare.

Clinical databases, such as Medline, Embase, and CINAHL, are only available via subscription, although Medline content is freely available via PubMed (http://www.pubmed.gov). It is important to remember that most of the content on these databases will not have been appraised, and there may still be issues with bias and quality, so it is important to critically appraise material found on these databases. More information on critical appraisal is available further on in this guide.

2. Acknowledging uncertainty

The source of evidence on health and care interventions in which errors or bias are least common is called the systematic review. If there is no systematic review on your topic, uncertainty exists. This uncertainty may be recorded in the Database of Uncertainties about the Effects of Treatments (DUETs) – this is a database of questions that patients and clinicians have asked, for which no systematic review can be found. Known uncertainties should be referred to in your information product.

In many instances systematic reviews are not available. In these cases health and care information can be based on any research reports that can be identified, (for example reports of single randomised controlled trials). Again, the information should be clear about the quality of the evidence used in its development. It is also appropriate to inform information users about research in progress. This allows the information user to see that there is uncertainty in the research community and may even offer the patient the practical option of enrolling in a relevant clinical trial, depending upon its location and the patient's place of residence.

3. An explicit process for deriving evidence

As a provider, you should demonstrate that your information product has been produced according to an explicit evidence-based process. This should include:
• formulating key questions that need answering
• identifying the types of research that would best answer your questions e.g. randomised controlled trial
• harm studies, patient experience, clinical expertise etc
• identifying the key sources of evidence to search
• devising search strategies for each source of evidence

1. Sackett David et al. Evidence Based Medicine: How to Practice and Teach EBM. Churchill Livingstone: Edinburgh, 2000

- recording details of the search terms used to search each source of evidence, along with the dates covered
- outlining the inclusion and exclusion criteria for selecting evidence from your searches
- appraising the evidence selected

A comprehensive explanation to finding the evidence is available further on in this guide.

Refer to all source material used

Information users should be able to see where you got your evidence from, and if there is good evidence to support it. While in some cases it might be appropriate to provide a full list of references within your information product, in many cases it will not be possible to do so (e.g. if there are many tens of citations, you may not have room to list them all). However, you must be able to respond to a request from a member of the public for the sources of your information. You should make information users aware of how they can obtain more details about the sources used. Maintain an archive of information sources against each information product that people can ask to inspect, and providing a phone number, email address or website within your information product, where further details of the sources used can be obtained.

When using evidence in patient information products, you must not take quotations out of context – use them in the sense they were intended, and remember to clearly reference any quotations that you include.

Publication and review dates

Each information product should clearly display:
- the last reviewed date – at a minimum, but could also display the publication date and the next review due date. Implement a process to ensure you record the publication and review dates for each information product in your archive, and ensure that information products are reviewed by their review due date – this should include sufficient time to conduct new searches, analyse any new evidence and update the product accordingly.

4. Using consistent language

It may not be practical or desirable to provide all references within your information product but you should reflect the weight of the evidence supporting the information. For example, you can use much more assertive language when information is based on quality systematic reviews of numerous RCTs than you can when it uses a limited number of surveys with small sample sizes. While it is not possible to give definitive guidance in this area, examples are given in the associated notes.

5. Impartiality

The possibility of a commercial or other conflict of interest cannot be ruled out. For example, you may provide information about your own products or services. The public should be in a position to decide how far this may influence the information you present.

You should make clear any conflict of interest when you supply the information, including if funding has been provided by a commercial source, so that the public can clearly see who has been involved in the production of the information. If there is independent evidence from a trusted source, you should disclose it. If there are alternative views, you should disclose these also.

Finding the evidence: an introduction

This part of the guide is all about how to find the evidence to inform patient information products. It goes through each step of the process:

• Asking answerable questions
• Identifying synonyms and building search strategies
• Identifying appropriate information sources
• Searching for evidence
• Appraising results

Asking answerable questions

Usually, typing the full question into the search engine or database will rarely retrieve anything, and there is a risk that you will miss out key papers by not using all the possible terms that might be relevant. So, initially, when you start the searching process, the first thing to do is to identify all the key concepts.

A useful framework is PICO (Patient/Problem/Population, Intervention, Comparison, Outcome). This helps you think about the key terms that you need to look for. For example:

*A middle-aged man who regularly travels overseas on business is concerned about the risk of **deep vein thrombosis**. He has read that **compression stockings** or **exercise** are effective in **preventing blood clots** (DVT), and would like to find more information about which method is most effective.*

Patient/Problem/Population	Intervention/Exposure	Comparison	Outcome
Deep vein thrombosis Deep vein thromboses Venous thrombosis Venous thromboses DVT Economy class syndrome	Compression stockings Compression bandages Ted stockings	Exercise	Blood clot prevention

This method can help you really focus your search. You may not always need to fill in each column, but just breaking down the question and identifying your concepts will make a positive difference to the results you retrieve.

Part of the searching process is to think about the level of evidence/study type you are looking for. The pyramid below (Diagram 1) shows the different types of studies available, with the highest quality evidence at the top of the pyramid, and the evidence types that require more quality assessment at the lower end of the pyramid. This does not mean that evidence types at the base of the pyramid cannot be used. Sometimes, this is the only evidence available.

Diagram 1 - Evidence Types

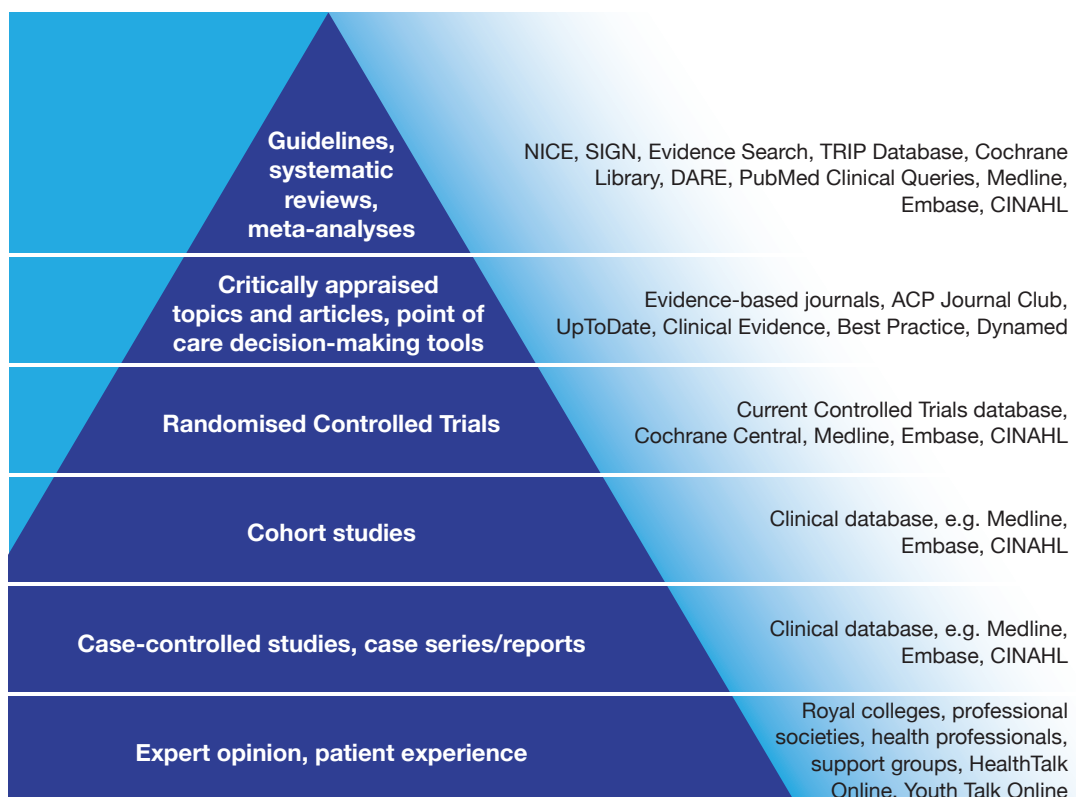| Evidence Type	Source
Guidelines, systematic reviews, meta-analyses	NICE, SIGN, Evidence Search, TRIP Database, Cochrane Library, DARE, PubMed Clinical Queries, Medline, Embase, CINAHL
Critically appraised topics and articles, point of care decision-making tools	Evidence-based journals, ACP Journal Club, UpToDate, Clinical Evidence, Best Practice, Dynamed
Randomised Controlled Trials	Current Controlled Trials database, Cochrane Central, Medline, Embase, CINAHL
Cohort studies	Clinical database, e.g. Medline, Embase, CINAHL
Case-controlled studies, case series/reports	Clinical database, e.g. Medline, Embase, CINAHL
Expert opinion, patient experience	Royal colleges, professional societies, health professionals, support groups, HealthTalk Online, Youth Talk Online

Diagram adapted from: DiCenso A, Bayley L, Haynes RB. (2009) Accessing pre-appraised evidence: fine-tuning the 5S model into a 6S model. Evidence-Based Nursing, 12(4):99-101

Identify synonyms and build search strategy

Now you have a list of the key concepts, you need to think of all the variations for each of those terms, for example, the Problem might be deep vein thrombosis. This is also known as DVT, venous thrombosis, even economy class syndrome. If you just search for deep vein thrombosis, you might miss out on some key research papers. Once you have all the relevant columns populated with the key concepts and related terms, then it is time to combine them. Within each column, you combine all the terms using the Boolean operator OR. Then, when those have all been combined, you combine all the columns with the Boolean operator AND. For example:

Patient/Problem/Population	Intervention/Exposure	Comparison	Outcome
Deep vein thrombosis `OR` Deep vein thromboses `OR` Venous thrombosis `OR` Venous thromboses `OR` DVT `OR` Economy class syndrome `AND`	Compression stockings `OR` Compression bandages `OR` Ted stockings `OR` `AND`	Exercise `AND`	Blood clot prevention

Identify appropriate information sources

When searching for high quality health information, it is important to use the right information source, so it is necessary to know what type of question you are asking. For example, are you looking for papers on diagnosis, treatment, prognosis, or harm? Another question is what type of study are you looking for, for example, guidelines, systematic reviews, randomised controlled trials, cohort studies. The following paragraphs describe some of the key information sources available for health and care:

Health information portals

NICE Evidence Search (http://www.evidence.nhs.uk), produced by the National Institute for Health and Clinical Excellence, and the TRIP Database are both filtered search engines. They both have simple functionality like Google, but only retrieve high quality health information. NICE Evidence Search was formerly known as NHS Evidence, and before that, National Library for Health Specialist Collections. NICE has expanded its remit to include social care, and NICE Evidence Search includes content from Social Care Online. It lets you sort by publication/study type, publisher, question type, etc. it also has Topic Pages on a large number of topics, so that you can find the guidelines, patient information, uncertainties, and drug information in one place. The TRIP Database organises results by level of evidence, so it is easy to just go straight to UK guidelines or other study types.

Clinical databases

The Cochrane Library (http://www.thecochranelibrary.com/) contains the highest quality systematic reviews, but only for a limited number of clinical topic areas. The Cochrane Collaboration is made up of 53 topic groups, so not all clinical topics are covered. You can see a list of the groups by going to this site.

To find other systematic reviews, you need to search at least PubMed/Medline and Embase. PubMed (http://www.ncbi.nlm.nih.gov/pubmed/) is the free version of Medline, produced by the National Library of Medicine in America. In 1997, Vice President Al Gore announced that everyone should have access to good quality health information and so made the content of Medline freely available via PubMed. However, it is not all-inclusive, and therefore, it is necessary to search Embase, which contains abstracts from European and Asian journals. While there is some overlap with Medline, Embase has many unique records, and it is also an excellent source for research on drug therapies.

Depending on the type of information that you are looking for, there are other databases to be aware of:
- CINAHL (Cumulative Index of Nursing and Allied Health Information) contains details of research from journals related to nursing and allied health. It also contains research related to health management and patient information.
- PsycInfo contains abstracts of research from journals related to mental health and psychology.
- The Campbell Collaboration is the social care version of the Cochrane Collaboration and contains systematic reviews about social care interventions.

Knowing which information source to use can be complicated, but the table below (Diagram 2) summarises which sources to start with, gradually moving down through the different levels of evidence. Ideally, you would use the filtered search engines to find guidelines upon which to base your information product, but if not, then you would move down to search for secondary research such as systematic reviews, using databases and search filters. If you still don't find anything, then you will need to search the databases for primary research which would then need to be critically appraised. Finally, you would search for expert opinion via professional societies, patient support groups, and Royal Colleges.

Diagram 2 - Levels of Evidence

Filtered Search Engines
Clinical search engines, that have been filtered so that only high quality health research is retrieved, for example NICE Evidence Search and TRIP Database, both of which search a range of evidence-based resources.

Guidelines
Guidelines sourced from the UK, where available, such as National Institute for Health and Care Excellence, Scottish Intercollegiate Guidelines Network, or Royal Colleges and professional organisations, or from overseas.

Secondary Research
Systematic reviews and meta-analysis of all primary research surrounding a topic, for example, Cochrane Library, DARE, and evidence based journals, such as Evidence-Based Medicine, and ACP Journal Club.

Clinical Queries
These are special filters, available via PubMed and in the limits of other healthcare databases, which identify evidence to support therapy, diagnosis, etiology and prognosis.

Health Care Databases
These can be used for advanced searching, using free-text and Medical Subject Headings. Examples of databases are PubMed/Medline, AMED, BNI, CINAHL, Embase - (Username & password required for some).

Organisation Home Pages
Patient support groups, Royal Colleges, professional organisations, academy institutions, NHS organisations homepages.

The next section will describe ways to help you search health care databases more effectively.

Search for evidence

There are two ways to search for your key concepts:

Free text search

A free text search will only look for the term, exactly as it is written, with no variations in terminology or spelling, so it is important to make a comprehensive list of all the synonyms so that you do not miss out on any important research. Free text is also known as natural language. There are a couple of useful shortcuts when carrying out a free text search, and these are:

• Truncation - by taking the stem of a word and adding (depending on the database) an asterisk (*) or dollar sign ($) at the end in place of prospective endings. For example, cancer* or cancer$

will retrieve papers on cancer, cancers, and cancerous. Check the Help pages on the resource you are using to see what symbols they use for truncation.

- **Wildcards** - this is a question mark that can replace a letter. It is useful for hyphens, plurals, or spelling variations, such as American English and British English. For example, pre?operative will look for pre-operative, pre operative, or preoperative; wom?n will look for woman or women, and behavio?r will look for behaviour or behavior.

Subject heading search

Subject headings are also known as index terms, controlled language, thesaurus, MeSH (Medical Subject Headings). Whenever an abstract of a research paper is added to a database, it is assigned a set of subject headings collected in an index, as part of the database. This index is the database thesaurus, so, when you search the database, you can tick the option to map the search term to the thesaurus or index. The benefits of using subject headings is that if you search for deep vein thrombosis, the database will map to Venous Thromboembolism and will find papers that are specifically about venous thromboembolism, deep vein thrombosis, venous thrombosis, DVT, and other related terms.

It is important to note, however, that when the abstract is first added to the database, it can take a few months for Index terms to be assigned. Therefore, to retrieve the latest research, it is important to carry out a search which includes all the free text variations and the Index terms.

So, you have gathered all your terms under their PICO headings, and you know which Boolean Operators you are going to combine them with. You start searching the database for each term under the "P" column, for example. Search one term at a time, searching for the Subject heading first and then the free text for each. If you type in the terms all together and you retrieve no results, then you will have to go back and type them all in again. If you search for them one-by-one, and at the end of the search, you have no results, you can then play around with the combinations to see if you are using an irrelevant term or inappropriate combination.

When you have searched for all the terms under "P", both Subject headings and free text, and you have combined them all with "OR", then you can do the same thing with as many of the other columns as necessary. You may find that you are only interested in the first two concepts although, remember, the more concepts you draw from your scenario, the more relevant the search. On the other hand, if you have too many concepts, you may end up with too few results and miss out on key papers. This is why it is useful to search for each term one at a time, because this gives you more flexibility, as you can try different combinations until you find the results which best answer your scenario.

Once you have searched all the individual columns, you can then combine the results of each, using "AND", so that you find papers containing all of your search concepts.

The following is an example of the final search strategy, carried out on Medline, using truncation and Boolean Operators:

Search History (14 searches) (close)			
	# ▲	Searches	Results
☐	1	exp Venous Thrombosis/	44380
☐	2	deep vein thrombosS.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]	11056
☐	3	venous thrombos*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]	32109
☐	4	DVT.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]	6558
☐	5	economy class syndrome.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]	74
☐	6	1 or 2 or 3 or 4 or 5	57921
☐	7	exp Stockings, Compression/	920
☐	8	exp Compression Bandages/	1169
☐	9	ted stockings.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]	28
☐	10	7 or 8 or 9	1192
☐	11	exp Exercise/	111465
☐	12	exercise*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]	253115
☐	13	11 or 12	284616
☐	14	6 and 10 and 13	23

Appraise results

Once the relevant results have been retrieved, they will need to be critically appraised to make sure they are accurate and reliable. This is an important part of the production process and should be carried out by the author(s) of the information product, as they have the clinical expertise to judge what is right. Medical library staff can also help with this stage. Biomedical journals are demanding a higher standard of reporting from researchers nowadays. However, there is still a need to critically appraise content to make sure that the research is robust, has been correctly reported, and can be replicated by other researchers. Particularly with drug-related research, it is important to check that all the relevant experiment results are included in the final paper, so that the data reported can be seen to be accurate and reliable.

Silberg[2] presents some basic principles for critical appraisal, and they are:

Check whether it is relevant and reliable using Silberg's 4 standards:

1. Authorship - who wrote the content and what are their credentials? Are they qualified to provide this information?
2. Attribution - is it clear how the information was generated, e.g. is it referenced?
3. Disclosure - is the website sponsored by anyone who might have a commercial gain? When did they write it? Who did they write it for?
4. Currency - is there a date to indicate age of the content?

This is a very basic approach to evaluating the quality of information. More in-depth guidance, tools and critical appraisal checklists, are available from the Critical Appraisal Skills Programme (http://www.casp-uk.net/) and the Centre for Evidence Based Medicine (http://www.cebm.net/) websites.

Keeping up-to-date

Particularly in the public sector, there are often changes to organisations and the information products and services they develop. It is important to keep up-to-date with these changes so that you know which sources should be used in the production of good quality patient information. This is one way to find out more about information sources in the NHS:

NICE Evidence Search mailing list

This is a monthly mailing list which keeps you up-to-date with latest additions to the NHS Core Content, which is the name given to the collection purchased by the NHS to ensure its staff has access to the best evidence. The mailing list also informs you when the latest Evidence Update has been published on a particular topic. Evidence Updates are regular evidence-based updates of existing guidelines on a range of clinical topics. They are a good starting point if you are looking for the latest evidence on the management of a particular topic, for example, depression. You can register for the newsletter and access the Evidence Updates at http://www.evidence.nhs.uk

Further reading

This is a brief list of resources where you can find more information about the topics covered in this handout.

Principles of evidence based medicine
Akobeng AK. (2005) Archives of Diseases in Childhood. 90: 837-840
http://adc.bmj.com/content/90/8/837.full.pdf+html
This is a series of papers which look at the principles of evidence-based medicine, including search skills, and how to critically appraise papers, in particular, systematic reviews and randomised controlled trials.

What is critical appraisal?
Burls A. (2009)
http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/What_is_critical_appraisal.pdf
This is a short overview explaining what critical appraisal is, describing the different question types, and how to interpret the results of papers.

2. Silberg WM, Lundberg GD, Musacchio RA. (1997). Assessing, controlling, and assuring the quality of medical information on the Internet: Caveant lector et viewor - Let the reader and viewer beware. Journal of the American Medical Association, 1997, 277(15):1244-5

How to read a paper

Greenhalgh T. (1997) British Medical Journal.
http://www.bmj.com/about-bmj/resources-readers/publications/how-read-paper
http://www.amazon.co.uk/How-Read-Paper-Evidence-Based-Medicine/dp/1405139765
This book, which has also been serialised in the British Medical Journal, has been written by a medical professional. It goes through each stage of how to read and understand the content of a research article.

Toolkit series

http://www.toolkitbookseries.com/
This is a collection of books, which have been created by researchers and librarians to support health professionals as they apply evidence to their clinical practice. There are currently four titles in the series:
- Evidence Based Medicine Toolkit 2nd ed.
- Statistics Toolkit
- Searching Skills Toolkit (2nd edition due early 2014)
- Patient and Public Involvement Toolkit
- Diagnostic Tests Toolkit 2nd ed.

Glossary

Abstract

This is a short, often word-limited to about 100-150 words, structured or unstructured summary of the paper. The abstract appears in healthcare databases and at the start of a published paper.

And

This is a Boolean operator which combines all the search terms so that only papers that contain all the terms will be retrieved, e.g. venous thrombosis and compression stockings.

Boolean operators

Boolean operators are words which facilitate the combination of search terms, allowing the search to be limited or widened.

Broader term

This is the opposite of narrowing a search, and means that you might get more irrelevant results, but you are also less likely to miss out on relevant research.

Citation

This provides all the information that is needed to find the research paper when the full text is not available online. A citation is made up of title of the paper, author(s), source (e.g. journal title, date, volume, part/issue number, page numbers).

Combining

This activity helps to build an effective search strategy because it joins the terms together, using Boolean operators, so that relevant results are retrieved.

Controlled vocabulary

This is also known as MeSH, Medical Subject Headings, index terms, keywords, and they are a few words which identify the content of the research and are added to the thesaurus or index.

Critical appraisal

Systematic assessment of the methods that have been applied to carry out the research, to ensure that it has been written to high standards, is reliable, and trustworthy. Checklists to facilitate this process are available here: www.casp-uk.net/

Database

This is a searchable computer system which stores and indexes all the abstracts from the research. Examples include PubMed/Medline, CINAHL, PsycInfo, HMIC, and Embase.

Descriptors

These are also known as controlled vocabulary, MeSH, Medical Subject Headings, index terms, keywords, and they are a few words which identify the content of the research and are added to the thesaurus or index.

Explode term

This concept is part of the thesaurus feature, and enables the search to be extended to include narrower terms.

Filter

McMaster University have developed a set of search strategies, which direct the database to find research of a particular publication type, e.g. aetiology, diagnosis, therapy, prognosis, systematic reviews, or clinical prediction guides. By applying one of these filters, for example the filter for systematic reviews, to a search, the database will find all systematic reviews which match the

search terms entered. PubMed was the first to offer this feature in the form of "Clinical Queries", but now many other databases are incorporating filters.

Focus
This feature means that the database will search for the term as a major subheading, e.g. any records found will have the term describing an important aspect of the article.

Free text
The words are typed into the database as they would be spoken or spelled.

History
This feature appears on most databases and is a record of all the searches carried out during a particular search session.

Index terms
This is also known as controlled vocabulary, MeSH, Medical Subject Headings, keywords, and they are a few words which identify the content of the research and are added to the thesaurus or index.

Keywords
These are also known as controlled vocabulary, MeSH, Medical Subject Headings, descriptors and index terms, and they are a few words which identify the content of the research and are added to the thesaurus or index.

Level of evidence
This is a hierarchy of study designs, organised according to their internal validity, or degree to which they are not open to bias. They are available at www.cebm.net/index.aspx?o=1025

Limit
Databases have varying limit options. Some have very comprehensive options, for example Medline, which allows the age to be broken up into different stages of life, including newborn, middle aged, and aged. Limit options include language, publication type, gender, etc.

MeSH
This stands for Medical Subject Headings. It is a thesaurus of medical terms used by many databases and libraries to index and classify medical information. MeSH helps to overcome the issues of US/UK English and different terminology applied to identical concepts. MeSH is also known as controlled vocabulary, and keywords.

Narrower term
This is a search term, which is much more specific, allowing the search to be more focused. For example, rather than searching for "nurse" a narrower term might be "community nurse".

Not
This is used as a Boolean operator and it means that only one of the terms will be searched for e.g. *contraception not oral* would exclude research on oral contraceptives.

Open access
This refers to research which is freely accessible to all via the World Wide Web. Biomed Central (www.biomedcentral.com/) is an example of a supplier of online open access journals.

Or
This is used as a Boolean operator and it means that the database will search for one or other of the terms or for research containing both terms.

PICO

This is the acronym for a framework for building focused, clinical questions. The 'P' represents the patient or problem or population; the 'I' stands for intervention, e.g. the treatment; 'C' is for comparison (optional); and 'O' stands for outcome.

Primary research

This refers to original studies such as a randomised controlled trial, cohort study, etc, where data is collected from experiments, observation, and case studies.

Publication type

This describes the format of publication, for example, it may be a journal article, a letter, an editorial, a book or a report.

Respected authorities

These are societies, associations, Royal Colleges, etc which inform and influence the development and activities of the professions they represent.

Search strategy

A combination of search terms identified from a focused clinical question which, when entered into a database, aim to retrieve relevant papers.

Secondary research

A summary or synthesis of existing primary research e.g. a systematic review

Secondary sources

Secondary sources of information contain reviews of primary research. Sources could include a summary of the literature in a scientific paper published in a journal, an overview of a disease or treatment in a book, or a synthesis written to review the available literature on a topic.

Sensitivity

In searching, sensitivity is high recall, low precision i.e. more of the relevant articles are retrieved, but at the expense of picking up more unwanted articles.

Specificity

In searching, specificity is lower recall, higher precision i.e. more of the articles retrieved will be relevant (proportionally), but some of the relevant articles may be missed.

Subheadings

Subheadings appear as an option in the index terms of most healthcare databases. MeSH, for example, will allow you to select from a range of subheadings. It allows you to refine/focus your search even further, by selecting one or more subheadings from a range of choices.

Summary

This is a shortened version of a document, e.g. a synopsis, providing the key points.

Synonyms

These are alternative terms meaning the same thing, e.g. venous thrombosis, deep vein thrombosis, and are useful for comprehensive searching.

Text word

Healthcare databases search for free text words in the title or abstract of the document.

Thesaurus

This is also known as controlled vocabulary, MeSH, Medical Subject Headings, keywords, descriptors etc, and consists of a list of index terms that can be assigned to articles in that database. It is used as an aid to information retrieval.

Truncation

Truncation can be used to pick up different work endings in a search. It is usually a * or $ symbol, and acts as a substitute for any string of zero or more characters at the end of a word. For example, the search aggress* retrieves aggression, aggressive, aggressor etc.

Wildcard

A wildcard can be used to represent one or more characters. It can be used to include British English or American English spelling, for example behavio?r will retrieve behaviour and behavior.