Searching Medline

- Go to the Library’s Medicine LibGuide: [http://library.soton.ac.uk/medicine](http://library.soton.ac.uk/medicine)
- Click on the Databases tab
- Click the link for MEDLINE (Ovid)
- Select: Ovid MEDLINE (R) without Revisions 1996 to January Week 4 2019
- Untick the box for Map Term to Subject Heading

Search in turn for each of these keywords – we’ve given you an indication of roughly how many articles you’ll find with each one...

<table>
<thead>
<tr>
<th>Term</th>
<th>Approximate number of hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiple sclerosis</td>
<td>49,000</td>
</tr>
<tr>
<td>interferon beta</td>
<td>9,000</td>
</tr>
<tr>
<td>ifn beta</td>
<td>5,500</td>
</tr>
<tr>
<td>rebif</td>
<td>200</td>
</tr>
<tr>
<td>compliance</td>
<td>105,000</td>
</tr>
<tr>
<td>comply</td>
<td>7,000</td>
</tr>
<tr>
<td>adhere*</td>
<td>140,000</td>
</tr>
</tbody>
</table>

**Question 1**

Why haven’t we put in alternative keywords for multiple sclerosis?
**Question 2**
Why do you think we’ve asked you to enter keywords/key phrases one at a time, rather than all together?

For instance, it would be perfectly valid to run this search...

#1  multiple sclerosis
#2  ifn beta or beta interferon or rebif
#3  compliance or comply or adhere*
#4  #1 and #2 and #3

...or even...

#1  multiple sclerosis and (ifn beta or beta interferon or rebif) and (compliance or comply or adhere*)

**Truncation** *
Notice that we’ve entered adhere with an asterisk on the end – this is the truncation symbol, and it searches for all words that start with those letters. For example, we could search for amput* - which in one go will find all these words:

amputate amputated amputation amputatee amputees

Truncation is handy for finding words with “our” or “or” endings (e.g. tuno*), “ise” or “ize” endings (e.g. hospi tal i *), singular and plural (e.g. doct or *, chil d*), etc.
Now combine your searches so that you have a single group of articles discussing interferon beta, and another single set of articles discussing compliance.

Note: you can use the Ovid search interface to combine previous searches – you don’t need to type in all your terms again.

You may find that your first few searches have disappeared off the screen – click Expand to bring them back into view.

Select the relevant search lines, then use the Combine with options to join them together.

### Joining Keywords with AND and OR

Join synonyms with **OR**:

- *catheter OR cannula* finds any article with either term in it

Join different concepts with **AND**:

- *smoking AND cancer* finds only articles mentioning both terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Approx no. hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your combined interferon beta OR ifn beta OR rebif search</td>
<td>11,000</td>
</tr>
<tr>
<td>Your combined compliance OR comply OR adhere* search</td>
<td>225,000</td>
</tr>
</tbody>
</table>

And now combine your search for multiple sclerosis with your group searches for interferon beta and compliance.

<table>
<thead>
<tr>
<th>Term</th>
<th>Approx no. hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your combined multiple sclerosis AND interferon beta AND compliance search</td>
<td>220</td>
</tr>
</tbody>
</table>
220 results is not a bad number – so you could stop there. But when you do your own search you might at this stage need to fine tune your search results. You can do this by applying some limits. Under the search box, click the **Limits** link, and then the **Additional Limits** button:

**Question 3**

What limits do you think might be helpful? Can you justify your choices? Why is it best to put the limits on at the end of the search process, rather than the beginning?
Select the limits for English Language and Publication Year 2009 – Current, then apply these limits (click the Limit a Search button at the top or bottom of the page). That should leave you with about 120-130 results.

The next stage would be to scan through the results and find the articles that are most relevant. We won’t worry too much about this particular step in this example search, because it’s something that’s specific to you and each search that you do. Instead, we’ll focus on finding the full text of some of the articles that you’ve found.

Scroll through the list, and find an article that is available as a PDF – clicking on this icon should take you to the full text PDF. (You will also see links for “Ovid Full Text” or “Full Text”.)

But what if the article you want doesn’t have the PDF attached to it? This doesn’t mean that we don’t have access to it – you just need to do one more check. Click on the Full Text Finder link.

This will open up a window that checks our journal catalogue, via Library Search. If no window appears, you may find that your browser has blocked this pop-up window: unblock it, then click the link again.

If you’re in luck, you’ll have links to the paper you’re after. If not, you’ll get a message “No results were found” – in this case, you’ll need to move on to another interesting article to see if we have that one.

Your search results will often retrieve articles that we don’t have full text access to. Usually you’ll just have to keep looking through your results until you find a suitable article that we do have. However, if the article is really important – and this applies particularly to your project – then you can request it via our inter-library loans service.

We’ll go to the British Library and get a copy of it for you. Use this only for really important articles: each request costs us over £10 – but if you need the article, then please request it. Usually you are limited to two inter-library loan requests each year – but we recognise that your project will require a wider trawl of the literature than normal, so your project supervisor can authorise the Library to extend your quota.

To get back to your search results, click the Search button on the Ovid menu bar:
So far, what we’ve been doing is free-text searching – looking for keywords that the authors have used in the article titles and abstracts. It’s pretty thorough, but as you’ve seen it places a lot of emphasis on you thinking of all the alternative keywords to include in your search strategy.

Medical databases – such as Medline, Embase and CINAHL – have the option of using Subject Headings (alternatively known as subject terms, controlled vocabulary, MeSH terms, Emtree terms).

Let’s quickly redo our search using MeSH subject headings. Tick the box for Map Term to Subject Heading, underneath the search box:

Search for *multiple sclerosis* and you’ll get a result something like this:

Click on the Continue button, and do the same for the next screen (we’ll ignore these options).

You should get something like 32,000 results... that’s rather fewer than we had with our free-text multiple sclerosis search (about 49,000). What you’ve found are 32,000 articles that have enough content about MS to warrant having the MeSH term added. The missing 17,000 articles mentioned MS, but only in passing, and it’s highly unlikely that they’d be of any interest to us.

Subject terms are keywords that are added to each article by people who work for the database, rather than by the authors. The database identifies a specific keyword to be used for each topic – irrespective of which word, phrase or spelling the author uses, the same subject heading keyword will be applied.

For instance, it doesn’t matter whether an author writes about teens, teenagers, juveniles, adolescents or teenage children: in Medline the article will have the MeSH term (subject heading) “adolescents” added to it.

So, if you wanted to find articles about teenagers, rather than free-text searching for all the various “teenager” type words – instead you can look up what the MeSH term is for teenager... you’ll discover that it’s “adolescents”, and then you run a search for all articles with the MeSH term “adolescents”.

In one very simple search, you’ll have found all the articles you want, without having to think of lots of alternative terms.
Now search for interferon beta – you should be pointed to the MeSH term Interferon-beta.

Finally, search for compliance. You’ll get a set of results like this.

There are four terms… but which one do we want? Click on the “i” icon to the right of each entry. Read the description, then go back on your browser to return to the list again.

To distinguish between free-text and subject heading searches when you’re writing up your search strategy, use this standard formatting:

- Free-text terms are all lower case
- Subject heading terms have an initial upper case letter, and are ended with a slash

<table>
<thead>
<tr>
<th>Term</th>
<th>Hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiple sclerosis</td>
<td>49,000</td>
</tr>
<tr>
<td>Multiple Sclerosis/</td>
<td>32,000</td>
</tr>
</tbody>
</table>

Hopefully you’ll agree that Patient Compliance and “Treatment Adherence and Compliance” are the terms we want – so deselect Compliance, select both Patient Compliance and “Treatment Adherence and Compliance” and run this search. You should end up with results a little like this:

<table>
<thead>
<tr>
<th>Term</th>
<th>Approximate number of hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sclerosis/</td>
<td>32,000</td>
</tr>
<tr>
<td>Interferon-beta/</td>
<td>8,000</td>
</tr>
<tr>
<td>&quot;Treatment Adherence and Compliance”/ or Patient Compliance/</td>
<td>41,000</td>
</tr>
</tbody>
</table>

Combining those terms together should get you about 30 results. That’s not many – so you would definitely need to use your free-text search as well. Using the subject headings is a very powerful way of searching, and can often help identify articles that you might have missed. However, it can sometimes come up with very small numbers of results. The best, most comprehensive searches use both free-text and subject heading searches.

At this point, you’ll want to review your search strategy and the results it’s found. You may find that you have too many articles in your results, or too few. If you have too many hits, try rerunning some of your free-text terms as title-only searches. You could also identify broad terms that you’ve included which are bringing in lots of irrelevant results and then eliminate them from the search.
Now that you should have a search that you’re happy with, you’ll probably want to keep a permanent record of it. We’ll look in the next session (in the summer) at exporting the details of specific articles into EndNote – but for the moment we’ll concentrate on just saving the search itself.

All the databases you use will have an option for making an account and saving your search – on the Ovid platform go to the top of the screen and click on the My Account link.

On the right, under the Don’t have an Account? heading, click on the Create Account link.

Complete the registration form – there are quite a few fields that are mandatory...

- **Personal Account Name**: This is your login, and we’d recommend that you use your University computer login, as it’s highly unlikely that anyone has registered with this before
- **Password**: This is quite awkward... your password can only contain letters and numbers, and must be between 6 and 20 characters long

Once created return to your search results (click on the Search button on the Ovid menu bar) – you’ll see that you’re now logged in.

At the bottom of your Search History box click on the Save All button.

You’ll need to give your search a name – and then it is saved permanently for you to recall and rerun whenever you log back into the Ovid search interface.
A thorough search will often (and for a systematic review, it’s essential) involve looking at more than one database. Embase is another great medical database, but it works in much the same way as Medline. Web of Science, on the other hand, is rather different.

- Go to the Library’s Medicine LibGuide: http://library.soton.ac.uk/medicine
- Click on the Databases tab
- Click the link for Web of Science Core Collection
- Run a search for multiple sclerosis

To get back to the search screen you’ll need to click the Search link...

Search for the same terms we used in our free-text Medline search. To combine your searches you’ll need to go to the Search History...

You should end up with something like these results:

<table>
<thead>
<tr>
<th>Term</th>
<th>Approximate number of hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiple sclerosis</td>
<td>120,000</td>
</tr>
<tr>
<td>interferon beta</td>
<td>42,000</td>
</tr>
<tr>
<td>ifn beta</td>
<td>34,000</td>
</tr>
<tr>
<td>rebif</td>
<td>300</td>
</tr>
<tr>
<td>compliance</td>
<td>150,000</td>
</tr>
<tr>
<td>comply</td>
<td>38,000</td>
</tr>
<tr>
<td>adhere*</td>
<td>210,000</td>
</tr>
</tbody>
</table>

To combine the searches, select the ones you want to combine, select whether you’re combining with AND or with OR, then click the Combine button. You should end up with a total of about 370 references.

Click on your search Results number to view the results.

You’ll now be able to scan through your results, find interesting articles, and check whether you can access them in much the same way as you did with Medline. If you want to apply limits, do this via the options on the left of your results.
That’s all very well, but so far it’s a bit like Medline – only without the medicine subject focus, and without the ability to use MeSH terms. Web of Science is a good back-up database, and it’s also good for searches that cross into areas outside core medical topics. But it also has a tool that makes it invaluable: citation searching.

In the selector, change the current page number to something towards the back of your results (we need to look at slightly older articles for this part) and then hit the Return key.

Now look at the right-hand column and pick an article with a number >0 for Times Cited and click on its title.

This takes you into the full record for the article – which has all the information you’d expect, including the abstract.

From now on, we’ll call this your “first article”.

**Question 5**

Web of Science is a very general database, covering a much wider range of topics than just medicine (e.g. physical sciences, engineering, social sciences, etc.). Why might it still be worth searching Web of Science when you’ve already looked at Medline?
Cited References
We’re interested in this panel on the right. Click on the number of Cited References – this shows you all the papers that your first article cited in its references section. This example article has 23 cited references.

It’s the equivalent of reading the article and flipping to the references section at the end. And if your first article is useful, then perhaps some of the articles it cites might also be useful.

Times Cited
Go back to your first article, and this time click on the number for Times Cited (this example article has been cited 28 times by other articles).

Now we’re reversing the process – this is now a list of articles that cite your first article in their references section. Again, if your first article is useful, then perhaps some of the articles that cite it are also useful.

Related Records
Go back again to your first article, and now click on the View Related Records link (it’s at the bottom of the panel). You’ll see a list with entries like this...

This article has 78 entries in its references section, and of those 36 were also in the references section of your first article – that suggests quite a lot of commonality between the two articles, so this one may well be useful.

We found the starting article by looking through the results of a search – but it’s just as easy to look up a specific article... perhaps a particularly good one you’ve found in your Medline search, or perhaps one suggested by your supervisor as an excellent starting point for your research. You can find it on Web of Science (search for an author name and one or two keywords from the title), and use these reference searching tools to identify additional articles that your Medline search may not have found.
Cochrane Library

The Cochrane Library is rather different to Medline and Web of Science – to start with it’s smaller. A lot smaller. And the results are split into a number of distinct sections. The two parts you’ll be most concerned with are the Cochrane Reviews and Trials.

- Return to the Medicine LibGuide: http://library.soton.ac.uk/medicine
- Click on the Databases tab
- Click the link for the Cochrane Library

Click on the Advanced Search button in the top-right corner…

...and then select the Search Manager tab.

You can now build up your search line-by-line as you have done before.

Note that there are no buttons to combine search terms – instead, write a new line referring to previous searches by their line number and writing the operator “and” or “or” as required.

i.e. to join lines 2, 3 and 4 with “or”:

#2 or #3 or #4

In this example, I’m leaving out the “compliance” part to focus just on the use of interferon beta with multiple sclerosis patients. I found 1400 results in the completed search.

You’ll see your results are organised into a number of tabs – there are 37 completed Cochrane Reviews, and 5 protocols for reviews that are currently in development.
We’ll come back to the Cochrane reviews in a moment – but first, have a look at the Trials. Any team researching a Cochrane review will carry out lengthy and thorough literature searches – and every time they identify a paper about a clinical trial, they’ll put the details in here. So if you’re looking for the results of clinical trials to inform your own project, this is an excellent database to search.

Returning to the Cochrane reviews, you’ll notice that each one (completed review – not protocol) is available in full text. You will also notice that some are marked with tags, such as “New Search” or “Conclusions Changed”.

Cochrane reviews are not meant to be static, one-off documents: they should be renewed every few years. At the very least this requires a new search to be carried out, to see if new research has emerged – which could lead to changes in the review’s conclusions.

Select a recent review and click on its title, and then scan through it. You’ll see that there is an abstract – but also a plain language summary, plus a summary of findings – all before you get into the main body of the review itself. Most will also have a few different options for downloading the review in PDF.

**Final Words**

This worksheet walks you through the practicalities of searching some databases. Use it as a template to develop your own literature search – but remember that a lot of the work needs to be done before you get to this point by developing a good search strategy to begin with.

If your project is a systematic review, then developing a thorough search strategy, applying it to several different databases, and using resources we haven’t covered here will all be essential. We will run an additional session for students embarking on systematic reviews in September.

Also, remember that there’s lots of help and guidance available on our website – look out particularly for the Medicine subject guide, and the Academic Skills guide.

Good luck!
Summary of the Search Process

- Define a clear search question
- Identify your key concepts – the PICO scheme may help you
- Identify alternative keywords and phrases for each concept – remember to include US and UK spellings and terminology
- Run your search
- Join synonyms with “or” to make a single set of results for each concept
- Then join these groups with “and” to get your initial results
- Apply any appropriate limits (year of publication, language, etc.)
- Scan through your results…
  - Have you got a reasonable number of results?
  - Are there enough relevant articles?
  - Have you spotted any terms in the papers you’ve found that might be useful to add to your search?
  - Depending on your answers to these questions, you may need to go back and modify your search
- Identify the most useful articles and check if you can get the full text
- If you find some essential articles that you cannot get in full text, request them via the Library’s inter-library loan service
- Remember to record details of your search, and the articles that you’ve found
- Repeat your search on other databases (Medline, Embase, Web of Science are good examples – but there are plenty of others depending on your exact topic)
- Identify a small number of your best papers (or ones recommended to you by your supervisor) and look them up on Web of Science
- Use the citation information for these articles to check if there are any others that you may have missed