Literature Search: Finding the “needle in the haystack” of information

What is a “literature search”? 

- It is a well thought out & organized effort to identify literature (or published information) on a topic.
- A well-structured literature search is an effective and efficient way to locate sound evidence (proof that a therapy/treatment works) or what is known or published on a research topic. Evidence may be found in books, journals, government documents and the internet.

Where to begin: the Medline database

Medline is the premier bibliographic database containing life sciences and biomedical information, compiled by the National Library of Medicine (a division of the National Institutes of Health). In the finest sense, it is our tax dollars at work. It is an important resource for biomedical researchers throughout the world.

- It includes more than 25 million citations (information about the journal articles) from more than 5,600 journals currently published in more than 40 languages. Time coverage is generally 1946 to present with some older material. The articles indexed are from important academic journals covering healthcare, medicine, nursing, pharmacy, dentistry and veterinary medicine.
- PubMed is the free-to-use, internet-based search engine for the Medline database.
- Use PubMed link from Moody Medical Library’s homepage, the link is scripted to identify you as part of UTMB (access to more full text).
How to begin: Tips that will improve the success of your search efforts

<table>
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<tr>
<th>1. Restrict search to a few search concepts</th>
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<tr>
<td>a. Use your question’s most important PICO elements as search terms</td>
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<tr>
<td>b. Combine search terms appropriately (typically, use AND or OR)</td>
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<tr>
<td>i. AND = all terms must exist</td>
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<tr>
<td>ii. OR = any terms may exist</td>
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<th>2. Use Strong search terms – start with broader/less specific terms. If this retrieves too many results, use more specific terms.</th>
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<th>3. When possible, use search terms that “map” to MeSH terms (Medical Subject Headings), which automatically includes synonyms to make search results more comprehensive.</th>
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Note: also use MeSH records to identify additional keywords (see Entry Terms)

A search question in PICO format –

- **P**: In an older woman with congestive heart failure
- **I**: does drug therapy such as Avapro combined with exercise
- **C**: compared to exercise alone
- **O**: decrease risk of re-hospitalization?

Identify initial search terms - use the PICO question (create a list which may change/grow as you search):

- congestive heart failure, drug therapy, exercise, rehospitalization

Locating MeSH terms

- Type in search term (let’s work with congestive heart failure)
- Change PubMed to MeSH (click down arrow to left of search box)

PubMed suggests Heart Failure as the MeSH term (Congestive Heart Failure listed as an Entry term for CHF – look at the bottom part of the Mesh record for Heart Failure.)
• Click the “Add to search builder” button (right side of page)
• Click “Search PubMed” to search the term.
• Results for Mesh term shown below

• Repeat for remaining terms (type into search box, select MeSH, click Search button).
  o Drug therapy (OR Angiotensins OR Avapro)
  o Rehospitalization (if no MeSH found, try readmission)
  o Exercise (if multiple MeSH terms are selected, use OR when adding to Search Builder, see below)

note: use OR when any of the terms are appropriate
• Click on PubMed’s Advanced search feature (under search box)
• Click Add (in Add to Builder column) to work with a particular set, type in keywords (working with Drug Therapy), use OR to separate.
• Continue combining MeSH terms with keywords

\[ ("Drug Therapy"[Mesh] OR Avapro OR Angiotensins OR drug therapy) \]

\[ Builder \]

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<tr>
<th>Add to builder</th>
<th>Query</th>
<th>Items found</th>
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<tbody>
<tr>
<td>Add</td>
<td>Search &quot;Patient Readmission&quot;[Mesh]</td>
<td>9995 1!</td>
</tr>
<tr>
<td>Add</td>
<td>Search &quot;Drug Therapy&quot;[Mesh]</td>
<td>1117299 1!</td>
</tr>
<tr>
<td>Add</td>
<td>Search &quot;Heart Failure&quot;[Mesh]</td>
<td>94291 1!</td>
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• When all similar MeSH and keyword terms have been combined with OR, Add each set, combine with AND (heart failure concepts AND drug therapy concepts AND rehospitalization concepts - #12, then heart failure concepts AND exercise concepts AND rehospitalization concepts - #13)

note: use AND when all of the terms must be found
Note: to view articles within a set, click the corresponding link in Items Found column.

Using Search Details (right-hand side of page)

Click See more ... to view Query Translation.
Clinical Queries  (a PubMed tool)
a set of filters which limits results to specific clinical research areas (clinical studies, systematic reviews or medical genetics information)  
(middle column, PubMed homepage)

Enter term(s) as earlier and click Search

- Look for articles under appropriate filter (clinical study, systematic review or medical genetics)
- Under Clinical Queries, select Category (Etiology, Diagnosis, Therapy, Prognosis or Clinical Prediction guides)
- Also under Clinical Queries, select Scope (selecting narrow will reduce retrieval)
- To Review or work with results, click See All (adds to Advanced Search Builder)

Other Helpful Tools - sidebar filters

- Article Types (top left-hand side of results page)
  - Click Customize to see entire list (see especially Systematic Reviews, RCTs)

- Publication Dates
  - Click show additional filters to view more
Helpful to limit to English language, Ages (where appropriate), Sex (Male/Female)

**Combining with: AND, OR**

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<th>Connector</th>
<th>Description</th>
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| **AND**  | When AND is used, all of the terms in your search must appear in the returned documents, even if the terms are far apart from each other.  
Example lesion AND pancreatic would only return documents that contained both the terms lesion and pancreatic.  
AND is the default connector. When you enter 2 or more search terms, AND is automatically inserted between any spaces or hyphens in the terms.  
Example If you searched for heart attack OR heart-attack both would be searched as heart AND attack. |
| **OR**   | Use OR when at least one of your search terms must appear in returned documents. You can use OR to search for synonyms, alternate spellings, or abbreviations.  
Example kidney OR renal would return documents that contained either of the terms kidney or renal. |

**Other Tips**

- **Find exact phrase:** Surround search terms with quotation marks, generally retrieves fewer results  
  o Kidney failure = 176,828 results  
  o “Kidney failure” = 85,191 results
- **Locating full text:** Click article title to access
- **Adding article references to EndNote:** Click box beside articles of interest, click “Send to:” link, select Citation Manager as Destination, create file.  
  o Save file (will need to remember where file is saved - NBIB formatted file  
  or  
  o Open with ResearchSoft Direct Export Helper (requires downloaded software)
See handout on EndNote Basic (web-based bibliography management, free to you)

**Other Databases**

- **CINAHL (Cumulative Index to Nursing and Allied Health Literature)**: one of the largest and in-depth sources for nursing and allied health research.

- **Cochrane Library**: Key resource in evidence-based medicine. Core database is Cochrane Reviews (systematic reviews and meta-analyses), which summarize and interpret results of medical research.

- **PEDro**: The Physiotherapy Evidence Database - a free database of randomized trials, systematic reviews and clinical practice guidelines in physiotherapy.

* Fee-based, subscription supplied by Moody Medical Library