FOR MDG5214

Presenter

Annelissa Chin (NUS Medical Library)

8 & 9 October 2018 (9:00 am-12:00 pm)
Venue: MD1 (Computer Lab 1, Level 8)
OUTLINE

- What is PubMed/MEDLINE
- PubMed search syntax
- How to search PubMed
  - Keyword
  - MeSH (Medical Subject heading)
- Manage search results
- Searching Pubmed Clinical Queries
- EndNote (presented by Amy Chou)
WHAT IS PUBMED/MEDLINE

• PubMed comprises more than 28 million citations for biomedical literature from MEDLINE, life science journals, and online books.
• MEDLINE, largest component of PubMed (24 million records from 5600 journals)
• Search interface developed by the National Center for Biotechnology Information (NCBI) at National Library of Medicine (NLM)

MEDLINE

• Biomedical literature database covering the fields of medicine, dentistry, nursing and health care system
• Medline records are indexed using MeSH
• Updated daily – in press, ahead of print
• Coverage: US & 80 other countries
HOW TO ACCESS PUBMED


   **Benefit:** Seamless access to full-text articles (journals subscribed by NUS Libraries)


   **Benefit:** Faster
SEARCH SYNTAX

1. BOOLEAN LOGIC (AND, OR, NOT)
2. PHRASE SEARCHING
3. TRUNCATION
4. BRACKETS

Test your understanding on search syntax?
Have fun with Kahoot QUIZ (https://kahoot.it)
**BOOLEAN OPERATOR**

**OR** -- either terms may be present
→ more results
E.g. cancer OR neoplasm

**AND** both terms must be present
→ fewer results
E.g. atrial fibrillation AND warfarin

**NOT** → Use with caution*
E.g. Humans NOT animals

**Note:** Boolean operators: **AND**, **OR**, and **NOT**, must be entered in UPPERCASE.
PHRASE SEARCHING

Searches exact phrase with double quotation marks

“Antithrombotic therapy”
“glycoprotein IIb/IIIa receptor inhibitors”
“American Society of Hematology”
TRUNCATION*

Searches spelling variants:

- **Vaccine** - vaccine, vaccines...
- **Vaccin** - vaccination, vaccinations, vaccinator, vaccinating...
- **Vac** - vacation, vaccine... vacuum, vacuole...

**Note:** Pubmed searches only first 600 variants.
BRACKETS (NESTING)

Used to combine concepts in a prescribed order in a search statement:

“atrial fibrillation” **AND** (warfarin **OR** Marevan **OR** Coumadin)

Grouping terms to be processed first
THE SEARCH PROCESS

1. Define the search topic
What is the safety and efficacy of warfarin treatment for stroke prevention in patients with non-valvular atrial fibrillation?

2. Identify Concepts

<table>
<thead>
<tr>
<th>Warfarin</th>
<th>non-valvular atrial fibrillation</th>
</tr>
</thead>
<tbody>
<tr>
<td>coumadin</td>
<td>non-valvular</td>
</tr>
<tr>
<td>coumadine</td>
<td>nonvalvular</td>
</tr>
</tbody>
</table>

3. Keywords

4. Search Statement

- warfarin OR caumadin OR coumadine
- AND
- non-valvular atrial fibrillation OR nonvalvular atrial fibrillation
SEARCHING PUBMED DATABASE

1. Keyword Search
   • [Title] field

2. MeSH Search
   • Subheadings
   • Major MeSH terms
In the **PubMed's Basic Search box**, enter the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Search strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>warfarin OR coumadin OR coumadine</td>
</tr>
<tr>
<td>#2</td>
<td>non-valvular atrial fibrillation OR nonvalvular atrial fibrillation</td>
</tr>
</tbody>
</table>

Click the **Advanced** tab, combine search results

#1 AND #2
Searching warfarin and its synonyms

Did you mean: warfarin OR coumadin OR coumadine (27596 items)

1. Primary Nonadherence to Oral Anticoagulants in Patients with Atrial Fibrillation:
   Real-World Data from a Population-Based Cohort.
   PMID: 29694286

2. Effects of Rolapitant Administered Intravenously on the Pharmacokinetics of a
   Modified Cooperstown Cocktail (Midazolam, Omeprazole, Warfarin, Caffeine, and
   Dextromethorphan) in Healthy Subjects.
   PMID: 29693712
Searching non-valvunar and its synonyms

1. **Optimal combination strategy of left atrial appendage closure plus catheter ablation in a single procedure in patients with nonvalvular atrial fibrillation.**
   PMID: 29727507
   [Similar articles](#)

2. **A Systematic Review and Bayesian Network Meta-Analysis of Risk of Intracranial Hemorrhage with Direct Oral Anticoagulants.**
   Wolfe Z, Khan SU, Nasir F, Raghu Subramanian C, Lash B.
   PMID: 29723935
   [Similar articles](#)

3. **Anticancer Drug-Related Nonvalvular Atrial Fibrillation: Challenges in Management and Antithrombotic Strategies.**
USING ADVANCED SEARCH FEATURE

Pubmed Advanced Search Builder

((warfarin OR coumadin OR coumadine)) AND (non-valvular atrial fibrillation OR nonvalvular atrial fibrillation)

See your search statements under History option
combine search results below using ‘ADD’ button
Search results
Items: 1 to 20 of 1518

1. A Systematic Review and Bayesian Network Meta-Analysis of Risk of Intracranial Hemorrhage with Direct Oral Anticoagulants.
   Wolfe Z, Khan SU, Nasir F, Raghu Subramanian C, Lash B.
   PMID: 29723935
   Similar articles

2. Optimal nonvitamin K antagonist oral anticoagulant therapy in a warfarin-sensitive patient after left atrial appendage closure: A case report.
   Shen L, Fang SS, Ge H, Qiao ZQ, Gu ZC.
   PMID: 29718897 Free Article
   Similar articles

3. Discontinuation risk comparison among 'real-world' newly anticoagulated atrial fibrillation patients: Apixaban, warfarin, dabigatran, or rivaroxaban.
   Lip GYH, Pan X, Kamble S, Kawabata H, Mardeklia J, Masseria C, Phatak H.
Searching specific field using [Title] from ‘ALL Fields’ dropdown

PubMed Advanced Search Builder

1. Enter search terms here
2. Choose ‘Title’ from ‘All Fields’ dropdown
3. AND
4. History deleted.

(((warfarin[Title] OR coumadin[Title] OR coumadine[Title])) AND (non-valvular atrial fibrillation[Title] OR nonvalvular atrial fibrillation[Title])))
Bypasses Automatic Term Mapping – More Specific but less comprehensive
REFINE SEARCH USING FILTERS

PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed ▼

((warfarin[Title] OR coumadin[Title] OR coumadine[Title])) AND (non-valvular)

Create RSS  Create alert  Advanced

Article types
Clinical Trial
✓ Randomized Controlled Trial
Review
✓ Systematic Reviews

Format: Summary  Sort by: Most Recent  Per page: 50

Search results
Items: 50

Filters activated: Randomized Controlled Trial, Systematic Reviews. Clear all to show 237 items.

   PMID: 28847595
   Similar articles

2. [Dabigatran versus warfarin for the prevention of stroke in Chinese patients with nonvalvular atrial fibrillation: Chinese subpopulation analysis of RE-LY].
   PMID: 27903389
   Similar articles
At the PubMed dropdown, select ‘MeSH’ option shown in the screen capture below:
MEDICAL SUBJECT HEADING (MeSH)

Medicine's controlled vocabulary used for indexing articles for MEDLINE/PubMed
Provides a consistent way to retrieve information

Human indexers read articles in MEDLINE and assign standardised terms called MESH

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MeSH

COUMADIN

Summary of COUMADIN

Search results
Items: 10

1. Warfarin
   An anticoagulant that acts by inhibiting the synthesis of vitamin K-dependent coagulation factors. Warfarin is indicated for the prophylaxis and/or treatment of venous thrombosis and its extension, pulmonary embolism, and atrial fibrillation with embolization. It is also used as an adjunct in the prophylaxis of systemic embolism after myocardial infarction. Warfarin is also used as a rodenticide.

2. Warfarin syndrome [Supplementary Concept]
   Date introduced: August 25, 2010

3. S-warfarin keto reductase [Supplementary Concept]
   Date introduced: May 10, 1992
ENTRY TERMS

SEARCH MESH FIRST TO CHECK FOR RIGHT TERMS!

Entry Terms:

- 4-Hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one
- Apo-Warfarin
- Aldocumar
- Gen-Warfarin
- Warfant
- Coumadin
- Marevan
- Warfarin Potassium
- Potassium, Warfarin
- Warfarin Sodium
- Sodium, Warfarin
- Coumadine
- Tedicumar

If you need to expand your search consider these synonyms in keyword search

Other ways to find Synonyms

- Thesaurus
- Subject terms in Library catalogue and key concepts or Descriptors (Author supplied)
- Find a review article and look for the “keywords” used to search the different databases
MESH TERMS

Automatically expands MeSH term to include more specific concepts

- All MeSH Categories
  - Chemicals and Drugs Category
    - Heterocyclic Compounds
      - Heterocyclic Compounds, 1-Ring
      - Pyrans
        - Benzopyrans
        - Coumarins
          - 4-Hydroxycoumarins
            - Warfarin

- All MeSH Categories
  - Chemicals and Drugs Category
    - Heterocyclic Compounds
      - Heterocyclic Compounds, Fused-Ring
      - Heterocyclic Compounds, 2-Ring
        - Benzopyrans
        - Coumarins
          - 4-Hydroxycoumarins
            - Warfarin

The broadest term
The most specific term
Searching for major topic on safety and efficacy of warfarin

- "Warfarin/adverse effects"[Majr]
Searching for major topic on complication and drug therapy for Atrial Fibrillation

- "Atrial Fibrillation/complications"[Majr]
- "Atrial Fibrillation/drug therapy"[Majr]
MeSH search using ‘Subheading’ and ‘Major topic’ for Warfarin AND Atrial fibrillation

("Warfarin/adverse effects"[majr]) AND ("Atrial Fibrillation/complications"[majr] OR "Atrial Fibrillation/drug therapy"[majr])

<table>
<thead>
<tr>
<th>Search results</th>
<th>Items: 1 to 20 of 234</th>
</tr>
</thead>
</table>
MESH MAJOR HEADINGS

MeSH terms
- Anticoagulants/adverse effects*
- Anticoagulants/therapeutic use
- Atrial Fibrillation/drug therapy*
- Hemorrhage/chemically induced
- Humans
- Practice Guidelines as Topic/standards*
- Renal Dialysis
- Stroke/prevention & control
- Vascular Calcification/chemically induced
- Warfarin/adverse effects*
- Warfarin/therapeutic use

Substances
- Anticoagulants
- Warfarin
COMPARING KEYWORD VS MAJOR MESH

- **Keyword**
  - Least precise
  - Broadest
  - Current (retrieve latest studies pending MeSH indexing)

- **Major MeSH**
  - Most precise
  - Narrowest
  - Slightly dated (miss latest studies due to delay in indexing)
In the *PubMed's Builder box* below, enter the following using the *ADD* button:

### #1

```
("Warfarin/adverse effects"[Majr]) AND ("Atrial Fibrillation/complications"[Majr] OR "Atrial Fibrillation/drug therapy"[Majr])
```

### #2

```
((warfarin[Title] OR coumadin[Title] OR coumadine[Title])) AND (non-valvular atrial fibrillation[Title] OR nonvalvular atrial fibrillation[Title])
```

Combine search results **#1 OR #2**
MANAGE SEARCH – USING FILTERS

- Located at the left side of the search results
- Choose suitable filters depending on what you are looking for
- Select additional filters if necessary
- Most commonly used: Article Types, Language
WHAT IF I CANNOT FIND MESH?

• If you cannot find a MeSH term, try other variations of your keyword

• It is possible there is no equivalent MeSH term for your keyword – if so then do a keyword search

Examples of newly added MESH Terms – 2015
• electronic cigarettes

Examples of newly added MESH Terms – 2016
• Zika virus

Examples of newly added MESH Terms – 2018
• Smoking Water Pipes
Review search history and pick best search for alerts to new results

<table>
<thead>
<tr>
<th>History</th>
<th>Search</th>
<th>Add to builder</th>
<th>Query</th>
</tr>
</thead>
<tbody>
<tr>
<td>#91 Add</td>
<td>Search</td>
<td>Add in builder</td>
<td>AND Warfarin/adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr]) Filters: Randomized Controlled Trials; News</td>
</tr>
<tr>
<td>#90 Add</td>
<td>OR in builder</td>
<td>OR in builder</td>
<td>adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr]) Filters: Randomized Controlled Trials; News</td>
</tr>
<tr>
<td>#89 Add</td>
<td>OR in builder</td>
<td>OR in builder</td>
<td>adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr])</td>
</tr>
<tr>
<td>#88 Add</td>
<td>Show search results</td>
<td>Show search results</td>
<td>adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr]) Filters: published in the last 5 years</td>
</tr>
<tr>
<td>#87 Add</td>
<td>Show search results</td>
<td>Show search results</td>
<td>adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr]) Filters: Systematic Reviews</td>
</tr>
<tr>
<td>#86 Add</td>
<td>Show search results</td>
<td>Show search results</td>
<td>adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr]) Filters: Clinical Trial; News</td>
</tr>
<tr>
<td>#85 Add</td>
<td>Show search results</td>
<td>Show search results</td>
<td>adverse effects[Majr] AND (&quot;Atrial Fibrillation/complications&quot; OR &quot;Atrial Fibrillation/drug therapy&quot;[Majr]) Filters: Systematic Reviews; News</td>
</tr>
</tbody>
</table>

Save in My NCBI
**Clinical study categories**: Therapy, diagnosis, etiology, prognosis; or clinical prediction guides.
PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches directly.

Search Term: warfarin AND (NOACs OR DOACs) AND (non-valvular OR nonvalvular)

Clinical Study Categories
Category: Therapy
Scope: Broad

Results: 5 of 220
Gupta K, Trocio J, Keshishian A, Zhang Q, Dina O,

Systematic Reviews
Results: 5 of 45
Screening for Atrial Fibrillation With Electrocardiography: An Evidence Review for the U.S. Preventive Services Task Force
Jonas DE, Kahlwati LC, Yun J DY, Middleton JC, Coker-Schwimmer M, Asher GN.
2018 Aug.

Medical Genetics
Topic: All

Results: 2 of 2
Meta-analysis of safety and direct oral anticoagulation in nonvalvular atrial fibrillation function.
Zou R, Tao J, Shi W, Yang M, Hua P.
IN SUMMARY

1. Always use MeSH in your search

2. If there is no MeSH term, use keywords

3. Use “OR” or “AND” to either widen or narrow your search

4. Combine keywords and MeSH search results to retrieve all relevant studies

5. Filter your results by:
   - Article types
   - Publication dates

6. Clinical Queries
THANK YOU

Feedback for Session on 9 October 2018
https://mysurvey.nus.edu.sg/EFM/se/547D231510739A7F

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