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DEPARTMENT OF HEALTH

Tús Áite do
Shábháilteacht 1 Othar
Patient Safety 2 First

How to Conduct a Literature Search

Internal Staff Guide
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1   INTRODUCTION

A literature search is an methodical search for all of the literature published on a topic. An effective search of the literature can be done quickly, but demands an organised and systematic approach, so it is important to keep records of the searches made and the information found.

Before carrying out your search you will need to identify your research question and plan your search strategy.

2   DEVELOPING A SEARCH STRATEGY

To prepare for your search:

- Define your **topic** – write down your research question
- Identify what **type** of literature you are looking for e.g. primary research in journal articles, systematic reviews, research reports, policy documents, books, etc.
- Identify **sources** to search – databases, Google Scholar, individual organisations' websites, library catalogues etc. (see more on sources below)
- Develop **keywords** / search terms that are logical and relevant to your search (see more on keywords below)
- Think about **scope** of topic / search restrictions – anything related to your topic that you wish to exclude
- Design a means of **recording** what you find (keep records)

The following methods may possibly be useful in breaking down your topic and developing your search strategy. The PICO method is promoted by organisations such as the Centre for Evidence-Based Medicine in (CEBM) in Oxford, and is an evidence-based model for formulating a clinical question. The ECLIPSE method may be useful for health management and policy searches. If these models are not appropriate for your topic, you could adapt the headings to fit the type of research you are undertaking.

Searching method	Some specifics of …
PICO method	Break down the search into its component parts: • P - Population / Problem • I - Intervention / Indicator • C - Comparator • O - Outcome
ECLIPSE method	• E - Expectation - What does the search requestor want the information for? • C - Client Group; L - Location; I - Impact - What is the change in the service, if any, that is being looked for? What would constitute success? How is this being measured?

| | • P - Professionals; S – Service - For which service are you looking for information? For example, outpatient services, nurse-led clinics, intermediate care? | |

3   LITERATURE SOURCES

Sources of literature include:

- Databases (references to journal articles)
- Peer-reviewed journals
- Theses and dissertations
- Books, but note, tend to be published some time after research on which they are based, and more recent research is often available.
- Internet
  - Google Scholar
  - Government websites: funded research reports, discussion papers, government policies, and enquiry results
  - Organisations and professional bodies' websites
  - Conference literature
  - Newspapers
  - Statistics
  - Library catalogues

Databases held by DoH are listed on Healthnet:

http://healthnet/index.php/info-resources/research-resources

Depending on your research topic, the following are likely to be useful resources:

Resource	Description
MEDLINE OR PubMed http://www.ncbi.nlm.nih.gov/pubmed	Generic health and medical database, offering reference to medical, nursing and social care literature
Health Business Elite	Covers health care administration and other non-clinical aspects of health care institution management.
The Cochrane Library http://www.thecochranelibrary.com	Collection of databases that contain high-quality, independent evidence to inform healthcare decision-making.

The Campbell Collaboration http://www.campbellcollaboration.org/	Online access to the full text of systematic reviews undertaken by the Campbell Collaboration in the areas of education, crime and justice and social welfare.
Centre for Reviews and Dissemination – DARE / HTA / EED http://www.crd.york.ac.uk/CRDWeb/	Critical appraisals of systematic reviews published elsewhere / Health Technology Assessment reports / Assessments of economic evaluations of healthcare interventions
CINAHL	Nursing and allied health database
SocIndex	Sociology research database
Psychology & Behavioural Sciences Collection	Fulltext coverage of over 400 journals covering topics in emotional and behavioural characteristics, psychiatry & psychology, mental processes, anthropology and observational & experimental methods
EconLit *	Index of the world's economic literature, produced by the American Economic Association
Google Scholar http://scholar.google.com/	Multidisciplinary
SIGLE (System for Information on Grey Literature in Europe) http://www.opengrey.eu/	Multidisciplinary
Lenus http://www.lenus.ie/	An Irish repository for health care information
Rian http://rian.ie/	Multidisciplinary portal for Open Access Irish research publications.
Websites of relevant associations / bodies	See OECD, WHO, EOHSP etc.

* Resources marked with an * are not available through DoH Athens or free on the Internet. Access is through TCD only.

Google Scholar is a useful resource when searching for literature. Google Scholar is a web search engine that indexes many peer-reviewed journals across many disciplines. It provides a broader range of articles than traditional academic databases. However, not all publishers make their content available via Google Scholar, which is why it is necessary to conduct a database search. Furthermore, there is no overall listing of publishers, journal titles, time span or disciplinary distribution of records provided. It would be unwise to rely solely on Google Scholar, but it will often throw up references that may have been missed in your database search. See presentation '*Searching Google effectively*' on Healthnet for more information on using Google and Google Scholar.

You might also want to search for **grey literature**. Grey literature refers to material emanating from government, academic, business and industry sectors which is not commercially published (e.g. unpublished studies**,** technical reports, working papers from research groups or committees, doctoral dissertations, conference papers, some official publications). Generally, searching individual websites and using search engines (Google) can yield good results. Note that when searching individual websites, it can be a good idea to use Google's **Advanced search** function which allows you to limit your Google search to a particular site or domain. This allows you to use Google's functionality to search the site, and sometimes produces better results than using the site's own search engine. For instance, in the example below, Google's Advanced search tool is used to search the OECD site for documents relating to government structures around families and children:

Advanced Search

Find pages with...   T

all these words:	
this exact word or phrase:	government structures
any of these words:	families child children
none of these words:	
numbers ranging from:	_____ to _____

Then narrow your results by...

language:	any language
region:	any region
last update:	anytime
site or domain:	http://www.oecd.org/
terms appearing:	anywhere in the page

The **Lenus** repository (http://www.lenus.ie/hse), managed by the HSE, is a good source for Irish (including DoH) material. The repository provides access to Irish health-related reports, research and official publications spanning a period from the 1960's to the present day. Lenus has recently been incorporated in RIAN (http://rian.ie/), a multidisciplinary portal for Open Access Irish research publications.

4   ELECTRONIC SEARCHING

Your search strategy can be used in all databases and in Internet search engines, with tweaks as required. Note that the search functionality for Internet search engines is not as refined as that for traditional databases. As regards the latter, each database operates slightly differently and it takes time to learn how to use them effectively. However, the following general principles apply:

4.1   Identify keywords

Identify **keywords** that represent the main concepts in the research topic.

Consider:
- Synonyms (e.g. *"young people" / adolescents*)
- Differences in European and American terminology (e.g. *Accident and Emergency / Emergency Room*)
- Differences in spelling (e.g. *anaemia / anemia*)
- Old and new terminology (e.g. *mongolism / down syndrome*)
- Lay and medical terminology (e.g. *stroke / cerebrovascular accident*)
- Acronyms (e.g. *AIDS*)

Example: Research topic is 'Improving management capacity in the health sector'. Possible initial keywords for this search might include "*management capacity", "management development", "management capability", "hospital managers", "hospital management", upskilling, "change programmes".*

Note that you are likely to identify **new terms** as you progress with the search and encounter alternative ways in which your search is represented in the literature.

Some databases are **indexed** using a **thesaurus / subject headings**. A thesaurus reconciles different spellings, terminology, plurals, etc., allowing all articles on the same topic to be indexed under the same subject headings, regardless of how subject is described in the text. Cochrane Library, PubMed and Medline all use **MeSH (Medical Subject Headings).** For instance, in the example above, the MeSH heading for *"hospital managers"* is *"Hospital Administrators".* Look at MeSH or thesaurus options to identify the most appropriate subject headings for the keyword you have entered. When you find a relevant article, check to see what MeSH terms have been used to index it, and consider including these in your strategy.

Correct use of a thesaurus or subject headings improves the accuracy of your results and is essential to an effective search. **Free text searching** (or natural language searching) is good for unambiguous topics e.g. *"universal health insurance",* or for new topics which might not yet be indexed, or for brand names of drugs e.g. *Prozac.* **Ideally, you should use a combination of free text searching and subject heading searches.**

Remember to record and document the keywords used in your search.

4.2   Search techniques

When searching databases or the Internet, use the advanced options whenever possible. When you enter the advanced searching option of the database, this is where you can make use of **AND/NOT/OR** commands – **Boolean operators.** These are used for combining terms and allow precision in finding information.

AND – allows you to narrow your search by combining words using AND, e.g. *"hospital managers"* AND *upskilling*

OR – lets you broaden your search to include similar or other information connected by OR, e.g. *retina* OR *eye;*

NOT – allows you to exclude specific information from the search, e.g. *anxiety* NOT *depression*

Phrase searching will help when you are looking for a particular phrase or title. Use quotation marks, e.g. *("management capacity" OR upskilling) AND "hospital managers"*

You can also use **limiters** to refine your search – limit by date, gender, language, articles that include an abstract, etc. You can specify a full text search or limit to a search of abstract and title.

Use **truncation** to identify all possible endings of the key terms that you use, e.g. *hospital manag** will identify *hospital managers* or *hospital management.* Note that truncation symbols vary depending on the database. The most commonly used is * (e.g. PubMed, EBSCO databases).

Use **wildcards** to deal with different spellings and plurals. The usual wildcard symbol is a question mark e.g. *behavio?r, wom?n.* Use the help pages for individual databases to check whether they support use of truncation and wildcards, and which symbols they apply.

Use AND / OR appropriately to combine results of separate searches (see **History** function in PubMed).

4.3   Implementing your search

`   Once you are happy with the search you have set up, you can begin your search. You can then continue searching the databases *using all the different combinations of keywords that you have*, using **AND/OR/NOT** as appropriate.

It is important to do this systematically and keep a record of the searches you do, especially if you log on and off the computer between searches, as it is easy to forget which searches you have done and which you have not.

You are likely to find that you develop new ideas for the search terms during the searching process. Be aware of this and be prepared to modify your search to include new and different terms.

If you don't have any hits from your search, then you need to keep searching with different keywords until you identify literature that is linked to your topic area. If you have too many hits, you will need to refocus your search.

Once you have identified the key literature on your topic using one database, you should repeat the search using another database. If you find that the same references are thrown up, you can be confident that your strategy is well focused and that you are accessing the relevant literature on your topic. If new references are constantly being thrown up, you will need to continue searching until later searches reveal little or no new information.

N.B. Searching an electronic database is a skill that needs to be mastered. You will find that you develop your skills and confidence as you progress.

5 ADDITIONAL METHODS OF IDENTIFYING RELEVANT ARTICLES

Note that computerized searching tools are not 100% comprehensive and for various reasons may fail to identify relevant literature on your topic. So although electronic searching will be the main component of your strategy, it should not be the only one. Further strategies, such as reference list searching, hand searching through relevant journals and author searching will add to the thoroughness of your search strategy.

5.1 Searching the reference lists

Once you have identified the key articles that relate to your research question, it can be useful to look at the reference lists of these articles for further references that may be useful.

5.2 Hand searching relevant journals

If you find that many of your key articles are located in one or two journals, it may be useful to hand search these journals to see whether you can identify other relevant articles that may not have been identified in the electronic search.

5.3   Author searching

Similarly, if you find that many of your key articles are by the same author, it may be useful to carry out an author search to see whether the authors have published other relevant material not identified in the electronic search. This might also lead you towards work in progress.

6　APPENDIX A – SEARCH PLANNING FORM

Define your **topic / research question:**	
Develop initial **keywords** to represent concepts in your search:	
Identify what **type of literature** you are searching for:	
Identify **sources** to search:	
Identify **scope / limits** of search:	

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