

# Literature Searching- Developing a strategy

## Guide to Literature Searching - getting started.

### Introduction

The key to a good literature search is planning, much of which can be done before you log on to a computer.

To undertake an effective search you need to understand exactly what it is you want to get out of it. There are two things you need to know before you can begin your search:

1. What are you searching for?
2. Where are you most likely to find this information?

The answers to these two questions assist in developing your **Search Strategy**.

### What are you searching for?

There are 3 steps you can take prior to starting to search the literature:

#### 1. Clarify the Question.

You may need to consult text books and encyclopaedias to gain background information and understand a bit more about your topic first.

The first stage of any search is to clarify exactly what it is you are looking for.

You may find it useful to write this down as a single sentence question or description of the information you would like to find.

This question or sentence will form the basis for developing your strategy; therefore it may be useful to be quite specific.

#### 2. Determine the search terms.

Once you have your search question, you can start to break it down into search terms.

You may have already identified distinct concepts in your search question or you may want to use one of the mnemonics, which have been developed to help you do this:

### PICO

The **PICO** mnemonic is useful for medical or clinical questions and for topics where one thing is being compared with another. It may be possible to break your topic down to terms that fall in to some of the following:

- **Patient /Population**  
This is the "Who". For this you need to think of the patient group, clinical problem, age, sex, ethnic origins or other defining characteristics of the patient and the population.
- **Intervention**  
This is also sometimes known as exposure, and makes up the "What". This is what is happening to the patient or population, so it could be a drug or a therapy, a screening questionnaire or a health improvement programme.
- **Comparison**  
This is what the **Intervention** (or population) being compared to. This could be a control group or another intervention.
- **Outcomes**  
What outcome do you expect to see? For example, you may be interested in knowing whether an intervention has a health benefit, or whether an exposure results in mortality.

### ECLIPSE

The **ECLIPSE** mnemonic is useful for management and service related issues.

- **Expectations** - This is the improvement or innovation or information that you want to see.
- **Client Group**
- **Location**
- **Impact** - What is the change or service change being looked for? What would constitute success? How is this being measured?
- **Professionals Involved**
- **Service** - For which service are you looking for information?

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### 3. Develop Key Words

Once you've broken your search question down and developed terms for as many of the PICO or ECLIPSE headings as you can, depending on which is applicable, you can then start to pull out the key words or terms which you are going to use for your search.

It is important to consider all the possible words or phrases i.e. the keywords that describe your topics. To do this you may consider related terms, synonyms, and any variations in word endings, terminology and alternative spellings.

*For example:* health promotion or health education or patient education.

In order to get *every article* that is applicable to your search you need to make the search as **sensitive** as possible.

However, *if you only want a few articles* that address the question you ask then you want to make the search as **specific** as possible. You would use slightly different search terms for each.

- **Sensitive Search**- to find as many articles as possible

To ensure that you find as many articles as possible you need to think of all the possible ways that authors of articles, or a professional indexer looking at articles, might describe each of your key words or concepts.

It may be useful to check with a medical thesaurus or a list of subject heading such as MESH (**M**edical **S**ubject **H**eadings).

The more alternative terms you use, the more results you will get from the search. For example you may search for terms to describe cancers such as cancer, carcinoma, tumour or neoplasm.

- **Specific Search** – to find a few specific articles

For a specific search you want to use only terms that relate directly to your question, so you would may be use only one or two ways to describe each search term.

At this stage you may need to check with the MESH or descriptors in the databases own thesaurus to ensure that the terms you are using are the terms the indexer would use.

In a specific search, you would apply more **Limits**.

#### **Limits or restrictions**

You can limit a search to find only articles relevant to the search terms by using restrictions such as language, age of article, journal title, article type or limits on the populations such as age, gender, ethnic group etc.

The more limits you apply to a search the fewer results you will get from that search.

### **Finding literature, journal articles and research information- Using online databases**

Online databases can speed up the search process and hold bibliographic information about articles published in the literature. Different databases have different specialities and may index literature from a specific collection of publications. You need to run your search in a database that covers your subject to ensure you successfully find information. You may also need to run your search in more than one database to optimise the amount of information you find.

Most databases will supply supporting background information indicating the subject area that they cover and the origins and features of the information held in them.

#### **Applying your search strategy**

Once you have decided on your search terms and where to search, you are ready to apply your search strategy in an online database.

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It is good practice to enter each term separately and to combine them afterwards. That way you can see which search terms are more commonly used, and where you may need to consider using a different word or phrase when one term has very few results. It also gives the maximum flexibility when combining your terms. It is often better to keep your search broader at the start in case there is not much published on your topic. You can always refine it and restrict it at the end.

### Entering Search Terms

There are two important things you need to know about entering search terms.

#### 1. Subject headings and Keywords searches

- **Subject Headings**

Subject headings are used by the databases to index articles into categories as subjects. An article may be given more than one subject heading. These relate to the purpose or subject of the article. The subject heading may not appear as a word or phrase in the article. Indexers try and choose the most specific subject headings that they can. Subject headings assist in finding specific information and apply a consistent terminology to all the different terms that may mean the same subject. The subject headings in the Medline database are called **Medical Subject Headings (MeSH)** in other databases they may be known as descriptors.

***Note:** Not all medical terms are covered by subject headings or descriptors. Therefore you may only be able to use keywords in your search.*

- **Keyword Searches**

When you do a keyword search you use the words or terms that you have thought of that describe your topic or concept. Keyword searches tell the database to look for a specific word or phrase that appears in the record fields such as anywhere in the document, the article title or abstract.

Keyword searches may be much broader than subject headings and will return articles where the search term is not the main purpose or subject of the article.

Using truncation may be useful when doing a keyword search e.g. palliat\$ finds palliat/ive, palliate or palliat/ion

Keywords are useful if there is not an appropriate subject heading, MeSH term or descriptor and when you need to make a search more sensitive to find as much information as possible.

***Note!** If a subject heading or descriptor does not cover your particular search term you will only be able to search for it using keywords.*

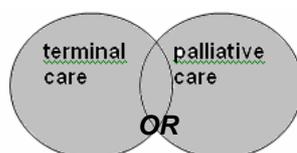
#### 2. Combining Search Terms

Once you have entered all the search terms you then need to combine them. We use mathematical operators called "*Boolean Logic*" to combine terms. You may know these better as the "operators" AND, OR or NOT.

##### **OR**

OR will combine search terms by finding articles that mention any of the search terms used. For example, if you search for:

terminal care **OR** palliative care



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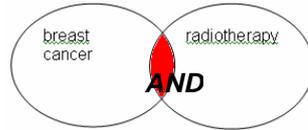
All the articles that mention terminal care and all the articles that mention palliative care will be returned, even if the article only includes one of the search terms used, (i.e. all the articles in the shaded area).

**OR** is most useful when you are combining *related or alternative* terms for a particular topic or concept. It widens the search or keeps it broad.

### **AND**

**AND** combines your search terms by only finding articles that mention all of your search terms. For example searching on:

breast cancer **AND** radiotherapy



This will only find articles that mention both breast cancer **AND** radiotherapy (i.e. those that fall into the shaded area). Both terms have to be mentioned in the articles for the article to be included in the results.

**AND** is most useful when you are combining 2 or more *different* concepts or terms in a search. It narrows your search (or focuses it) to find articles that mention all the terms you have combined with AND.

### **NOT- Use with care!**

It isn't available in all search engines, but it's useful to know about it. NOT has to be used with care, as it will *eliminate* terms from your search. For example, you might want to find an article about liver cancer but not colon cancer i.e. you would search for liver cancer NOT colon cancer.

**NOT** is most useful for focussing the results of a search. You would use NOT to eliminate terms you do not want to include in your results. It has to be used *very carefully* as you may eliminate some of the useful articles too.

### **The End?**

After searching on all your terms you might find you have too many or too few results (or even none at all!). When this happens you need to review your search strategy.

- If you have **too many results** you may need to impose more limits. Think about whether you want to restrict your results to a particular language, type of article, age range, or even to a restricted time period (e.g. the last 5 years). You may need to bring in another concept from your question to focus your search more.
- If you have **too few results** you need to think of other ways to phrase your search, or you might need to take out a few search terms. Think about which terms are most important to your search, and think of other ways to say them. If after entering all the terms you can think of, or even searching on just one word, you still have too few or no results then you have probably found everything that is available through the databases.

**Remember.** The first search may be the just the beginning of the process; you may not find all that you want at the first attempt and may have to rethink your search strategy or use slightly different terms to find what you are looking for.

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### Panning the Search

- **Topic:**

#### Key Words

|          |  |          |
|----------|--|----------|
| <b>P</b> |  | <b>E</b> |
| <b>I</b> |  | <b>C</b> |
| <b>C</b> |  | <b>L</b> |
| <b>O</b> |  | <b>I</b> |
|          |  | <b>P</b> |
|          |  | <b>S</b> |
|          |  | <b>E</b> |

#### Other Search Terms:

| Key words/concepts                               |             |   |             |  |             |   |  |
|--|-------------|---|-------------|--|-------------|---|--|
| 1.   | A<br>N<br>D | 2.  | A<br>N<br>D | 3.   | A<br>N<br>D | 4.  |  |
| Alternative terms<br>(to be combined<br>with OR) |             | Alternative<br>terms (to be<br>combined with<br>OR) |             | Alternative terms<br>(to be combined<br>with OR) |             | Alternative<br>terms (to be<br>combined with<br>OR) |  |
|  |             |   |             |  |             |   |  |

#### Limits

|                    |
|--------------------|
| • Age              |
| • Language         |
| • Publication type |
| • Human/animal     |
| • Male/female      |
| • Dates            |
|                    |

#### Databases to try: