EBP for the EBP
(Extremely Busy Practitioner)

Using Search Engines and Databases

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Outline

- Search Strategy
- Pulling Keywords from Your PICO Question
- Boolean, Truncation, and Wild Cards
- Hierarchy of Evidence and Study Design
- National Guidelines Clearinghouse
- Cochrane Database of Systematic Reviews
- PubMed (MEDLINE)
The Search Strategy

- Develop PICO question
- Identify keywords and terms from PICO
- Identify standardized subject headings
- Combine subject headings and keywords to narrow or broaden your search
- Evaluate your search results
- Revise the search in light of your results
PICO Examples

- Do pediatric oncology patients have less infections when their diet includes fresh fruits and vegetables? (NGC)
- Does the use of Echinacea really prevent the common cold? (Cochrane)
- Does simulation improve confidence and competence of health science students? (PubMed)
Pulling Keywords from Your PICO Question

- What are the main topics of your PICO?
- Brainstorm – what other words could you use to describe your topic?
- What are some synonyms for the words you’ve come up with?
Evaluate the Search Results

- Don’t be afraid if you have zero (0) or thousands of results, play around with search strategies – you won’t break anything!
  - Read the titles and abstracts of “hits” in your search to get a feel for their relevance
  - Identify relevant MeSH and Keywords used to index particularly relevant “hits”
  - If your search yields too many or too few hits, modify it and try again
Revise the Search in Light of your Results

- Narrow the search by combining search terms and applying limits
- Broaden the search if the results are too limited by removing keywords and limits
Boolean

- AND
- OR
- NOT
Boolean

strawberry AND vanilla AND chocolate

Boolean

strawberry OR vanilla OR chocolate

Boolean and Nesting

- (strawberry OR vanilla) NOT chocolate

Truncation and Wild Cards

- Truncation is a searchable shortened form of a word.
  - `adolescen*` will include
    - adolescence
    - adolescent
    - adolescents, etc...

- Wild card characters are useful because of alternate spellings and other quirks in the English language.
  - `behavio?r,` will include
    - behaviour
    - behavior
  - `Wom*n,` will include
    - women
    - woman
Quotation Marks

Using quotation marks for a phrase forces the database to return results where those words appear together.

Without Quotations = 57,360 results

With Quotations = 13,180 results
Hierarchy of Evidence and Study Design

As you move up the pyramid the amount of available literature decreases, but increases in its relevance to the clinical setting.
National Guidelines Clearinghouse

- **http://www.guideline.gov/**
- Freely accessible database of evidence-based clinical practice guidelines and related documents.
- Initiated by the AHRQ in partnership with the American Medical Association and America's Health Insurance Plans.
- Now maintained by the Agency for Healthcare Research and Quality (AHRQ) and the U.S. Department of Health and Human Services.
- If you have developed a good practice guideline consider submitting it to the NGC
NGC Search Example

- Question: Do pediatric oncology patients have less infections when their diet includes fresh fruits and vegetables?

Click Detailed Search
NGC Detailed Search

Enter Keywords
Sort Results by Publication Date
**NGC Detailed Search cont...**

<table>
<thead>
<tr>
<th>Age of Target Population*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescent (13 to 18 years)</td>
</tr>
<tr>
<td>Adult (19 to 44 years)</td>
</tr>
<tr>
<td>Aged (65 to 79 years)</td>
</tr>
<tr>
<td>Aged, 80 and over</td>
</tr>
<tr>
<td>Child (2 to 12 years)</td>
</tr>
<tr>
<td>Infant (1 to 23 months)</td>
</tr>
</tbody>
</table>

**Sex of Target Population:**

- (Not stated)

**Publication Date**

- All Years
- 2008
- 2007
- 2006
- 2005
- 2004

**Results per page:**

- 20 Results

*Hold down the Control Key (Ctrl) and click your mouse to make multiple selections.*
NGC Search Results

Your search criteria:

Keyword: nutrition oncology infection
Age Range: Child (2 to 12 years)
Sort Order: Relevance

Your search found 6 related guidelines, which are listed below by relevance. Use the "Limit Search" button to sort by publication date.

To view a guideline summary, click on a title below.

Limit Search | Retrieve All | Add to My Collection

Items 1 to 6

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Other Guidelines from this Developer</td>
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<tr>
<th>Title</th>
<th>Consultation and referral guidelines citing the evidence: how the allergist-immunologist can help, American Academy of Allergy, Asthma and Immunology - Medical Specialty Society. 2005 Feb. 29 pages. NGC:006003</th>
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**NGC**

**Pros**
- Freely accessible practice guidelines that have undergone rigorous acceptance standards by the AMA, AHIP, AHRQ, and the U.S. Department of Health and Human Services

**Cons**
- Limited content
- Limited search capabilities
Cochrane Database of Systematic Reviews

- [http://www.cochrane.org/](http://www.cochrane.org/)
- “Gold Standard” for systematic reviews
- Free database, but requires paid subscription to access most content
Cochrane Search Example

- Question: Does the use of Echinacea really prevent the common cold?
You are only interested in Cochrane Reviews. Click “Record” to view details of review and access full text if available.
Cochrane Systematic Reviews

• Pros
  • Compiled through rigorous standards
  • Review process has already been done so you don’t have to

• Cons
  • Limited content
  • Limited search capabilities
  • Access to most full-text content requires paid subscription
PubMed (MEDLINE)

- www.pubmed.gov
- Created and maintained by the National Institute of Health (NIH) and the National Library of Medicine (NLM)
- 17 million citations back to 1950s
- Free database of citations with some content available for free
PubMed (MEDLINE) Search Example

- Question: Does simulation improve confidence and competence of health science students?
MeSH = Medical Subject Headings

Choose MeSH from Pull Down Menu
MeSH in PubMed

• Enter your search terms one at a time...
Choose the most applicable MeSH terms
PubMed - MeSH cont.

Send to Search Box using Boolean Operators
PubMed - History

- Combine searches from the History tab

Enter search numbers and combine using Boolean operators.
PubMed - Limits

- Click the “Limits” tab
PubMed - Limits cont...

- For the most clinically applicable studies always limit to “Humans,” “English,” and “Type of Article”.
## PubMed – Limit to Type of Article

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Tier 2</th>
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<tbody>
<tr>
<td>• Meta-Analysis</td>
<td>• Clinical Trial</td>
</tr>
<tr>
<td>• Practice Guideline</td>
<td>• Clinical Trial, Phase I</td>
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<td>• Randomized Controlled</td>
<td>• Clinical Trial, Phase II</td>
</tr>
<tr>
<td>Trial</td>
<td>• Clinical Trial, Phase III</td>
</tr>
<tr>
<td>• Review</td>
<td>• Clinical Trial, Phase IV</td>
</tr>
<tr>
<td>• Guideline</td>
<td>• Comparative Study</td>
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<tr>
<td>• Multicenter Study</td>
<td>• Controlled Clinical Trial</td>
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<td></td>
<td>• Research Support, N.I.H., Extramural</td>
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<td>• Research Support, N.I.H., Intramural</td>
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<td></td>
<td>• Research Support, Non-U.S. Gov't</td>
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<td></td>
<td>• Research Support, U.S. Gov't, Non-P.H.S.</td>
</tr>
<tr>
<td></td>
<td>• Research Support, U.S. Gov't, P.H.S.</td>
</tr>
</tbody>
</table>
PubMed - Citation Display

- Citation Display allows you to see if it is available online in full text, the abstract, and MeSH terms the citation was indexed under.
PubMed - Show

“Show” allows you to see all the results in one continuous list.

Debriefing with the OPT model of clinical reasoning during high fid


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Evidenced-based educational practices propose simulation as a valuable teaching and le
A project that uses a structured debriefing activity, the Outcome Present State-Test Meth
challenge faculty to create and manage patient simulation scenarios that coordinate with outcomes. Considerations for the future include incorporating patient simulation activities;
the current educational environment has obvious short term benefits, however, the long

MeSH Terms:
- Adult
- Clinical Competence
- Computer-Assisted Instruction/methods
- Curriculum standards
- Education, Nursing, Baccalaureate/organization & administration
- Female
Accessing Full-Text Articles

Avoid clicking on publisher icons unless they explicitly state that they are free or unless you are willing to pay $35.00 - $65.00 dollars per article.
It is likely that your institution’s library has facilitated link-out in PubMed to link you directly to articles from journals to which they subscribe to.

It is also likely that your institution’s library has an Inter-Library Loan service that will “borrow” the article you want from another library for you for a small charge (certainly less then $35.00!) or for free.

Contact your librarian and find out what services are available and how to use them.
You can email your results to yourself and your colleagues.
PubMed - Search History

• Don’t forget to save your search history!
PubMed (MEDLINE)

- PubMed advantages
  - Free to search
  - No username/password
  - Searches same content as Ovid MEDLINE
  - Links to free full-text sometimes available

- PubMed disadvantages
  - Still have to appraise articles once located
Good Database Searching Rules

Following these rules will improve your results...

1. Use standardized subject headings like MeSH and CINAHL Subject Terms.
2. Apply Limits like “English” and “Humans.”
3. Limit “Publications Types” to
   - Meta-analysis
   - Practice Guidelines
   - Randomized Controlled Trials
   - Reviews
4. Keep a copy of your search history.
5. If it takes you longer then 20 minutes – ask your librarian for help.
Need Help?

Contact a librarian at your institution.
They are there to help!