Information Skills 3 (Year 2)

PICO and evidence based decision making sources

Workbook

Contents

PICO and search strategy worksheet[1]

"Start as you mean to go on, use the Cochrane Library and PICO search skills as soon as possible. The earlier you get used to doing them, the easier it becomes and you'll find you can easily tweak your searches to find the best results."
– HYMS student

Scenario to question

Using the clinical scenario which you have brought to the session briefly summarise your patient case, outlining the key issues of concern:

What sort of questions might arise from this scenario? Write them below.

[1] In:
Appendix 1 you will find a reminder of **Background and Foreground Questions**.
Appendix 2 you will find an **example of a PICO search strategy**.
Appendix 3 an **example of a search using Medline via Ovid** based on the PICO search strategy of Appendix 2.
Appendix 4 an **example of a search on the Cochrane Library** based on the PICO search strategy of Appendix 2.
See also the online tutorials at http://libguides.hull.ac.uk/medicine/skills

Translate your question into the PICO framework

Select one of your scenario questions and split it into PICO elements:

Patient or Problem	Intervention	Comparison	Outcome

Maximise your search

Now think of any synonyms, more general and/or more specific terms for each of the PICO sections, to develop alternate search terms for your scenario. Include truncation and wildcard symbols where appropriate and consider when you could usefully use adjacency and proximity indicators:

Patient or Problem	Intervention	Comparison	Outcome
I would search for these alternative **P** terms using the operator:	I would search for these alternative **I** terms using the operator::	I would search for these alternative **C** terms using the operator:	I would search for these alternative **O** terms using the operator:
I would bring together my different PICO element's final searches together using:			

Selected EBDM sources: a summary guide

All the following resources are available via http://libguides.hull.ac.uk/medicine:

Medline and Embase via Ovid

(listed in the Key Databases & EBM sources at http://libguides.hull.ac.uk/medicine/resources)

- York Account required.
- Daily and weekly updates.
- Medline and Embase are primary sources of information. Medline covers medical and biomedical sciences, indexing over 4,600 journals; EMBASE covers biomedical and pharmaceutical information, indexing over 3,500 pharmaceutical and biomedical related journals
- See the Ovid Medline tutorial in the HYMS Information Skills 2 section of http://libguides.hull.ac.uk/medicine/skills

The Cochrane Library

(listed in the Key Databases & EBM sources at http://libguides.hull.ac.uk/medicine/resources)

- No login required. Free registration allows you to save searches.
- More information on the databases within the Cochrane Library can be found at https://www.cochranelibrary.com/about/about-cochrane-library.
- For help searching the Cochrane Library see the links at http://libguides.hull.ac.uk/medicine/skills and the links available via the Cochrane Help option at https://www.cochranelibrary.com/help/how-to-use.

NICE Evidence search

(listed in the Further Databases & EBM sources at http://libguides.hull.ac.uk/medicine/resources)

- An NHS Athens account may be required for some resources. If you need a reminder of NHS Athens account go to http://libguides.hull.ac.uk/medicine/librarycontacts > NHS Athens Accounts.
- Nice Evidence search is the NHS's portal to evidence, guidelines and policy relating to health and social care – a full list of resources searched is available at http://www.nice.org.uk/about/what-we-do/evidence-services/evidence-search/evidence-search-content
- NICE Evidence includes an A-Z of Clinical Knowledge Summaries (CKS) (https://cks.nice.org.uk/#?char=A) providing summaries of evidence and latest findings relating to various topics.
- NICE Evidence search allows the use of basic search operators as well as phrase searching and truncation. Spelling variations and plurals are automatically searched for e.g. woman will also retrieve women. The Filters option on the page of your retrieved results lets you filter results by e.g. by Evidence type or Area of interest > clinical or Type of information > Systematic Reviews.
- Information on searching is available at http://www.nice.org.uk/about/what-we-do/evidence-services/evidence-search/how-to-search

BMJ Best Practice

(listed in the Key Databases & EBM sources at http://libguides.hull.ac.uk/medicine/resources)

- Access via Hull Account (select Shibboleth from the BMJ BP login page.)
- BMJ Best Practice is a decision-support tool for use at the point of care. Structured around the patient consultation, it aims to present the required information just as it's needed. It advertises itself as 'your instant second opinion' and is updated daily.
- FAQs, including how to search BMJ Best Practice are available at https://bestpractice.bmj.com/info/faq/
- Information on the BMJ Best Practice app is available at https://bestpractice.bmj.com/info/app/.

Best Evidence

(listed in the Further Databases & EBM sources at http://libguides.hull.ac.uk/medicine/resources)

- A free web-based app available for clinicians to get access to research and guidelines. City University of London, funded the development of BestEvidence in order to facilitate the use of research evidence to inform and improve learning, practice and policy and thereby improve patient outcomes.
- Builds on Trip (see below)

Trip

(listed in the Further databases and EBM sources at http://libguides.hull.ac.uk/medicine/resources)

- Registration (free) allows you to save results and receive topic updates.
- Updates from PubMed every two weeks and manual additions to content c. once a month.
- A metasearch engine covering various UK and international EBM sources including the Cochrane Library, PubMed, Clinical Evidence, various guidelines as well primary journals such as BMJ, Lancet, JAMA, and NEJM. Allows the use of parenthesis, truncation and basic search operators. Use the PICO search to allow a more structured search.
- Filters allow you to narrow your retrieved search by evidence type. (NOTE that filtering by Clinical Area is not available via Hull or York.)
- PICO search help is available on the main screen and guides about and how to use Trip are available at https://www.tripdatabase.com/how-to-use-trip

Evidence based journals

A study has found that you'd have to read 227 articles in the Lancet or 118 articles in the New England Journal of Medicine to get the relevant information that would be contained in 1 Evidence-Based Medicine article:[2]

Evidence Based.... Journals

(available via searching Unicat at http://libguides.hull.ac.uk/medicine/resources)

- Access via Hull or York Account.
- Published bi-monthly.

[2] https://doi.org/10.1186/1741-7015-2-33

- Titles include Evidence Based Medicine (EBM) which is published by the BMJ and 'publishes original evidence based research, insights and opinions on what matters for health care' and 'Focuses on the tools, methods, and concepts that are basic and central to practising evidence-based medicine.'[3]
- EBM allows the use of basic Boolean, phrase searching, wildcards, truncation as well as automatic synonym searching.
- More information on the journal Evidence Based Medicine is available at http://ebm.bmj.com/pages/about/

ACP Journal Club

(available via searching Unicat at http://libguides.hull.ac.uk/medicine/resources)

- Access via York Account.
- Published monthly.
- Produced by the American College of Physicians, the ACP Journal Club brings information together from over 100 clinical journals to provide summaries of systematic reviews and studies relating to internal medicine which it believes should be brought to the attention of clinicians.
- Phrase searching and truncation are available as well as basic Boolean (AND is presumed; do not enter) and parenthesis. Retrieved searches can be limited by topic, article type and date.
- More information on the ACP Journal Club is available at http://annals.org/SS/ACPJC_Purpose_and_Procedure.aspx

[3] http://ebm.bmj.com/pages/about/

Medline via Ovid

What is Medline?

Medline is the primary abstracting and indexing service for the medical and biomedical sciences indexing over 4,600 journals. Daily and weekly updates.

Accessing Medline via Ovid:

For HYMS users:

Medline via Ovid is accessed via the Find Resources tab on the **HYMS webpage.**

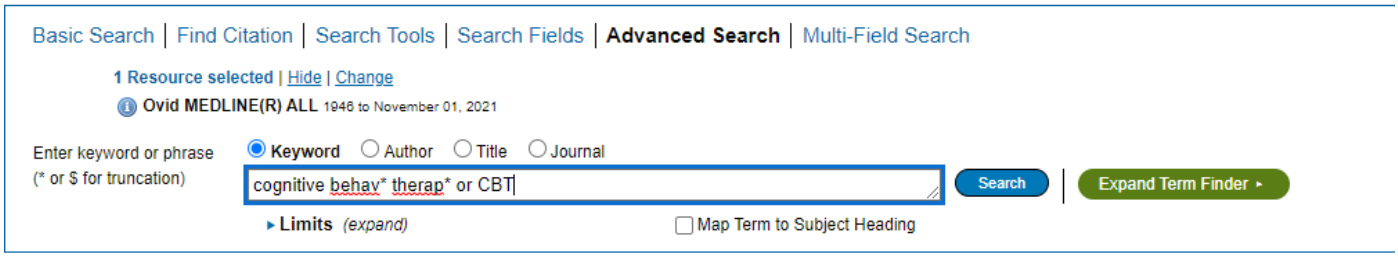
1. Go to https://libguides.hull.ac.uk/medicine/resources.
2. In the Key Databases & EBM sources section, click on **Medline** to open the resource in a new window. You will need your York username and password to login.

Advanced Search

Medline automatically opens in the Advanced search option. From here you can perform Keyword or Medical Term to Subject Heading (MeSH) searches.

Keyword Search

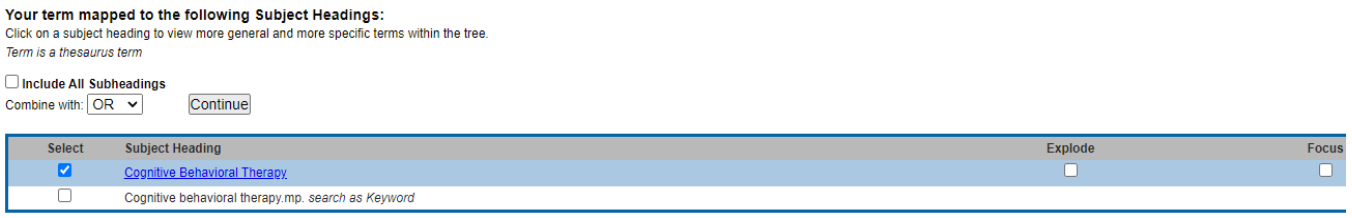
Ovid looks for your keywords in the default multi-purpose (.mp) set of fields. The set varies by database but usually includes Title, Original Title, Abstract, and Subject Heading. You can use advanced search techniques such as truncation when using Keyword search. Remember to untick the Map Term to Subject Heading box when performing a Keyword search.



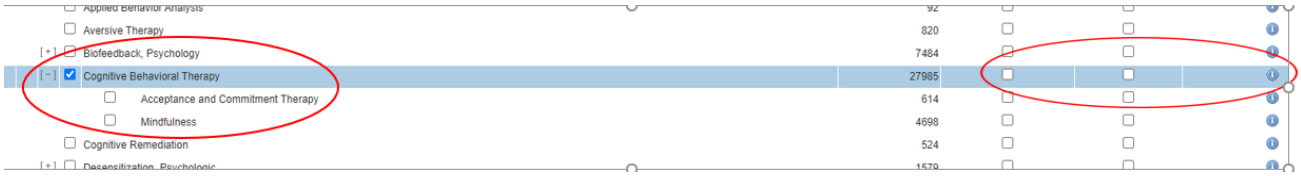
Map Term to Subject Heading (MeSH) Search

All of the articles indexed in MEDLINE have been read by an indexer. Indexers read each article in order to identify and assign the most *specific* terms, *from a standardized list of subject terms*, that describe the content of an article. When you type in a search on a topic, you are telling the database to search for articles that have been assigned MeSH terms *that match the search term that you entered*. You must remember to tick the Map Term to Subject Heading box.

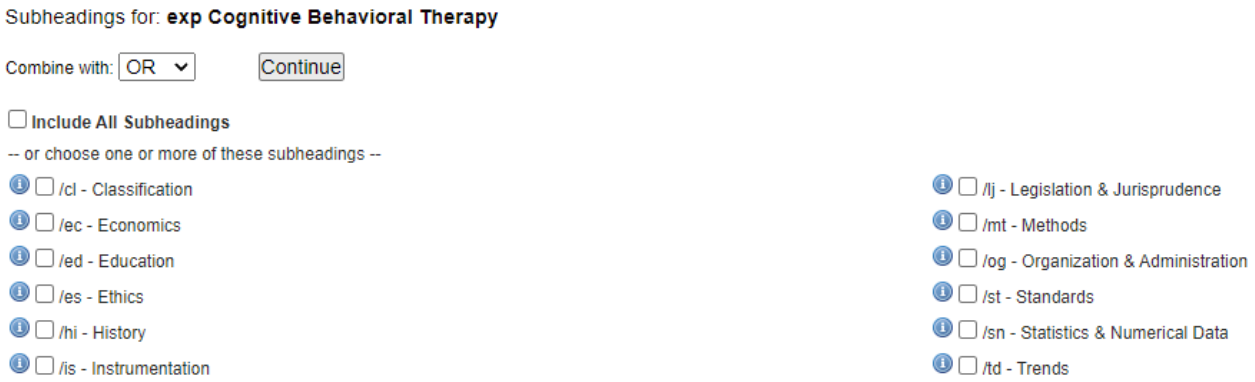
You will then be shown your results mapped to the Subject Heading:



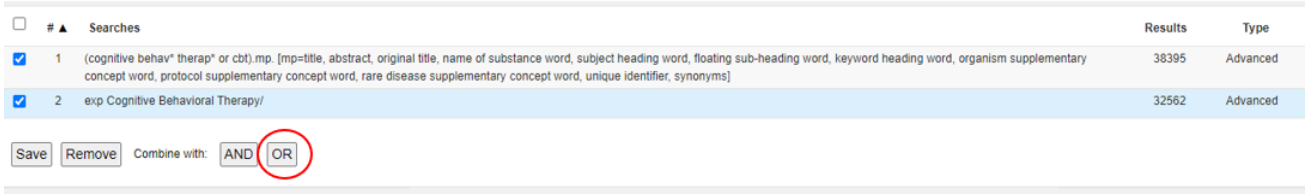
You can click on the term given to see where it appears in the Subject Heading tree. You can also choose to Explode the term (to include all headings indented underneath), Focus the term (only articles where this is the main subject term will be retrieved) or look at the Scope Note (gives you more information about the term).



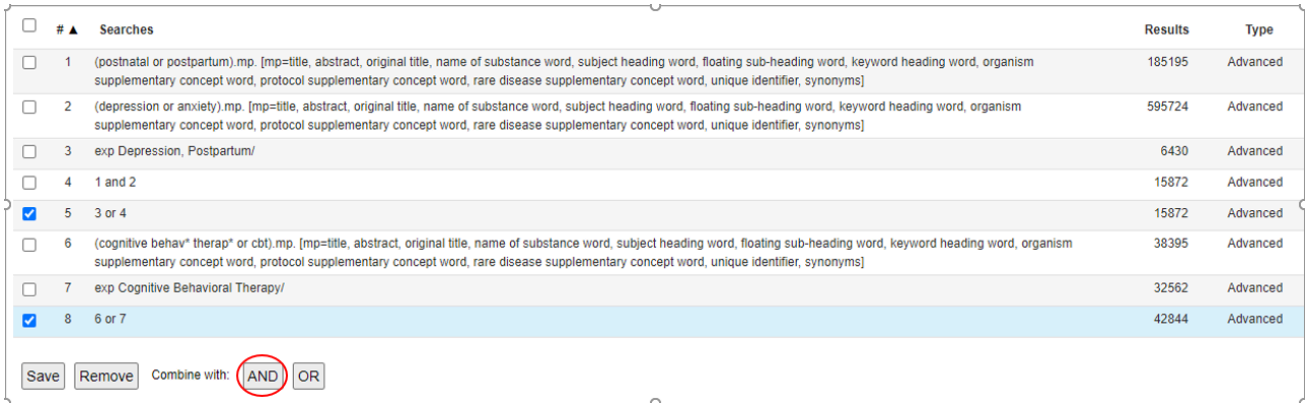
You will then be given the option to choose the subheadings that you would like to include in your search. To keep the search broad you can choose to Include all Subheadings. If you wish to narrow your search you can choose to limit by subheadings.



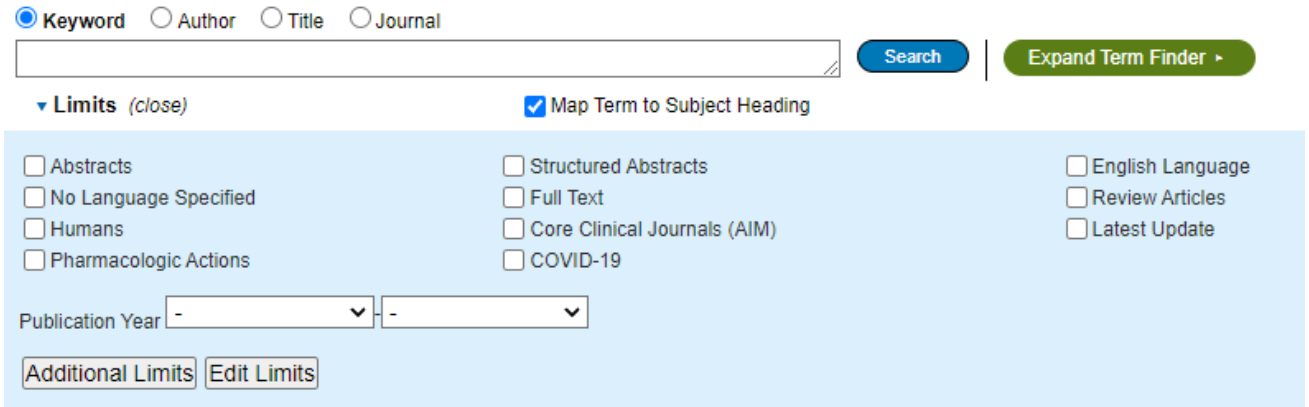
You will now have a Keyword and a MeSH search for your Cognitive Behavioural Therapy part of your search. These two searches will need to be combined using the OR operator.



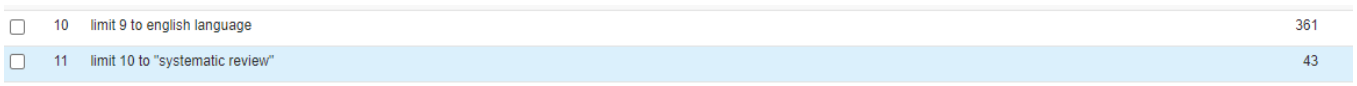
When you have completed the Keyword and the MeSH searches for each element of your PICO scenario you will need to join them all together with the AND operator. This will ensure that your final articles will contain all of the search terms that you need.



Once you have completed the searching elements you can then use the Limits to further narrow your search. The Limits are located underneath the search box.



This gives you some popular limits such as English Language but you can also click on Additional Limits to view further. You will find the limit for Publication types here and will be able to limit to Systematic Reviews.



Cochrane Library

What is The Cochrane Library?

The Cochrane Library presents the work of the Cochrane Collaboration and others interested in assembling the best possible evidence on the effects of health care. It is made up of a number of databases including *The Cochrane Database of Systematic Reviews/CDSR (Cochrane Reviews)*, the *Database of Abstracts of Reviews of Effectiveness/DARE (Other Reviews)* and the *Cochrane Central Register of Controlled Trials/CENTRAL (Clinical Trials). The Cochrane Database of Systematic Reviews* is continuously updated. *CENTRAL* and *About the Cochrane Collaboration (Cochrane Groups)* are updated monthly, the rest quarterly.

Accessing The Cochrane Library:

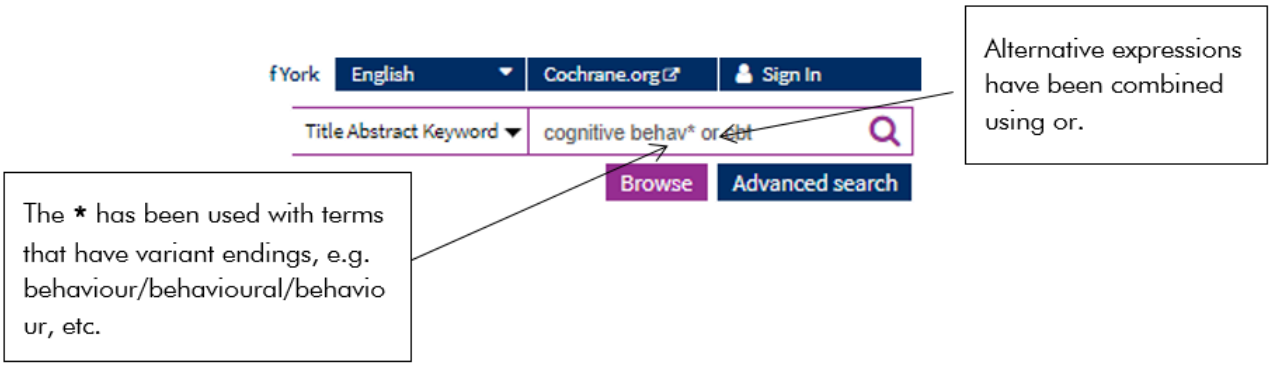
For HYMS users:

The Cochrane Library is accessed via the Find Resources tab on the **HYMS webpage.**

1. Go to http://libguides.hull.ac.uk/medicine/FindArticles.
2. In the Key Databases & EBM sources section, click on **The Cochrane Library** to open the resource in a new window.

Simple Search

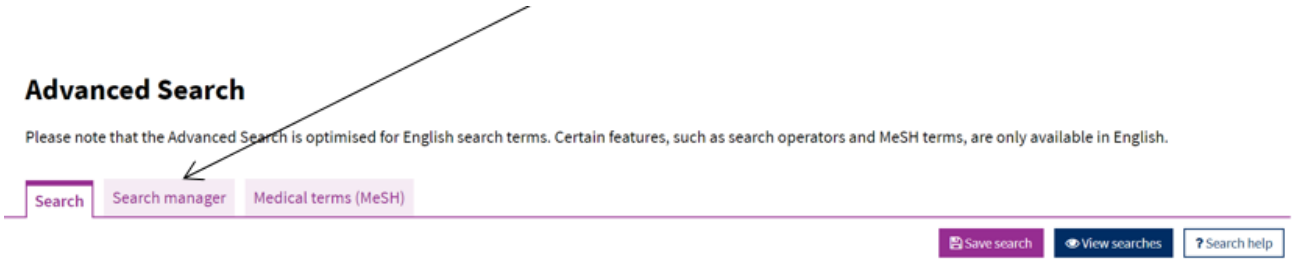
To do a basic search on the home page type your search terms into the search box, ensuring that **Title, Abstract Keyword** has been selected from the dropdown menu, to the left of the box, and click on the Magnifying glass.



Your search results will then be displayed.

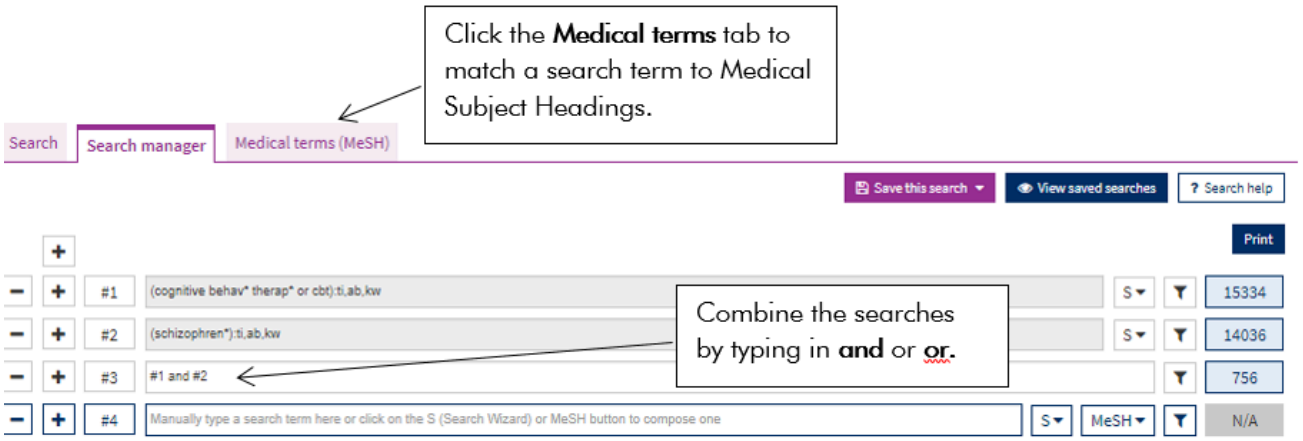
Complex searches using Search Manager

To carry out this search as part of a more complex search, leave the search box blank, click **Advanced Search** and from here you can select the **Search manager** tab.



Search manager allows you to combine searches together to produce more complex searches. To carry out a complex search, select the "S" box at the end of line #1. This brings up the ***Search wizard pull down menu** from which you can choose **Title Abstract Keyword**. Type in the search terms for **`cognitive behav* therap* or cbt.`** Then select **Add to search line**. *

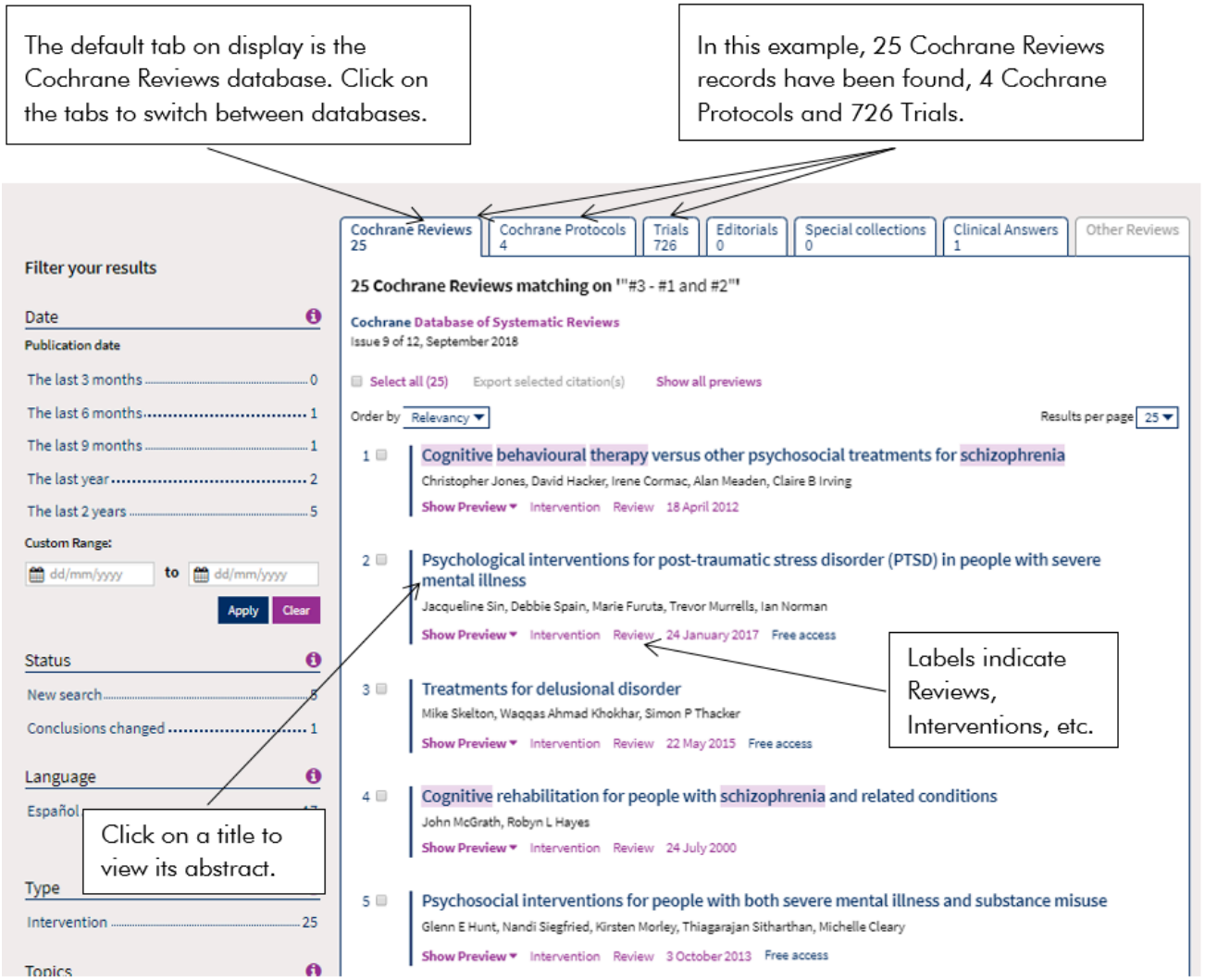
You can then carry out a separate search on line #2 for **schizophren*** once again by first selecting the **Title Abstract Keyword** option and typing in the search terms etc**.** On line #3 the searches are then combined by typing in the appropriate search ID numbers (**#1, #2**) together with **and** or **or**.



The number of results found for each search appears in the blue box at the end of each line. Double click on this box to view your results.

Viewing and working with your results

The number of results found is listed next to the database in which they appear.



Click on the title of a review to view the text. For records in other parts of The Cochrane Library an abstract is available; check YorSearch for full text availability.

Select the **View PDF** option in order to download a PDF of the Full, Standard or Summary report.

Find out more

Click on **About** from the homepage to find out more about The Cochrane Library. Click on **Help** on the homepage to learn how to use The Cochrane Library and how to access the **Cochrane Library Training Hub**. You will need to register with your email. The Hub includes training videos, live and recorded webinar sessions and training resources.

This guide is also available via the icon beside the title at:
http://libguides.hull.ac.uk/medicine/resources

Appendix 1: Background and Foreground Questions

There are two types of question for which you might want answers: *background* questions and *foreground* questions.

Background questions

Background questions generally refer to the sort of knowledge that is very general about a patient's condition or disorder – such as the underlying pathology of a condition. In general, as clinicians become more experienced, they are less likely to want to know answers to background questions. Generally, background questions have two components; a question root with a verb (what causes...? how does...?) and some aspect of the disorder itself.

Examples might be:

1. How do antibiotics cure infection in pneumonia?
2. What microbial organisms can cause community-acquired pneumonia?
3. Why does cigarette smoking cause lung cancer?

Foreground questions and PICO

Foreground questions generally refer to the sort of knowledge you need to know in order to manage a patient condition – how to diagnose a condition; what the prognosis might be; what treatment interventions might be effective. As clinicians develop experience they are much more likely to want answers to these types of questions.

Foreground questions have three or four components; the **p**atient or **p**roblem of interest, the main **i**ntervention, **c**omparison interventions (if relevant) and the clinical **o**utcomes of interest. The structure of this type of question is known as the PICO framework, and it is this framework you will be using as a way of structuring your question for future searching.

Examples of foreground questions might include:

1. What evidence is there that increased hygiene in wards reduces the incidence of MRSA infection?
2. What are the risks of developing diabetes for a patient who has moderate risk of cardiovascular disease and is taking statins?
3. Should a healthy, breast fed infant be given calcium/vitamin D supplements to prevent the development of conditions such as rickets?

An example of how to turn a question into more focussed components is given by the Centre for Evidence Based Medicine[4] as follows:

	Patient Or **P**roblem	**I**ntervention (a cause, prognostic factor, treatment etc.)	**C**omparison Intervention	**O**utcomes
Tips for building:	Starting with your patient, ask "How would I describe a group of patients similar to mine?" Balance precision with brevity	Ask "Which main intervention am I considering?" Be specific	Ask "What is the main alternative to compare with the intervention?" Again, be specific	Ask "What can I hope to accomplish?, or what could this exposure really affect?" Again, be specific
Example:	"In patients with heart failure from dilated cardiomyopathy who are in sinus rhythm…"	"…would adding anticoagulation with warfarin to standard heart failure therapy …"	".. when compared with standard therapy alone.."	"…lead to lower mortality or morbidity from thromboembolism. Is this enough to be worth the increased risk of bleeding?"

[4] Centre for Evidence Based Medicine, *Focussing clinical questions.* Available at: http://www.cebm.net/index.aspx?o=1036. Accessed Sep 14

Appendix 2: Example PICO search strategy

Question:
For the treatment of burns, does the topical use of honey improve healing in comparison to more conventional wound dressings?

Patient/ problem	**Intervention**	**Comparison**	**Outcome**
Who	What	Alternative	Outcome
Patient with burns	Honey	Conventional dressing	Healing
My search notes/ideas:			
Burn* Scald* [widen search to wounds/bites/ulcer?] [age or sex of patient relevant? No: unnecessary limit.]	Honey [Include reference to topical??]	(silver or conventional or sterile linen...) near/? Dress*	Heal* Re-infect* Reinfect* [is it necessary to search for this? Check P+I+C results before including]

Appendix 3: Example search using Medline via Ovid

The example given is based on a search carried out in November 2021 for the PICO strategy given in Appendix 2. It is indicative only.

☐	1	(burn* or scald*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	131097
☐	2	exp Burns/	59633
☐	3	1 or 2	134477
☐	4	honey.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	13283
☐	5	exp Honey/	4404
☐	6	4 or 5	13283
☐	7	((silver or convention* or steril*) adj3 dress*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1720
☐	8	exp Silver Nitrate/	3287
☐	9	7 or 8	4979
☐	10	3 and 6 and 9	18
☐	11	limit 10 to english language	18
☐	12	limit 11 to "systematic review"	7

Appendix 4: Example search using the Cochrane Library

The example given is based on a search carried out in November 2021 for the PICO strategy given in Appendix 2. It is indicative only.

#1	MeSH descriptor: [Burns] explode all trees		MeSH	1795
#2	(burn* or scald*):ti,ab,kw	S	Limits	11165
	(Word variations have been searched)			
#3	#1 or #2		Limits	11380
#4	(honey):ti,ab,kw	S	Limits	1154
	(Word variations have been searched)			
#5	MeSH descriptor: [Honey] explode all trees		MeSH	164
#6	#4 or #5		Limits	1154
#7	((silver or convention* or steril*) near/3 dress*):ti,ab,kw	S	Limits	857
	(Word variations have been searched)			
#8	MeSH descriptor: [Silver Nitrate] explode all trees		MeSH	93
#9	#7 or #8		Limits	947
#10	#3 and #6 and #9		Limits	8

See also the online tutorials at http://libguides.hull.ac.uk/medicine/skills