# ADVANCED MEDLINE/PUBMED REVIEW Sep 2011

**CONCEPTS -- OVID MEDLINE TIPS -- PUBMED TIPS -- TROUBLESHOOTING**
**(SUMMARY FROM LECTURE AND TUTORIALS)**

## I. CONCEPTS

### MeSH

**Indexers** read new articles. They recognize the same topic expressed in different words, and translate authors' **non-uniform** language into **standardized MeSH Headings**.

**MeSH Heading** = word or phrase from **Medical Subject Headings ("MeSH")** list, maintained by the National Library of Medicine.

**Subheading** = Secondary topic pre-linked to a MeSH term by an indexer, e.g.
**Aortic Rupture/su [Surgery]** where Surgery is a Subheading
Pick a Subheading only if it **exactly matches a critical topic** of your question.
If no Subheading is selected, ALL are searched.
Indexers assign a Subheading in preference to a freestanding MeSH.
Polycystic ovary syndrome/**ge[Genetics]** Result = 380 (last 10 years, major topic)
Polycystic ovary syndrome **AND exp Genetics** Result = 2 (last 10 years, major topic)

**Strengths of MeSH**

**Standardization** - Searcher doesn't have to think of (or type) variations like aortic rupture, ruptured aorta, rupture of the thoracic aorta when using MeSH.

**Focus/Major Topic** – Find articles where indexer tagged MeSH as major topic, omitting citations where the topic is a **minor** point. Helps target results, especially for a search with only 1 topic. When searching 2 or more topics, 1st try without specifying major topic.

**Subheadings** – Indexer can pre-link 2 topics, e.g. Hernia,Hiatal/su[surgery]. MeSH+Subheading gets **better results** than hiatal hernia "**AND**" surgery, which incorrectly retrieves hiatal hernia caused by surgery for reflux disease.

**Explode** – Add indented, more specific MeSH from the Tree display

e.g. **Intestinal Diseases** ← Broad category
Cecal Diseases
Appendicitis ←Indented (more specific) MeSH
Cecal Neoplasms {Don't confuse with "Subheadings"}
Colonic Diseases
Colitis (etc.)

PubMed explodes by default; Ovid MEDLINE explodes only if you check explode box.

**Mapping** -- **Software** feature that suggests MeSH to match the topic you type. For best mapping, type **one** topic **alone**.

**If mapping fails**, search **title** words, then **display MeSH** assigned to the best results. What MeSH did indexers use for this topic (e.g. 2 MeSH instead of 1)?

**Limitations of MeSH:**

MeSH Headings don't exist for all topics.
Very recent citations don't have MeSH yet (indexing takes time).
Indexers don't assign MeSH for every word in an abstract
New MeSH not retroactive e.g. Individualized Medicine (2010) – no pre-2010 results
It's possible to miss the best MeSH, e.g. search Prions but missed Prion Diseases

## Text Words

Words from **titles, abstracts**, etc. in the MEDLINE record. Text words = **Authors'** words**.**
Helpful if no MeSH matches a topic, and to supplement MeSH.

**Strengths of text word search**

Instant index; up-to-date terminology; every title/abstract word searchable (even low-frequency terms); get results even if you missed the best MeSH.

**Challenge of text word search**

a) Can **miss information** because **authors use different words for same topic**.
b) **Can't** use **Explode**, **Focus**, or **Subheadings** -- those features only apply to MeSH

| | **MeSH** | vs. | **Text Word (Title, Abstract)** |
|---|---|---|---|
| Standardization | Yes | | No |
| Subheadings | Yes | | No |
| Major topic | Yes | | Search title only |
| Explode | Yes | | No |
| Latest terminology | No | | Yes |
| Fast indexing | No | | Yes |
| Find low-frequency words | No | | Yes |

**Think of word variations for text words**

1. Use a **truncation** character (*) to search **different word endings**.
   Place asterisk at the point where variation begins,
   e.g. esophag* -- retrieves esophagus, esophageal, esophagitis, etc.
   The asterisk substitutes for a **blank** space or **any number of characters**.
2. **Synonyms**: vitamin c - ascorbic acid renal failure - kidney failure - renal insufficiency
3. Different **spacing** and punctuation: RU486 RU 486 RU-486
4. **British spellings**, e.g., **oe**sophag*, p**ae**diatric*
5. Break up phrases? Instead of **elder abuse**, try **abus* AND elder*** -- retrieves abuse of the elderly, elder negect and abuse, partner abuse among the elderly, etc. …
   **Hartmann*** retrieves hartmann's procedure, Hartmann resection, Hartmann's operation

**Help with text word variations**

1. **Search MeSH as major topic** (focus), then look at **word variations in titles**.
2. Display the **MeSH Scope note**
   Advanced Ovid Search – Click **[i]** in Mapping or Tree display; look at "Used For" list.
   PubMed: open Full display in MeSH Database; look at "Entry terms"

**Add Text Words as Safety Net for Mesh**

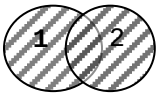
- Example: What is the relationship between papillomavirus and cervical cancer?
  Search MeSH = Papillomavirus, Human Find Cervical Ca and HPV **virus only**
  Missed MeSH = Papillomavirus Infections
  Text word: papillomavir* finds virus & infection; avoids missing relevant articles
- Example: Search MeSH: Ebola vaccines [New MeSH created **2005**]
  Text word safety net: ebola and vaccin* -- Avoids missing **pre-2005** articles.
- Find very **new** and very **old** citations that **lack MeSH** Headings.
- Find topics skipped by the indexer (e.g. long abstract)
- Increase number of results, **improving chances** of locating **full text AT DREXEL**.

**When results are important, use the strengths of both MeSH and text words**.

**Search Process**

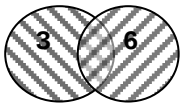
1. Analyze the question: Identify **critical topics**, keeping only essential ones (**fewest possible**)
2. Search **each topic separately** (most important topic first)
3. Create **separate result sets for MeSH and for text words**. Why? Different thought processes:
   a. **MeSH** -- use mapping; check Tree display to decide whether to explode; make major topic (focus) decision; check Subheadings for exact match to search topic.
   b. **Text words** -- type synonyms, use truncation character, different spellings, spacings, etc.; Combine word variations using OR (RU486 **or** RU 486 **or** RU-486).
4. Be sure topics in **text word** search **match topics** in **MeSH** search**.**
5. If **MeSH** is **major topic,** search **text words** in **title only** (major point)**.**
6. **Combine set numbers**

Use **OR** with words or result numbers for the **SAME topic**. **Computer merges results, removes duplicates** in the **overlap area, and keeps results from all parts of both circles** (or all circles, if >2 variations on same topic)




e.g. 1 **OR** 2

Use **AND** with words or result numbers for **DIFFERENT topics**
**Computer finds items in the overlap area only**
e. g. 3 **AND** 6




If using **AND** and **OR** in the same search box, add **parentheses** to avoid logic errors:
**PubMed** example: (#6 OR #9) AND (#5 OR #8) **Ovid** example: (6 or 9) and (5 or 8)
Note parentheses in step 5 of papillomavirus vaccines example below

Ovid example showing **AND/OR** with **2 separate MeSH = 2-MeSH search template**

1. ***Papillomavirus Vaccines/** -- MeSH (**Major** topic)
2. **(papillomavir* and vaccin*).ti.** -- Word variations (**title=major topic**), same topics as 1
3. **1 or 2** -- Merge results, eliminating duplicates, creating superset
4. ***Uterine Cervical Neoplasms/** **--** MeSH (**Major** topic)
5. **(cervi* and (cancer* or neoplas* or carcinoma*)).ti.** -- Word variations (**title=major topic**)
6. **4 or 5** -- Merge results, eliminating duplicates, creating superset
7. **3 and 6** -- Combine supersets for **different** topics

Create a **"superset"** (MeSH OR text words) for each topic **BEFORE combining different topics**. What's wrong with (**1 AND 4**) **OR** (**2 AND 5**)? You miss combinations of MeSH + text words, like (**1** AND **5**). Most complete results are from step 7.

PubMed example showing **AND/OR** with **MeSH+Subheading = MeSH+Subheading template**

1. **"Aortic Rupture/mortality"[Majr]** -- 2 topics: MeSH + Subheading, **major** topic
2. **aort*[ti] AND rupture*[ti]** **--** Word variations (**title=major topic**) for 1st topic in 1
   - Retrieves ruptured aorta, aortic rupture, etc.
3. **mortalit*[ti] OR death*[ti]** -- Word variations (**title=major topic**) for 2nd topic in **1**
4. **2 AND 3** -- **4** has same topics as **1**.
5. **1 OR 4** **--** Merge results, eliminating duplicates

- **Look at MeSH assigned to best results.** See **another good MeSH? Add it** to your search**.**
- **Add LIMITS** to target results: e.g. • Review articles
  - Core Clinical Journals – NEJM, JAMA, and other frequently-used journals
  - **Valid clinical evidence limits**: Publication Type = **Randomized Controlled Trial** or **Meta Analysis** **Clinical Queries** **Subject Subset** = **Systematic Review**
- **Too many/too few results? --** See Trouble-Shooting guide, p. 5

## II. TIPS FOR ADVANCED OVID MEDLINE

- Remember to click **Advanced Search**
- **MESH**
  - Type only **one topic**. **AND or OR turns off mapping**, even if the "Map Term" box is checked.
  - Check **only 1 MeSH** in a **Mapping or Tree** list, or **Subheadings** list will be **skipped**.
  - Check **Tree** display **before exploding**, to see which MeSH will (or won't) be added.
  - Check **Explode** to **add indented (more specific) MeSH**.
  - **Pick a Subheading** only if it **exactly matches** a **critical topic**
- **TEXT WORDS**
  - **Type** synonyms and other word variations **in search box, connected with OR**.
    E.g. autops* **or** post-mortem* **or** postmortem* Typing "**or**" bypasses mapping and performs a "Multi-Purpose" (mp) search (**title, abstract**, etc.) – works fine for text words
  - To search as **major topic**, click **TITLE button** above the search box. Check results in search history, to be sure each word was searched in titles.
  - If you type a single text word, Ovid may try to map and fail: "**Can not map**". If this happens, temporarily un-check "Map to MeSH" box and try again – **or** type a field qualifier after the word in the search box: **.mp.** or **.ti.**
- **TOO MANY IRRELEVANT CITATIONS?**
  - **Focus** an earlier **MeSH** result by typing an asterisk followed by the set number – e.g. ***2**
  - Convert an earlier **.mp.** result to **title** search. Type set number with **".ti."** – e.g. **5.ti.**
  - Combine topics again, using new results.
- **FULL TEXT**: 1st try "Ovid Full Text" link, if available. If not, click **Get It** for Drexel full text.
  **Beware: "Limit to full text"** misses lots of Drexel full text.
- **LOGOFF from OVID** to release the session and permit others to log in.

## III. PUBMED TIPS

- **DEFAULT /BASIC SEARCH** (quick & dirty)
  - PubMed maps multiple topics to MeSH Headings, but not reliably (see **Details** to confirm).
  - MeSH Headings are automatically exploded, by default.
  - Text words are searched as well as MeSH, but **without** anticipating word variations.
  - No "major topic" search option.
- **MESH: Use MeSH Database -** Better mapping to MeSH
  - Open **Full** display to see **Subheadings, Major topic/No explode** options, **Tree** display, etc.
  - **Subheadings: Pick one only** if it **exactly matches** a **critical topic.** If **no Subheading** is checked, **all** Subheadings are searched.
  - **Do Not Explode** option **–** avoids adding indented (more specific) MeSH.
  - Click **[Add to search builder**] to place the MeSH in the search box, then **[Search PubMed]** (below search builder box) to perform the search and exit MeSH Database.
  - **For each additional topic, re-open the MeSH Database** to map to MeSH**.**
- **TEXT WORDS:** type in PubMed default/basic search box, or add to Search Builder box after selecting MeSH in the MeSH Database.
  - Type synonyms & word variations **connected with OR**
  - Use **asterisk** (truncation character) **only** with **text word**s, since it prevents mapping to MeSH.
  - To search in **title (Major topic)**, type **[ti]** following each word. e.g. **aort*[ti] AND ruptur*[ti]**
- To see **SEARCH HISTORY** click **Advanced**
  - Results are in **reverse chronologic** order -- latest search result at the top.
  - Ignore missing result numbers; they are in MeSH Database instead of PubMed.
- To **COMBINE RESULTS**, include **pound symbol** (#) with number & **capitalize AND/OR**.
- **VALID CLINICAL EVIDENCE**: In addition to limits mentioned under **Search Process**,
  - For systematic reviews, combine final set **AND systematic[sb]**. .
- **TOO MANY IRRELEVANT CITATIONS?** Search at least 1 topic as a **major point** by changing [MeSH] to **[Majr],** and adding **[ti]** after each text word variation. Then combine using new results.

- **FULL TEXT:** To see **Drexel's Get It** links, **use a PubMed link on a Library web page**
  • **Get It links** reveal Drexel online availability.
  • Be wary of PubMed **"Limit to full text"—** It omits much Drexel full text.

## IV. MDCONSULT NOTE:

MDConsult has a "quick & dirty" search interface for MEDLINE. It is **not recommended for serious searching**.

## TROUBLE-SHOOTING MEDLINE

**RESULTS TOO LARGE?**

- Check for errors in search logic (AND/OR)
- Search **MESH** Headings as **Major topic (Focus)**.
- Search text words in **title** only (major topic):
  OVID: topic***.ti.** PubMed topic***[ti]**
- Limit to **Review articles**, **recent years**, etc.
- Limit to **Core Clinical Journals** (OVID limit; PubMed Subset limit)
- Use **valid clinical evidence** limits
- Don't explode MeSH; just search the broad term.
- **Add another topic** using **AND,** or by picking a **Subheading**

**RESULTS TOO SMALL?**

- Check for **errors** in search logic (AND/OR) or spelling
- Remove unnecessary topics, leaving only the most critical ones
- Use **Scope Notes** to find other MeSH Headings and synonyms for text word search.
- Display **MeSH Headings** of known, highly-relevant articles, and look for other MeSH Headings that had not occurred to you. Add them to the search.
- **EXPLODE** to **include more specific MeSH** headings
- Search **ALL Subheadings** (don't select any)
- Don't search MeSH as Major Topic (Focus)
- Search **text words in addition to MESH**.
- Instead of searching words in **titles only**, search title, abstract, etc..
- Think of word variations when searching **title/abstract words**:
  - **Synonyms:** kidneyfailure OR renal failure OR. renal insufficiency
  - Different **word endings** using truncation character:
    E.g. **diaphragm*** - Retrieves diaphragm, diaphragmatic, diaphragms
  - Break up phrases: **abus* and elder*** - Retrieves elder abuse. abuse of the elderly, etc.
  - Anticipate different spacings and British spellings.
    E.g. rollerblad* vs. roller blad* esophag* vs. oesophag*
- For **drugs/chemicals**, add **Registry Number (substance name)** to MESH and title/abstract words.

**STILL NEED HELP?** A **Reference Librarian** will be glad to help you!