Searching for randomized controlled trials on PubMed

Two important principles:

- avoid too many different search concepts but use a wide variety of synonyms and related terms (both free text and MeSH/subject headings/descriptors) combined with 'OR' within each concept.
- do not apply language restrictions to the search strategy. You may miss something valuable. If the abstract (in English) looks useful you can get the article itself translated.

Example question: To what extent is there a cardiovascular risk associated with HRT?

Concept 1: HRT

In drop down menu (PubMed) type: hrt OR hormone replacement therapy (note that you are not using quote marks)

- usually when an acronym is used the full term will appear at least once in that record. Be cautious using acronyms. HRT stands for other things. Your acronym may be informed by the other search terms though.
- Using phrase searching or truncation will turn off Automatic Term Mapping, this will significantly restrict your search.
- always capitalise Boolean operators (AND, OR) when using PubMed.
- a keyword search searches the title, abstract, MeSH headings (ie. subject headings) and MeSH Subheadings, Publication Type, Substance Names, personal names, and any other terms.
- keywords which are mapped to a MeSH heading will be exploded, ie. they will retrieve any narrower terms. More about this below.
- since a keyword search includes MeSH headings why bother to search specifically for MeSH headings? Because MeSH searching allows for more precision searching. Keywords have no context so could appear in records of no relevance to you.

Click Search.

In drop down menu change to MeSH and type: hormone replacement therapy. Click Search.

This suggests two MeSH headings.

Click on Hormone Replacement Therapy

- subheadings - sometimes unwise to limit by subheadings. Can be too restrictive.
- note the "entry terms" - if you had entered any of these phrases the search would still have mapped to hormone replacement therapy.
- note where hormone replacement therapy sits in the MeSH tree structure.
Click on **Estrogen Replacement Therapy**
- note the definition – more precise than hormone replacement therapy. It is a narrower MeSH heading (see MeSH tree structure below).
- note the entry terms: Hormone Replacement Therapy, Post Menopausal and Postmenopausal Hormone Replacement Therapy.
- note the option to ‘Restrict to MeSH Major Topic.’
- check the MeSH tree structure below and note that Estrogen Replacement Therapy is a narrower term than Hormone Replacement Therapy. A keyword search will search for MeSH headings and since MeSH headings are automatically **exploded** to retrieve narrower terms, the keyword search for Hormone Replacement Therapy would search for this phrase as a MeSH heading as well as Estrogen Replacement Therapy as a MeSH heading.

All MeSH Categories:
- Analytical, Diagnostic and Therapeutic Techniques and Equipment Category
  - Therapeutics
    - Drug Therapy
  - Hormone Replacement Therapy
    - Estrogen Replacement Therapy

If we wanted to search for Estrogen replacement therapy as a MeSH heading:

**Click on the check box next to the heading** *Estrogen replacement therapy*

**Click in the Add to search builder box:**
- note that “Estrogen Replacement Therapy”[Mesh] will appear in the search box

**Click on Search PubMed**

![MeSH search interface]

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**Concept 2: Cardiovascular**

In drop-down menu (**PubMed**) type: heart diseases.
- searches all fields including title, abstract and MeSH headings.
- as noted above MeSH headings in PubMed are exploded automatically to include narrower MeSH terms (see MeSH tree below). This means a keyword search for heart diseases will include Heart Diseases as a MeSH heading and thus the narrower term Myocardial Infarction and everything beneath that.
All MeSH Categories
Diseases Category
Cardiovascular Diseases
Heart Diseases
Myocardial Infarction
Anterior Wall Myocardial Infarction
Inferior Wall Myocardial Infarction
Myocardial Stunning
Shock, Cardiogenic

- if we truncate (i.e., heart disease*) it won’t explode the MeSH headings
- if we use quotes (i.e., “heart diseases”) it won’t explode the MeSH headings
- how about using the keyword ‘cardiovascular’? Note that this would map to MeSH headings such as Cardiovascular System, Cardiovascular Surgical Procedures and Cardiovascular Diseases and then explode to include all narrower terms. Your search would be quite broad and include records that do not have the term cardiovascular in them but such records would be retrieved because of narrower MeSH headings. Note too that records retrieved under Cardiovascular System are anatomy terms, not disease terms. So it is better to search more specifically under Cardiovascular Diseases as a MeSH heading or even better, the more narrow heading of Heart Diseases.

Click on Advanced search option (top of screen)

Click on Add next to the numbers corresponding to the search results you wish to combine. Or enter the numbers manually in the search box, eq. #1 AND #3. This would be for; (HRT OR Hormone replacement therapy) AND heart disease
- since Hormone Replacement Therapy will also include results for Estrogen Replacement Therapy, and since in this case we want to search at this higher level, there is no need to search for both phrases.

Click on Search

Limiting to randomized controlled trials

Two options:

1) under Article Types (left of screen) click on Customize.

Click in the check box for Randomized Controlled Trial and click on Show.

Randomized Controlled Trial appears as an option under Article Types. Click on this.

Searching for systematic reviews on PubMed

Click on Clinical Queries (make sure Limits aren’t in place)

Enter your search eg. hormone replacement therapy[MESH] AND heart diseases

Click on Search

Note the records under the column ‘Systematic Reviews’

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