1. What is your **Search Goal**?
   - Up to date information to help with a patient
   - Up to date, relevant information for a research paper or review
   - Overview Information on a specific topic

2. Formulate your **PICO Question**
   - **P** – Patient/Population
   - **I** – Intervention
   - **C** – Comparison
   - **O** – Outcome

3. Get **General Information**
   - Get a general idea of your subject area and the language used within it. This may lead you to develop further needs which require more research.
   - General Information may be enough for your question.

4. Identify **Key Concepts**
   - Identify terms developed through PICO question and found in general information source(s).

5. Choose **Appropriate Database(s)**
   - Let your search goal and PICO question influence your choice(s) (PubMed, CINAHL, EMBASE, Cochrane Library, etc.).

6. Construct **Preliminary (Scope) Search**
   - Use key concepts as search terms in database(s) and combine with Boolean logic.

7. **Refine and Evaluate**
   - Browse your results from your preliminary search to find relevant titles.
   - Explore the terminology used to describe the articles you choose and keep track of these terms.

8. Construct **Precision Search of Database(s)**
   - From key concepts and terms found during your preliminary search, consult list of preferred terms/controlled vocabulary (MeSH, EMTREE, Thesaurus etc.). Use these terms with Boolean logic (AND OR NOT) to perform a precision search.

9. **Refine and Evaluate**
   - Browse your results. You can also combine the results from your precision search and your preliminary search. Go back and refine search strategy if necessary.

10. **Manage your Citations** in a reference manager such as RefWorks

---

Updated August 12, 2011
<table>
<thead>
<tr>
<th>Term</th>
<th>Also called or Related Terms</th>
<th>How to use it</th>
<th>Where you might see/hear it</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Keyword Searching</strong></td>
<td>Free text searching, Quick Searching, Natural Language</td>
<td>To create a preliminary or scope search. Keyword searching allows you to search broadly.</td>
<td>Google, PubMed, most databases and search engines</td>
</tr>
<tr>
<td><strong>Controlled Vocabulary</strong></td>
<td>Thesaurus, MeSH, EMTREE, CINAHL headings</td>
<td>To create a precision search. Using controlled vocabulary allows you to speak the language of the database you are using.</td>
<td>Databases often use a controlled vocabulary to describe the contents of a given database</td>
</tr>
<tr>
<td><strong>Truncation ( * asterisk )</strong></td>
<td>Usually asterisk, can be other symbols</td>
<td>To broaden your terms. Cancer* retrieves cancer, cancerous, cancers.</td>
<td>In most Health Science databases and search engines</td>
</tr>
<tr>
<td><strong>Reference</strong></td>
<td>Record, citation</td>
<td>Essential information such as Title, Journal Name, Date, etc. help identify where an article is located. Having a proper reference is essential when writing any professional document.</td>
<td>RefWorks, PubMed, EMBASE, Google Scholar, etc.</td>
</tr>
<tr>
<td><strong>Boolean Searching</strong></td>
<td>Boolean Logic, Advanced Searching, Boolean Operators</td>
<td>Used to combine search terms.</td>
<td>Advanced search options in databases have drop-down menus with Boolean Operators</td>
</tr>
<tr>
<td><strong>AND</strong></td>
<td>Boolean Operator</td>
<td>Insert <strong>AND</strong> between search terms to retrieve items which mention all search terms. It will not retrieve items that mention only one of the terms being searched. Narrows a search.</td>
<td>In most databases and library catalogues. In many search boxes, such as Google, there is an implicit <strong>AND</strong> between terms entered. e.g. Entering <em>lung cancer</em> is treated as <em>lung AND cancer</em>.</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>Boolean Operator</td>
<td>Insert <strong>OR</strong> between synonyms or related terms. Retrieves either or both terms. Broadens a search.</td>
<td>In most databases and library catalogues.</td>
</tr>
<tr>
<td><strong>NOT</strong></td>
<td>Boolean Operator</td>
<td>Insert <strong>NOT</strong> to exclude search terms. <strong>NOT</strong> can help to narrow your search by excluding certain terms.</td>
<td>In most databases and library catalogues.</td>
</tr>
<tr>
<td>Term</td>
<td>Also called or Related Terms</td>
<td>How to use it</td>
<td>Where you might see/hear it</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Limits</td>
<td>Filters, limiters</td>
<td>To group together search results by specific areas of interest (e.g. full-text, age, sex, date, etc.)</td>
<td>PubMed, EMTREE, CINAHL, etc.</td>
</tr>
<tr>
<td>Precision Search</td>
<td></td>
<td>Creating a specific search using controlled vocabulary to retrieve exact matches</td>
<td>PubMed, EMTREE, CINAHL, etc.</td>
</tr>
<tr>
<td>Preliminary (Scope) Search</td>
<td></td>
<td>Creating a broad search strategy to retrieve all related or possibly relevant results</td>
<td>PubMed, EMTREE, CINAHL, etc.</td>
</tr>
<tr>
<td>Randomized Controlled Trials</td>
<td>RCTs, randomized controlled clinical trials</td>
<td>A type of scientific study in which experiment participants are randomly selected to different groups (e.g. receiving the drug being tested or not) before the experiment begins. High quality RCTs on a single topic are often compiled in a Systematic Review</td>
<td>PubMed, EMBASE, CINAHL, Cochrane Library</td>
</tr>
<tr>
<td>Systematic Reviews</td>
<td>Reviews</td>
<td>Synthesis of relevant and trusted research on a single topic into one document</td>
<td>PubMed, EMBASE, CINAHL, Cochrane Library</td>
</tr>
<tr>
<td>Evidence Informed Decision Making</td>
<td>EIDM, evidence informed practice, evidence based decision making</td>
<td>The integration of experience, judgment, and expertise with the best available external evidence from systematic research e.g. An occupational therapist may want to prepare for meeting a new client with Alzheimer’s by obtaining a recent Systematic Review on the topic.</td>
<td>Capital Health, Health Sciences Library, health sciences literature, etc.</td>
</tr>
</tbody>
</table>

Updated August 9, 2011
## Choice of Database(s)

<table>
<thead>
<tr>
<th>Databases</th>
<th>Cochrane</th>
<th>PsychINFO (via EBSCO)</th>
<th>CINAHL (Nursing &amp; Allied Health) (via EBSCO)</th>
<th>PubMed</th>
<th>EMBASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects</td>
<td>Reviews of the effects of healthcare 1998+</td>
<td>Psychology, Behavior, Mental Health 1806+</td>
<td>Nursing and Allied Health 1981+</td>
<td>Medicine, Nursing, Dentistry, Veterinary, health care system, preclinical sciences 1966+</td>
<td>Medicine, Nursing, Dentistry, Veterinary, Pharmacology 1947+</td>
</tr>
<tr>
<td># of Journals</td>
<td>1</td>
<td>2100+</td>
<td>4556+</td>
<td>4900+</td>
<td>4800+</td>
</tr>
<tr>
<td>References</td>
<td>4500+</td>
<td>2,000,000+</td>
<td>2,700,000+</td>
<td>21,000,000+</td>
<td>13,000,000+</td>
</tr>
<tr>
<td>Full-text</td>
<td>All</td>
<td>Some Available through Capital Health link</td>
<td>Some Available through Capital Health link</td>
<td>Some Available through Capital Health link</td>
<td>Some Available through Capital Health link</td>
</tr>
<tr>
<td>Controlled Vocabulary</td>
<td>MeSH</td>
<td>Thesaurus</td>
<td>CINAHL Headings</td>
<td>MeSH</td>
<td>EMTREE</td>
</tr>
</tbody>
</table>

---

**Start here!** Smaller databases can be quicker to search and may lead you to good systematic review, or overview of your topic.

**No relevant information found in Cochrane?**
Move on to a database in your subject area:
- Mental Health = PsychInfo
- Nursing & Allied Health = CINAHL

**Need more information or not finding what you need?**
Consult PubMed and/or Embase

**Remember!**
The larger the database the more time you will need to put into forming a good search strategy.

---

*Updated: April 11, 2012*
Boolean Searching

What is Boolean Searching?
Creating relationships between concepts and combining search sets are the basics of Boolean searching. Relationships between concepts or search sets are created using the words AND OR NOT.

What are Boolean Operators?
AND OR NOT are often referred to as Boolean operators. These three words are used to combine concepts when searching.

AND

BOTH terms are within all items retrieved. The AND operator is used to narrow a search or decrease results. Only items within the intersection of circle A AND B will be retrieved.
Example:
smoking AND adolescence
Both words are found in items retrieved.

OR

Either term (A OR B) is located in retrieved items. The OR operator is used to broaden a search or increase results, and is often applied to synonymous terms. All terms in either circle A or circle B, or both will be retrieved.
Example:
flu OR influenza
Either or both of the above words will be seen in items retrieved.

NOT

B is being excluded from all items retrieved. The NOT operator is used to narrow or decrease results. Only items in the partial circle A will be retrieved.
Example:
overweight NOT obesity
All items that mention only “overweight” will be retrieved. Items that mention “obesity” will not be retrieved.
Caution: The NOT operator is the least used operator, since it may exclude potentially valuable items.

Questions?
Ask the Health Sciences Library: cdhalib@cdha.nshealth.ca
Nesting/Using Multiple Boolean Operators

What is nesting?
To solve the problem of multiple Boolean operators within one search statement, parentheses (parenthetical logic) are used. Parentheses are strategically placed around search terms. This practice is referred to as nesting.

Nesting (parenthetical logic) takes precedence over Boolean logic.
In a search statement with multiple operators, a search will be processed in the following sequence:
(search strategy in parentheses) ➔ NOT ➔ AND ➔ OR

Example:

Boolean logic: flu AND treatment OR therapy OR therapeutics
• Without nesting, you will get a large amount of results because “flu AND treatment” are being searched first, with therapy, therapeutics being added after with OR

With Nesting: (treatment OR therapy OR therapeutics) AND flu
• All terms and Boolean operators within the parentheses will be processed first, and then combined with the term "flu". This will give you fewer results because the synonyms in parentheses are searched first, with “flu” being added to the result of that search with AND

What if your search statement requires more than one set of parentheses?

Example:

Boolean logic: treatment OR therapy OR therapeutics AND flu OR influenza

With Nesting: (treatment OR therapy OR therapeutics) AND (flu OR influenza)
• All terms and Boolean operators within each group of parentheses will be processed first, and then combined together with AND

Remember:
• When using nesting always use an equal number of "opening" and "closing" parentheses
• When using advanced search options, nesting becomes very important. When combining sets of searches (e.g. PubMed Advanced Search) always make sure you use nesting correctly

Updated August 9, 2011
<table>
<thead>
<tr>
<th>CONCEPT 1</th>
<th>AND</th>
<th>CONCEPT 2</th>
<th>AND</th>
<th>CONCEPT 3</th>
<th>AND</th>
<th>CONCEPT 4</th>
<th>AND</th>
<th>CONCEPT 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td></td>
<td>OR</td>
<td></td>
<td>OR</td>
<td></td>
<td>OR</td>
<td></td>
<td>OR</td>
</tr>
</tbody>
</table>