

# Research Workshop for BPK 801

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## Goals

- Overview of steps involved in a literature search
- To learn techniques you can use to efficiently find relevant information to support your research
- An appreciation for thinking like an information scientist

## Need help after today?

Ask me by email or phone, or set up an appointment

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Writing, thesis & data services for grad students at the Research Commons

[researchcommons.sfu.ca](http://researchcommons.sfu.ca)

In-person at the Research Help desk

(by the library entrance)

AskAway (online chat research help)

[www.lib.sfu.ca/help/ask-us](http://www.lib.sfu.ca/help/ask-us)

## Research questions

Questions often spring to mind in a form that makes it challenging to find answers in scholarly literature. Dissecting a topic into its **component parts** is an essential first step which makes it easier to find all the relevant information.

As a result of clearly defining what you're looking for, you will have:

- clearly-stated terms you can use in your search string, and
- eligibility criteria you can use to evaluate the relevancy of your search results.

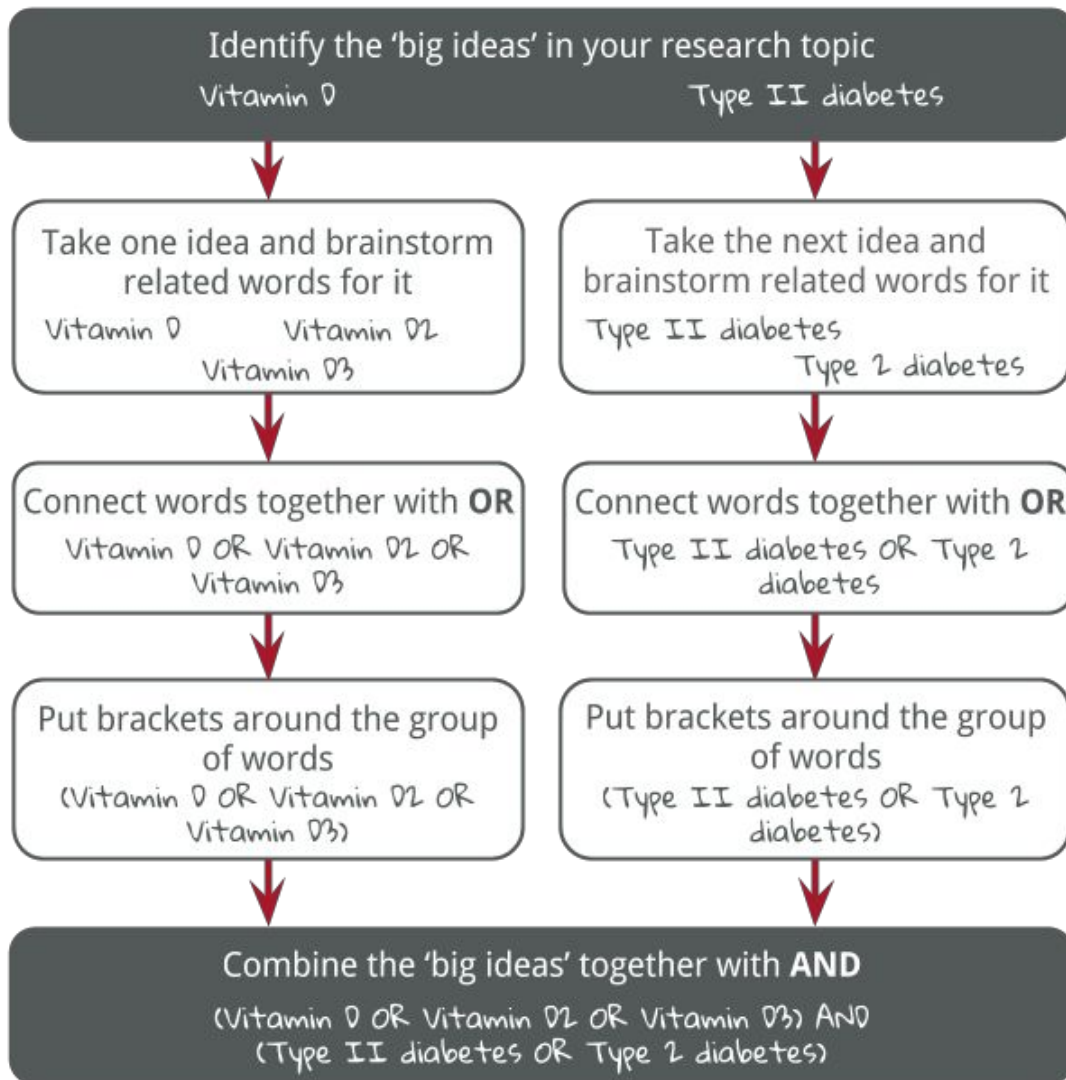
The PICO principle is often used to identify a topic's component parts:

<b>P</b> opulation / patient	Who are the relevant participants or population group? What health condition are you studying?
<b>I</b> ntervention / action	What intervention, test or exposure are you using?
<b>C</b> ontrol / comparator	Is there a control or alternative test or exposure?
<b>O</b> utcome	What variable is being measured to assess the effect of the intervention?

## Boolean operators

To develop an effective search, consider how you will combine your key words in the search box. Using Boolean operators (e.g. AND, OR and NOT) gives you more control over your search results because you're speaking the database's language. Boolean helps you search a database more thoroughly so you don't miss any key sources -- this will save you time in the long run!

Does taking Vitamin D supplements reduce insulin resistance in Type II Diabetes?



Note: The population or health condition (P) and intervention (I) generally work best as the 'big ideas' for your search strategy.

Note: The effectiveness of the search terms you use may depend on the database you're using. Each database contains different content, so taking some time to customize your search to the database will improve the relevancy of your search results.

## Database search techniques

Knowing some advanced search techniques can help you quickly adjust your search so that you are not overwhelmed by too many results, or disappointed by too few.

Techniques that <b>narrow/decrease</b> your search results	Techniques that <b>expand/increase</b> your search results
<ul style="list-style-type: none"> <li>- Using <b>phrase searching</b>, e.g. <i>"vitamin D" instead of vitamin D</i></li> <li>- Using <b>limiters</b> to refine your search, e.g. <i>limit to "Review" or limit by "Publication Years"</i></li> <li>- <b>Field searching</b>, e.g. <i>searching only within the "Title" field</i></li> <li>- Adding in a new concept with <b>AND</b>, e.g. <i>vitamin D AND supplement</i></li> <li>- Using <b>NOT</b> to filter out irrelevant concepts, e.g. <i>vitamin D NOT "vitamin D receptor"</i></li> </ul>	<ul style="list-style-type: none"> <li>- Adding more related terms with <b>OR</b>, e.g. <i>type 2 diabetes OR hyperglycemia OR insulin resistance</i></li> <li>- Using <b>truncation</b>, e.g. <i>supplement*</i> for <i>supplement, supplementation, supplemental, etc.</i></li> <li>- Using <b>broader keywords</b>, e.g. <i>diabetes instead of type 2 diabetes</i></li> <li>- Looking at <b>cited and citing articles</b>, related articles, bibliography</li> </ul>
<p>PubMed-specific techniques</p> <ul style="list-style-type: none"> <li>- Use MeSH terms instead of keywords, e.g. <i>"Vitamin D"[MeSH] instead of Vitamin D</i></li> <li>- Use a <b>narrower</b> MeSH term, e.g. <i>"Cholecalciferol"[Mesh]</i></li> <li>- Use <b>MeSH Major Topics</b>, e.g. <i>"Vitamin D"[Majr]</i></li> <li>- Use <b>MeSH subheadings</b>, e.g. <i>"Vitamin D/drug therapy"[Mesh]</i></li> <li>- Turn off <b>exploding</b> to exclude all narrower MeSH terms, e.g. <i>"Vitamin D"[Mesh:NoExp]</i></li> </ul>	<ul style="list-style-type: none"> <li>- Use a <b>broader</b> MeSH term, e.g. <i>"Secosteroids"[Mesh]</i></li> <li>- By default, PubMed searches include:             <ul style="list-style-type: none"> <li>- all narrower MeSH terms</li> <li>- all MeSH subheadings</li> <li>- both MeSH terms and MeSH Major Topics</li> </ul> </li> </ul>

# Exploring MeSH in PubMed

## Connect to PubMed

Go to [www.lib.sfu.ca](http://www.lib.sfu.ca). Under the Find menu, select "Article databases", then select "Kinesiology" from the drop-down menu. Under "PubMed," click Connect.

## Get familiar with the MeSH terms for this topic

1. Run a search with the following search string:  
vitamin d AND supplement AND (type ii diabetes OR type 2 diabetes)

How many search results do you get?

2. (a) Run a new search for: supplement (b) Then compare it to the following search: supplement\*

Usually, truncation (\*) increases your search results; however, the truncated search gives fewer results. Can you figure out why?

3. Search each concept separately and look at the automatic mapping in the "Search Details" box. Which concepts have MeSH terms associated with them?

Search string	Associated MeSH term(s)?
vitamin d	
supplement	
type ii diabetes	

4. Compare the following searches:

Search #1	Search #2	Which search is more comprehensive?
supplement	supplement OR supplement*	
vitamin d	"vitamin d"	

5. Run a search with the following search string:  
vitamin d AND (supplement OR supplement\*) AND (type ii diabetes OR type 2 diabetes)

How many search results do you get?

## More about MeSH in PubMed

MeSH stands for Medical Subject Headings. Each MEDLINE article is tagged with MeSH terms to indicate what the article is about. MeSH is a powerful tool that helps you pull together all the sources on that topic.

### MeSH Terms

If you'd like to find a MeSH term for your topic, you can search the *MeSH database* by selecting "MeSH" from the drop-down menu next to the search bar.



A search bar interface with a dropdown menu on the left containing the text "MeSH" and a small downward arrow. To the right of the dropdown is a text input field, and further right is a blue button with the word "Search" in white text.

If you already know a MeSH term you'd like to use, you can search PubMed using the following syntax:



A search bar interface with a dropdown menu on the left containing the text "PubMed" and a small downward arrow. To the right of the dropdown is a text input field containing the search syntax: "Neoplasms"[Mesh]. Further right is a blue button with the word "Search" in white text.

To see what terms an article is tagged with, go to the article record and look for the "MeSH Terms."

#### MeSH Terms

##### MeSH Terms

[Continuity of Patient Care\\*](#)

[Humans](#)

[Neoplasms/nursing\\*](#)



### MeSH Major Topic

In the above figure, the asterisk next to "Continuity of Patient Care" indicates that this MeSH term is especially 'key' to the subject of the article, a MeSH major topic. You can search PubMed for articles with a MeSH major topic using the following syntax:

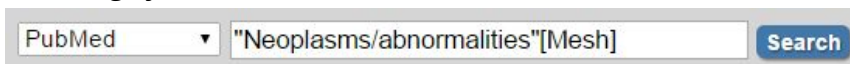


A search bar interface with a dropdown menu on the left containing the text "PubMed" and a small downward arrow. To the right of the dropdown is a text input field containing the search syntax: "Neoplasms"[Majr]. Further right is a blue button with the word "Search" in white text.

### MeSH subheadings

Each MeSH term has subheadings that allow you to narrow the focus. To see what subheadings are available for a particular MeSH term, find MeSH record for the term in the *MeSH database*.

If you already know the MeSH term and subheading you'd like to use, you can search PubMed using the following syntax:



A search bar interface with a dropdown menu on the left containing the text "PubMed" and a small downward arrow. To the right of the dropdown is a text input field containing the search syntax: "Neoplasms/abnormalities"[Mesh]. Further right is a blue button with the word "Search" in white text.

### Exploding

MeSH terms are part of a hierarchy, with terms getting conceptually narrower and broader as you go down and up the MeSH tree. By default, PubMed 'explodes' MeSH terms, which means that it searches for sources not only tagged with the MeSH term but also with any MeSH terms lower in the MeSH tree. To limit the search only to sources that use the exact MeSH term, you can search PubMed using the following syntax:

PubMed



"Neoplasms"[Mesh:NoExp]

Search