### Keyword Databases

- Retrieval is based on the occurrence of a word on the page.
  - Example: A keyword search for *asthma* may retrieve a document that contains the phrase “but not asthma” as the only occurrence of the word in the document. While this is a valid retrieval, it may not be helpful.

- Searchers are responsible for building a search string that includes all the possible words that could be used to describe a concept + the plural spellings + the variant spellings
  - Example: tylenol OR acetaminophen OR paracetamol OR tempra OR panadol OR datril OR valgesic OR valadol OR tussapap OR tralgan OR tapar OR tabalgin OR pyrinazine OR parmol OR "paracetamol inn ban" panets pacemo neopap naprinol multin lyteca lonarid
  - Color OR colour

### Indexed Databases

- Content driven: the indexing language is used to describe the content of an article
  - Example: A search for the indexing term *asthma* will retrieve only articles that are about asthma.
  - NOTE: Indexing is content-driven

- Searchers can put their chosen search terms into the database and the database will map those terms to the appropriate indexing terms.
  - Example: The searcher types *Tylenol* into the search box and it maps to the indexing term *acetaminophen*. This retrieves everything in the database that has been tagged (indexed) with the term *acetaminophen*. No need to put singulars + plurals + variant spellings. The mapping to the indexing term takes care of all that.

PubMed is really a database with another database inside it. MEDLINE is the set of all indexed citations.

Everything that’s in MEDLINE is in PubMed but not everything that’s in PubMed is in MEDLINE.

- NOTE: Citations start out in PubMed and, after indexing, move into MEDLINE
- The most recent additions to the database are NOT indexed. (Indexing takes time)
- All indexed citations are marked: [PubMed – indexed for MEDLINE]

The name of the indexing language for MEDLINE is **MeSH: Medical Subject Headings**
Searching the PubMed database requires both keyword searching and MeSH searching.

PubMed manages this problem (keyword + MeSH term searching) by using a process called **Automatic Term Mapping**. Here’s a very basic explanation of how it works:

1. **MeSH match**: When a word or words are typed into the search box in PubMed, the database first looks for a match with a MeSH term. Since indexing is content-driven, if there is a match between a search term and a MeSH term, PubMed assumes that’s what the searcher wants and uses it to run the search.

2. **Journal Title match**: If there is no match between the word(s) in the search box and a MeSH term, then the database looks for a match with a journal title. If it finds such a match, it runs the search.

3. **Author name match**: If there is no match to a MeSH term and no match to a journal title, then it looks for a match with an author name.

You can see this mapping in the Details box in PubMed. Here is what the Details box shows if you search for the word *apple*:

From this, we can see that the MeSH term for *apple* is *malus*. This shows that the database is retrieving citations from both the indexed and keyword portions of the database:

- The [MeSH Terms] tag in the search string indicates the MeSH term that PubMed chose
- The [All Fields] tag follows the key word search

**NOTE**: Since PubMed automatically searches both the MeSH term and the keyword, *simply using the Search box is often your best choice for searching.*

**Using the Search Box for Searching**

Enter your search terms in the search box, using AND, OR and parenthesis accordingly. Run your search. Eyeball your results. How do they look?

- Check the **Details box** to see what PubMed did with your search.
- Take advantage of the tools provided for you: **Filters**

[see next page]
### Filters on the left hand side of the page:
There are filters along the left hand side of the search results page in PubMed that will help you narrow your search results. Some of these filters are:

- Publication date
- Language
- Type of article
- Age groups
- And more

Filters on the left hand side of the page need to be applied and, when appropriate, turned off.

### Filters on the Right hand side of the page:
When you use PubMed through Miner Library, you will see that some of the more useful filters also appear on the right hand side of the page. Here, you will easily see things like:

- English language only
- Core clinical journals
- Etc

Filters on the right side of the page do not need to be applied or turned off. They are links to a subset of your result set.

What if putting terms in the search box doesn’t help me find what I need?

- **Quotation marks:** This can sometimes help you find the occurrence of a word or words, but it turns off the Automatic Term Mapping.
  - “Don’t” “use” “quotation” “marks” “as” “an” “initial” “search” “strategy.” Try it without the quotation marks first. Then, if you need to, add the quotation marks.

- **Advanced Search:** This allows you to search for terms in a specific field in PubMed
  - Looking for words in a title of an article can often lead you to articles that are on-topic and are indexed, allowing you to see the MeSH terms associated with that article.

How can I see the MeSH terms associated with a citation?

- Remember that only indexed citations have MeSH terms. Each citation in PubMed has a label. The label will tell you whether or not the citation is indexed (has MeSH terms).
  - The label appears in the *Abstract* version of the citation
    [See graphic next page]
  - PubMed employs several different labels on citations. The most common are:
    - [PubMed – as supplied by publisher]
    - [PubMed – in process]
    - [PubMed – indexed for MEDLINE] Only these citations are indexed
    - [PubMed]

- If a citation is labeled [PubMed – indexed for MEDLINE], then you will also see the words *MeSH Terms* at the bottom of the abstract. Click the link or the drop-down arrow to reveal the MeSH terms. [See graphic next page]

- If you would like to restrict your search results to ONLY those items that are indexed for MEDLINE, there are two ways to do this:
  - Add AND medline[sb] to your search
  - Set a filter for Journal Categories. How to do this:
    - Click on the Show additional filters on the left hand side of the PubMed results page. Select Journal categories. Click *show*. Now, you will see the Journal Categories on the left hand list of filters
    - Choose MEDLINE. When you activate this filter, all your results will be indexed
Building a search in the MeSH database

Sometimes, a search in the search box just doesn’t cut it. When that happens, you may want to go directly to the MeSH database and build your search.

NOTE: When you do this, you are deliberately choosing to NOT retrieve any of the non-indexed citations in PubMed. That might be OK – or it may not be OK. It depends on the nature of your
search question. Remember that the most recent citations in the database are not indexed (because indexing takes time)

Start by accessing the MeSH database. There’s a link to the MeSH database on the home page of PubMed (see the lower right, under the graphic). You can also search the MeSH database directly from the search box in PubMed.

Use the drop-down arrow to switch from searching PubMed to searching the MeSH Database:

You will be taken to the MeSH database where you will see a list of terms. Generally, the first term in the list is the one that most closely matches what you put into the search box. However, you may click on any term in the list to see the MeSH record for that term.

Please note that there are two ways to use MeSH terms in your searching:

- Explore the MeSH database to find the terms that will be useful to your search.
  - Make note of those.
  - Return to the PubMed home page and simply type those words into the search box using the appropriate Boolean connector (AND, OR, NOT). This allows PubMed to map the terms using Automatic Term Mapping. This means, of course, that the database will do both indexed term searching and text word searching to retrieve relevant articles
• Use the MeSH database to build a search that will run in the PubMed database. Here’s how that works:

Review the MeSH record. Make your selections. Then, click Add to search builder.

If any of these terms are entered into the search box in PubMed, they will map to this MeSH term, smoking. These are called entry terms.

This shows how this term fits into the MeSH hierarchy (known as the MeSH Tree). Broader terms are at the top; narrower terms at the bottom. A search for smoking will also search marijuana smoking. If you do not want to use the narrower term(s) in your search, click the “Do not include MeSH terms found below this term in the MeSH hierarchy” button above.

Once you’ve added this term, you can go back to the search box at the top of the page and work with the next term in your search. Repeat until all the desired terms are in the Search Builder box. Then, click the “Search PubMed” button.

Additional information about searching PubMed:
• Use AND, OR, and NOT to combine words. You get more with OR you get less with AND.
• Use parentheses if you are going to use both OR and AND in a search statement:
  
  Ice cream AND (headaches OR injuries)

Using parentheses in your search statement is called nesting your terms
Plan for Searching PubMed

1. Enter search terms in the search box in PubMed. Hit search.

2. Eyeball citations – do they look relevant?

   **Yes**
   - Check the Details Box to see what PubMed did with the search. Is there a clue here in how to fix the search? If so, return to Step 1
   - Save relevant citations to the Clipboard using the Send To feature

   **No**
   - Check the Details Box to see what PubMed did with the search.
   - Does PubMed show you “Articles with your search terms”? Does one of them look relevant? Is it indexed? Look at the MeSH terms – choose one or more and use them in the search box, returning to Step 1.
   - Is there one indexed citation in the first 20 that seems close to what you want? Examine those MeSH terms and if one or more seems useful, type them in the search box, returning to step 1
   - Is there a non-indexed citation that looks useful? If so, the “Similar Articles” link may help you find more citations like that one
   - Use the Advanced Search feature -- search for words in the title of an article, look for something useful and then (a) look for an appropriate MeSH term from indexed citations or (b) use the “related citations” link

   Access the Clipboard and deal with your articles.

**REMEMBER:** If you get lost in a black hole of non-relevant citations & can’t figure out how to claw your way free OR if you just can’t figure out where to start OR if you’ve been working on a search for more than 30 minutes without good results, **CONTACT YOUR PERSONAL LIBRARIAN.**

We are professionals. We can help.