### The basics of searching biomedical databases



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### **Learning Outcomes**

### At the end of this workshop you will:

- Be better able to formulate a clear search question
- Become more familiar with key databases in your field: CINAHL, Medline & EMBASE (Ovid), as well as Google Scholar
- Be able to conduct a successful search in these databases



### Agenda

#### How to search the major bibliographic databases

- Formulating a question
- General search tips

#### **Demo**

- Searching the databases:
  - CINAHL
  - Medline/EMBASE (Ovid)
  - Pubmed
  - Google Scholar

### Formulating your question

### Step 1:

 Formulate your question & identify key concepts.

 Knowing what you want to find before you begin is half the battle.



### Why are key concepts important?

- Identifying the important concepts in your question will help you to build your search.
- They can be used as either keywords, or to map to subject headings, depending on which resource you are searching.
- You will learn more about keywords and subject headings in the following section...



### What is PICO?

- PICO is a tool clinicians use to help formulate their questions.
- PICO helps identify key concepts which can then be used as keywords in your search
- PICO helps determine what type of evidence you are looking for
  - Diagnosis
  - Therapy
  - Etiology
  - Prognosis
- PICO helps you select the best research/resource to answer your question
  - Clinical practice guideline, Systematic review, RCT
  - CINAHL, Medline, Embase etc.



### **Example**

**Question:** You are looking for literature on the use of solusets in pediatrics to minimize risk of fluid overload.

- Population (pediatric)
- Intervention (soluset)
- Comparison (nothing in this case)
- Outcome (lowered risk of fluid overload)

Type of question: Therapy

**Type of research:** Systematic, RCT review, Clinical study...

**Type of resource:** In this case a nursing resource like CINAHL might be best. In fact a search using keyword "soluset\*" retrieves the following relevant article:

Ford NA; Drott HR; Cieplinski-Robertson JA. **Administration of IV medications via soluset**. *Pediatric Nursing*, 2003 Jul-Aug; 29 (4): 283-6, 319

etermine the type of auestion

Type of Question	Best Evidence
Diagnosis (test)	Quantitative Comparison to Gold Standard
Therapy (treatment, prevention)	Quantitative Systematic review of RCTs, RCT
Etiology/Harm	Quantitative Observational study: cohort or case control
Prognosis	Quantitative Observational study: cohort or case control
Economics	Quantitative Cost-effectiveness study
Meaning	Qualitative, mixed methods Case study, ethnography, grounded theory, phenomenologic approach



jgh.ca/hsl > Subject Guides >
Evidence-based Practice

## Identifying key concepts without using PICO

Look at your question. Remove all extra words:

 You are looking for literature on the use of solusets in pediatrics to minimize risk of fluid overload.

solusets pediatrics fluid overload.



## Identifying key concepts without using PICO

Keep the bare minimum essential to your question.

### Ex. Why remove "minimize risk"?

- Unnecessary
- "Increased" or "minimized": Don't we want both?
- The more you add, the more you can miss out



## **Get ready for searching – The Concept plan**

Writing down each concept in a table and find synonyms will help you to

- Build your search
- Understand your question better
- Understand the relation between the concepts (AND? OR?)



## **Get ready for searching – The Concept plan**

Concept 1	AN	ND	Concept	2	AN		Concept 3
					Co	nc	
OR	_		OR		_		OR
OR	_		OR		_		OR



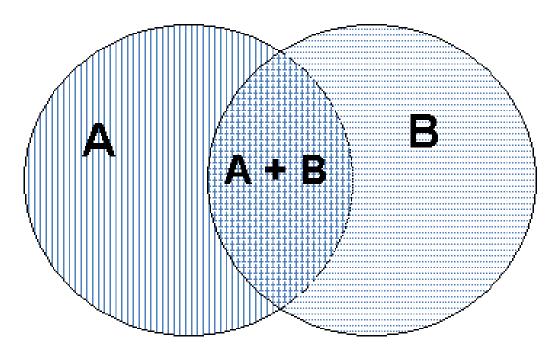
# **Searching the Literature – Tips**I

### **Boolean operators**

**AND** = A+B (narrowing)

**OR** = A, A+B, B (broadening)

**NOT** = A only (not A+B or B) \*Use with extreme caution!





### Subject headings

- Subject headings are a controlled vocabulary used to index contents in different databases
  - MeSH medical Used in Medline
  - CINAHL nursing and allied health
  - EMTREE Embase (pharma)
  - etc...
- All synonyms included under one term so all articles about x are found using one subject heading i.e. what is the article about?
- Can usually have more control and limit search more effectively
- Resources: Ovid databases: Medline, EMBASE, Cinahl



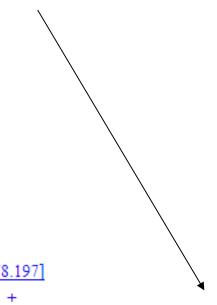
### Subject headings are organized in a hierarchical tree:

MeSH Tree Structures

#### Health Occupations [H02]

Acupuncture [H02.004] Allied Health Occupations [H02.010] + Biomedical Engineering [H02.070] Chiropractic [H02.110] Dentistry [H02.163] + Environmental Health [H02.229] + Evidence-Based Practice [H02.249] + Health Services Administration [H02.269] Hospital Administration [H02.309] Medical Illustration [H02.385] Medicine [H02.403] + Mortuary Practice [H02.438] Nursing [H02.478]

**Broad (general)** 



Narrow (specific)

Evidence-Based Nursing [H02.478.197]

Nursing Research [H02.478.395] +

Nursing Theory [H02.478.408]

Specialties, Nursing [H02.478.676] +

Nursing, Practical [H02.495]

Nutritional Sciences [H02.533] +

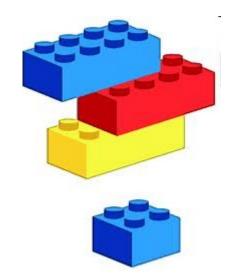
### Keywords

- Keywords are words that appear in the text.
  - Does this word appear in the title, or abstract? (resources rarely search full text)
- Author's terminology must search each synonym so all articles about x are found using x, y, z, etc.
- Can find concepts not indexed as headings i.e "72 hours", age range, new concepts, etc.
- Can help to establish relationship between concepts i.e. this
  as alternative to that
- Resources: Medline via Pubmed, Science Direct & Google Scholar



### Subject headings vs keywords:

 Subject headings work like building blocks: take one concept at a time and build your search



 Keywords work like the ingredients of a soup: throw in a bunch of concepts and see how it turns out





### **Important Note:**

- You will be using keywords to "map" to Subject headings in Cinahl and Ovid (Medline and EMBASE)
- In other words...
  - 1. You type in your keyword: cancer
  - Database suggests the best Subject Heading: neoplasms

#### Used For:

neoplasms

neoplasm

tumors

tumor

benign neoplasms

neoplasms, benign

benign neoplasm

neoplasm, benign

cancer

### The databases

### Step 2:

Pick your database

 Looking in the right place is essential to finding relevant literature



### **Access the databases**





#### JGH Libraries Catalogue Search



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Table of Contents (TOC)

Accessing JGH Resources

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Libraries > Health Sciences Library (HSL)

#### Welcome to the Health Sciences Library (HSL)





www.jgh.ca/hsl

15/10/2014

Ebola: a new page with timely resources by the Patient & Family Resource Centre (PFRC)

The Patient & Family Resource Centre (PFRC) of the JGH created a new

#### McGill Resources

#### ■ IGH Resources

**CINAHL Complete** 

Cochrane Library

Directory of Open Access Journals

e-CPS

EMBASE (via Ovid)

Health and psychosocial

instruments (via Ovid)

Healthstar (via Ovid)

Google Scholar

IAMA

IGH Journals A-Z

Medline (via Ovid)

**Natural Standard** 

NASW Clinical

### **Cinahl Complete**

Producer	CINAHL Information Systems (Glendale Adventist Medical Centre, CA)	
Coverage & Updating	1937 to present, updated weekly 5400+ journals indexed	
Full text coverage	Complete or partial full text for over 1 300 journals indexed.	
# of references	4.3 million+	
Languages	22	
Content	<ul> <li>Indexes literature in nursing &amp; allied health (physiotherapy, occupational therapy, speech and language pathology, nutrition, etc.).</li> <li>Books, book chapters, conference proceedings, journal articles, websites, consumer health literature, dissertations and theses.</li> </ul>	
Search Options	<ul> <li>Subject headings (MeSH + CINAHL SH) and subheadings, AND, OR, limits by age group, year of publication, language, review articles, etc.</li> <li>Keyword searching by field, truncation using *</li> </ul>	

<sup>\*</sup> Please note that the HSL subscribes to CINAHL Complete and McGill to CINAHL Plus with Full Text. Coverage can varies.

### Why use Cinahl?

The topic is a nursing or allied health topic

 The question is on the psychosocial aspects of a health topic

- Key concepts map easily to subject headings
  - Terms commonly used in nursing practice
  - You can easily combine the terms using AND & OR



### **Medline- OVID**

Producer	National Library of Medicine, U.S.
Coverage & Updating	1950 to present, updated daily 5600+ journals indexed
Full text	available if subscription to journal is held by your institution
# of references	21 million + 2 000 – 4 000 added per day
Languages	60+
Content	<ul> <li>Contains journal articles covering the full range of evidence from experimental studies to systematic reviews, with editorials and review articles as well.</li> <li>All life sciences, clinical, research, allied health, and related fields - medicine, nursing, dentistry, rehabilitation sciences, veterinary medicine, health care administration, and preclinical sciences, etc.</li> </ul>
Search Options	<ul> <li>Subject headings (MeSH) and subheadings, AND, OR, limit by date, type of publication, age group, etc.</li> <li>Subheadings (etiology, therapy, diagnosis)</li> <li>Keywords, truncation using \$</li> </ul>

### Why use Medline via Ovid?

The topic is a medical topic

- Key concepts map easily to subject headings
  - Terms commonly used in medical practice
  - You can easily combine the terms using AND & OR



### **EMBASE- Ovid**

Producer	Elsevier Science
Coverage & Updating	1974 to present; updated daily 8400 journals indexed
Full text	available if subscription to journal is held by your institution
# of references	22 million + 1 million+ added every year
Languages	30+
Content	Broad biomedical scope covering the following areas: Drug therapy and research, including pharmaceutics, pharmacology and toxicology Clinical and experimental (human) medicine Basic biological science relevant to human medicine Biotechnology and biomedical engineering, including medical devices Health policy and management, including pharmacoeconomics Public, occupational and environmental health, including pollution control Veterinary science, dentistry, and nursing
Search Options	Subject headings (EMTREE not MeSH), keywords and limits Truncation using \$  Can limit to clinical question types

### Why use EMBASE?

The topic is pharmaceutical in nature

 Embase indexes many more drug names than the other databases and uses EMTREE subject headings which are designed to work with drugs – keywords are more likely to map, limits and subheadings are more relevant



### Medline- PubMed

Producer	National Library of Medicine, U.S.
Coverage & Updating	1950 to present, updated daily 5246 + journals indexed
Full text	Many Open Access/Free by PubMedCentral and from publishers (more available if subscription to journal is held by your institution)
# of references	24 million + 500 000 + added every year
Languages	58+
Content	PubMed provides access to bibliographic information that includes MEDLINE, as well as:  Citations that precede the date that a journal was selected for MEDLINE indexing.  Some additional life science journals that submit full text to PubMedCentral and receive a qualitative review by NLM.  PubMed Central- Open Access
Search Options	<ul> <li>Subject headings (MeSH) and subheadings, AND, OR, limit by date, type of publication, age group, etc.</li> <li>Keywords</li> <li>Truncation using *</li> <li>Clinical query filter: diagnosis, therapy, etiology, or prognosis.</li> </ul>

### Why use Medline via Pubmed?

- The topic is a medical topic
- You feel more comfortable searching using keywords but would like to access the medical literature found in Medline (will search for keywords and MeSH subjects headings at the same time)
- The question is clinical in nature and you would like to use the Clinical Queries filter



Goodle Scholar

Producer	Google
Coverage & Updating	Unknown coverage, updated multiple times a week
Full text	available if subscription to journal is held by your institution OR if content is Open Access
# of references	Unknown but:  "index research articles and abstracts from most major academic publishers and repositories worldwide, including both free and subscription sources"
Languages	13+
Content	Multidisciplinary: Journals Conference papers Theses and dissertations Academic books Pre-prints Technical reports, Court opinions Patents, etc.
Search Options	<ul> <li>Keywords</li> <li>Limit by author, journal, year, language, topic subset</li> <li>Search within results</li> <li>Cited by</li> </ul>

### Why use Google Scholar?

- The topic is broad, either medical, nursing or pharma related
- The relationships between key concepts are difficult to establish using AND & OR
- You want to do snowballing i.e check who cited an article you found that is older than you would like, or you want to quickly find a reference from another article
- You think the answer may also be found in a book
- You want to get familiar with a completely new topic



### Why use Google?

- You are looking for
  - guidelines
  - drug warnings
  - how to use equipment, how to avoid air embolism... as opposed to the research
  - definitions, correct spelling, nursing blogs, access consumer health resources etc.

#### NOTE:

- Guidelines can also be found here:
  - RNAO www.rnao.org/Page.asp?PageID=861&SiteNodeID=270
  - CMA https://www.cma.ca/En/Pages/clinical-practice-guidelines.aspx
  - National Guidelines Clearinghouse www.guideline.gov
- Drug warnings can also be found on Health Canada www.hc-sc.gc.ca/dhp-mps/prodpharma/databasdon/index-eng.php



### Why use all of the above?

- It is important to not get stuck on one resource.
  - Search one and use what you've learned in the next one.
  - Keep them all open so you will remember to switch back & forth
  - Steal keywords or subject headings you think might work elsewhere
- Do snowballing (see slide #37)
- Jump back & forth
- Know the strengths and weaknesses and exploit them or avoid them

# Searching The Literature – Tips

## Tips for good searching

- Start broad and then narrow search
  - limits (French, 2000-2009, Humans, RCTs)
  - subheadings (Neoplasms: drug therapy)
- Save search history
  - key words & synonyms
  - subject headings
- Try search again with a fresh mind
- Know when to stop: déjà vu





### Think like a detective

- Find one relevant article = "lead"
- Use it to find more = follow the clues...
  - Look at the subject headings used to index the article- reformulate your search
  - Find synonyms in title or abstract
  - Snowball:
    - Use the "More like this", and "Citing articles" features of databases) and/or online journal(s)
    - Look at the references
  - Try another database
  - Try Google or Google Scholar to learn more about the topic and maybe find more literature
- This is an iterative process

# **Demo question**

# Step 3:

Conducting your search

 Formulating a clear search strategy will help you pinpoint the relevant literature to answer your question



## **Demo Question**

### **Scenario:**

You have noticed that talking with your cancer patients about depression, treatments and coping strategies seems to help them. You think this would make an interesting study and would like to know what research has already been done on psychosocial interventions by nurses in managing depression in cancer patients.

### **Question:**

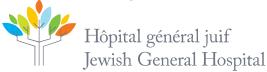
"What are the psychosocial nursing interventions for coping with depression in cancer patients?"

### **Key Concepts:**

- Depression
- Cancer
- Psychosocial interventions
- Nursing

### **Resources:**

- Cinahl
- Medline
- Google Scholar



## Cinahl Search

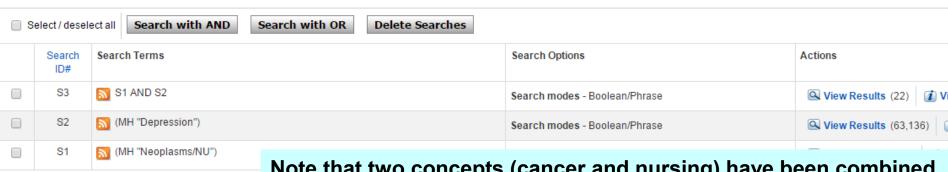
Print Search History | Retrieve Searches | Retrieve Alerts | Save Searches / Alerts

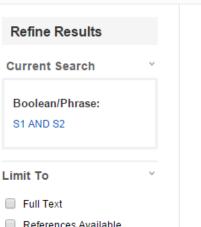
Search

 Compa depressi

Journal

#### Search History/Alerts



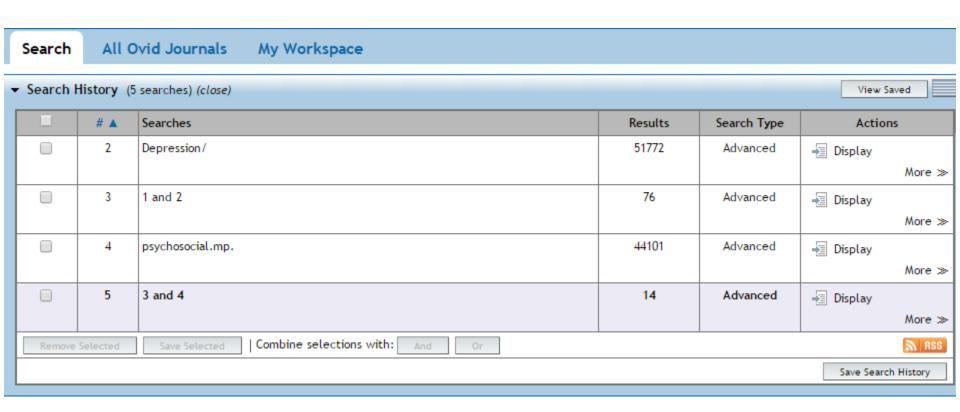


Note that two concepts (cancer and nursing) have been combined in one subject heading: Neoplasms/NU

More results can be found by:

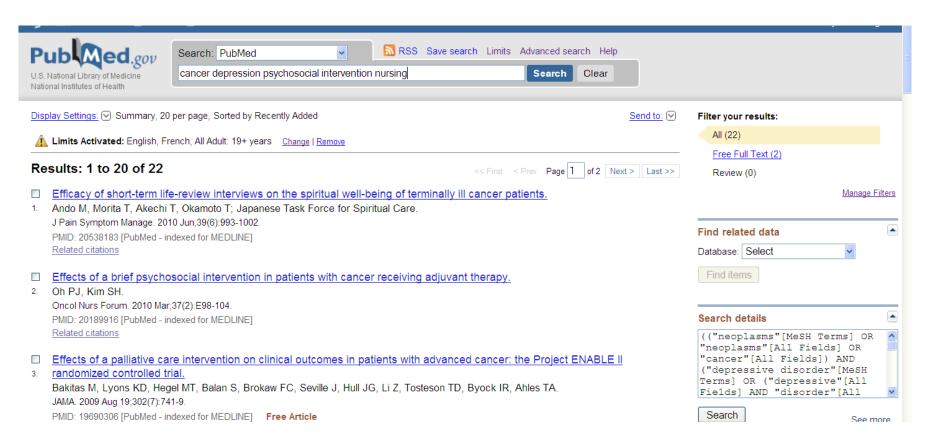
- 1. Looking at articles cited by relevant articles found here
- 2. Look at who cited relevant articles found here
- 3. To see more citing articles plug title of relevant articles into Google Scholar in quotes i.e. "Randomized trial of coordinated psychosocial interventions based on patient self-assessments versus standard care to improve the psychosocial functioning of patients with cancer"
- 4. To find more articles in Google scholar remove quotes and add keywords "nursing intervention"

### **Ovid Medline Search**



- In Medline the final concept has been added as a keyword to further narrow results
- The same snowballing steps can followed as outlined in the Cinahl search (see previous slide)

## **Pubmed Medline Search #1**



# Pubmed Medline Search #2 Clinical queries

### **PubMed Clinical Queries**

Efficacy of an insomnia intervention on fatigue, mood and quality of

J Adv Nurs. 20081

life in breast cancer survivors.

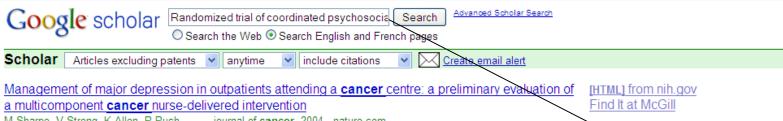
Search	cancer depression psychoso	ocial nursing		Search Clear
Results of	searches on this page are lin	mited to specific clinica	I research areas. For comprehensive searches, use PubMed di	rectly.
Clinical Study Categories			Systematic Reviews	Medical Genetics
Category	Therapy	~		Topic: All
Scope	Narrow	<b>V</b>		
Results: 5 of 16			Results: 5 of 6	Results: 1 of 1
Efficacy of short-term life-review interviews on the spiritual well-being of terminally ill cancer patients.  [J Pain Symptom Manage. 2010]			Coping interventions for parents of children newly diagnosed with cancer: an evidence review with implications for clinical practice and future research. [Pediatr Nurs. 2010]	The influence of cancer-related distress and sense of coherence on anxiety and depression in patients with hereditary cancer: a study of patients' sense of coherence 6 months after g [J Genet Couns. 2007
Effects of a palliative care intervention on clinical outcomes in patients with advanced cancer: the Project ENABLE II randomized controlled trial. [JAMA, 2009]			Health-related quality of life in patients with hepatocellular carcinoma: a systematic review.  [Clin Gastroenterol Hepatol, 2010]	See all (1
The psychological impact of a specialist referral and telephone intervention on male cancer patients: a randomised controlled trial.  [Psychoncology, 2010]			[Psychosocial interventions for couples living with cancer. A literature review].	Filter citations to topics in medical genetics.
The effectiveness of the Screening Inventory of Psychosocial Problems (SIPP) in cancer patients treated with radiotherapy: design of a cluster randomised controlled trial. [BMC Cancer. 2009]			Specialist breast care nurses for supportive care of women with breast cancer.  [Cochrane Database Syst Rev. 2008]	

Adjustment issues related to bilateral prophylactic mastectomy in

[Plast Surg Nurs. 2006]

women at elevated risk of developing breast cancer.

## Google Scholar Search



M Sharpe, V Strong, K Allen, R Rush... - ... journal of cancer, 2004 - nature.com ... Coordinating and monitoring the patient's treatment with respect to the MDD. ... ISI | ChemPort |; McLachlan SA, Allenby A, Matthews J, Wirth A, Kissane D, Bishop M, Beresford J, Zalcberg J (2001) Randomized trial of coordinated psychosocial interventions based on patient self ... Cited by 29 - Related articles - Get at CISTI - All 7 versions - Import into EndNote

#### Barriers to the treatment of depression in cancer patients

DB Greenberg - JNCI Monographs, 2004 - jncimonographs.oxfordjournals.org ... These medications have been tested in systematic placebo-controlled, randomized studies ... Screening is coordinated with the first or second oncology visit or the simulation appointment for ... The study of the benefit of paroxetine in an interferon trial for melanoma illustrates how an ... Cited by 42 - Related articles - BL Direct - All 7 versions - Import into EndNote

#### OF PSYCHO-ONCOLOGY 16TH-21ST OCTOBER 2006

JC Holland - Psycho-Oncology, 2006 - Wiley Online Library
... tools have been developed for the assessment of the intensity of physical and psychosocial
symptoms. ... Interventions range from prevention that has a potential in changing the care for the
hospita ... This analysis is based on literature that cites popular culture and mass media as a ...
All 2 versions - Import into EndNote

#### [воок] Outcomes in radiation therapy: multidisciplinary management

DW Bruner, G Moore-Higgs... - 2001 - books.google.com
... BASED MANAGEMENT MODEL OF PATIENT CARE 1 Defining Outcomes-Based Management
2 ... Expected Outcomes 478 Outcomes Measures 479 Outcomes Management 480 Pharmacologic
Interventions 482 References ... FDA) for use only in a research study or clinical trial. ...
Cited by 2 - Related articles - Find It at McGill - Import into EndNote

Rand

K Robie

Critica

America

Rand

Randomized trial of coordinated psychosocial interventions based on patient self-assessments versus standard care to improve the psychosocial functioning of patients with cancer "nursing intervention"

[HTML] from oxfordjournals.ord Find It at McGill

[PDF] from psycho-oncology.info Find It at McGill

### Remember!

- A JGH Librarian is available to provide one-on-one instruction
  - Francesca Frati, local 2438, ffrati@jgh.mcgill.ca
  - Laura Ivan, livan@jgh.mcgill.ca
- Tutorials are available 24/7
  - JGH.ca/HSL > Subject Guides or
  - JGH.ca/HSL > Instruction > Workshop presentations & Handouts



### **THANK YOU!**

