Searching Skills for Finding the Evidence

THE EAHIL 2011 WORKSHOP
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Objectives

- Background - Evidence-Based Medicine
- Asking an answerable question
  - Important concepts
  - Search terms
- Where to look for evidence
- Developing a search strategy

Evidence Based Medicine (EBM) extends the role of the librarian beyond Identification of the literature to practising and teaching information retrieval methods and critical appraisal. This workshop will focus on the first two steps of EBM which is librarian centred and offer techniques to help librarians to retrieve information efficiently and effectively. First step asking an answerable question identifying that there is a need for new information and how to convert a information query into an answerable question. Secondly finding the best evidence - locate which sources to search, and how to search them. Construct a search strategy using the techniques of narrowing or expanding the search, Boolean operators, truncation and wildcards. The workshop consists of lectures, quizzes, and demonstrations. Hands on practice developing a search strategy for CINAHL. Overview and demonstration of the Cochrane Library and other EBM resources..

Background

What is EBM? Its definitions

History of EBM

Steps in the EBM process

What is Evidence-based Medicine?

"The integration of individual clinical expertise with the best available clinical evidence from systematic research."

David L Sackett, W Scott Richardson, William Rosenberg, R Brian Haynes
Evidence Based Medicine--How to Practice and Teach EBM, 1996

What is evidence based practice?

Evidence-based practice, the practice of health care in which the practitioner systematically finds, appraises, and uses the most current and valid research findings as the basis for clinical decisions.

Mosby's Medical Dictionary, 8th edition. © 2009,
Elsevier

What is Evidence-based Health Care?

"Evidence based health care takes place when decisions that affect the care of patients are taken with due weight accorded to all valid, relevant information."
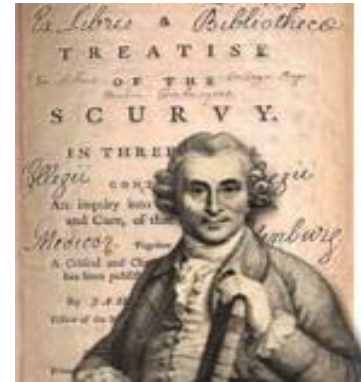
Some milestones in the history of EBM

Daniel "Please test your servants for ten days: Give us nothing but vegetables to eat and water to drink. Daniel 1:12-15

James Lind 1716-1794
In 1753, he published 'A Treatise of the Scurvy'

600 BC   900 AD   1100   1780

1840

Zakariya al-Razi
For I once saved one group by it, while I intentionally neglected another group.

Frederick II (1194-1250)
was interested in the effects of digestion

Pierre Louis (1787–1872)
Develops his "numerical method" and changes blood letting practice in France

http://www3.interscience.wiley.com/journal/118718929/abstract

Alternatives to
Evidence Based Medicine

Eminence based medicine

Making the same mistakes with increasing confidence over an impressive number of years

Eloquence based medicine

Sartorial elegance and verbal eloquence can be powerful substitutes for evidence

Providence based medicine

The decision may be best left in the hands of the Almighty

Nervousness based medicine

Fear of litigation is a powerful stimulus to over-investigation and over-treatment.

http://bmj.com/cgi/reprint/319/7225/1618.pdf

Five Steps of EBM

- *Ask:* Converting the need for information into an answerable question
- *Acquire:* Searching the best evidence with which to answer that question.
- *Appraise:* Critically appraising the evidence for its validity impact and applicability
- *Apply:* Integrating the evidence with our clinical expertise and patients' condition, values and circumstances.
- *Assess:* the outcome in evaluating our effectiveness and efficiency in executing the above

What is a systematic review?

- A review of a clearly **formulated question** that uses **systematic** and **explicit methods** to **identify, select,** and **critically appraise relevant research**, and to **collect and analyse** data from the studies that are included in the review.

- Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies.

  http://www.cochrane.org/resources/glossary.htm

The key features of a systematic review are that:

- *Explicit* and *transparent* methods are used
- It is a piece of research following a *standard* set of stages
- It is *accountable*, *replicable* and *updateable*

- Based on an exhaustive literature search

- Research has been critically appraised

- Data extracted from multiple studies

Why do systematic reviews

- information explosion
- not all information = evidence
- highlight the lack of evidence
- identify areas where further research may be needed

Systematic reviews are widely considered to be the best source of research evidence.

essential tools for :
- clinicians
- health care workers
- researchers
- consumers
- policy makers
- legal profession

Asking an answerable question

Question must be….

- **Clear**
- **Answerable**
- **Focused**

"Ask a poor question and you will get a poor review…"

Counsell C (1997) Formulating questions and locating primary studies for inclusion in systematic reviews. *Annals of Internal Medicine*, 127: 380-387

Defining the Question

- First and most important decision
  - Guides the rest of the review
  - End users' determination of relevance
- Take adequate time to draft and discuss with co-reviewers

Donna Dryden and Lisa Hartling. *Defining the Question and Protocol Development*. PowerPoint presentation. Author Training Workshop, Canadian Cochrane Symposium, Edmonton, Alberta, March 8, 2008.

Asking the Right Question

- Facilitates literature searches
- Guides your plan
- Narrows your focus
- Searchable
- Answerable

Narrow versus broad question

- Very broadly defined questions may be too difficult to search

- Very narrowly focused questions may lead to biased interpretations / conclusions
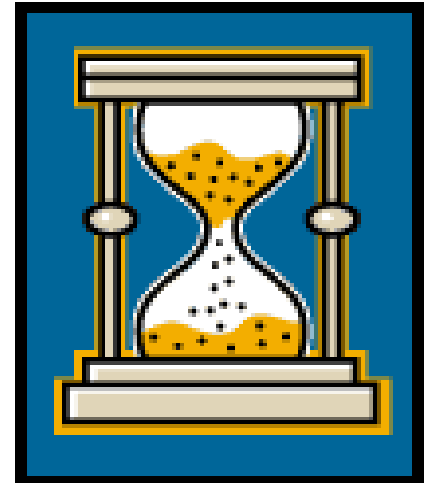
How to tackle a broad question

Who
What
When
Where
Why

Forming the right 'question' may take time and it will develop as you do your research, you don't have to rush.

What is a PICO Question?

Population

- **P:** Population/disease (i.e. age, gender, ethnicity, with a certain disorder)
- **I:** Intervention or Variable of Interest (exposure to a disease, risk behavior, prognostic factor)
- **C:** Comparison: (could be a placebo or "business as usual" as in no disease, absence of risk factor, Prognostic factor B)
- **O:** Outcome: (risk of disease, accuracy of a diagnosis, rate of occurrence of adverse outcome)

Example

- Identifying emotional neglect / abuse in children aged 6-11 years, with a view to defining 'thresholds' for intervention

What emotional, behavioural, psychological, developmental, physiological features in the child aged 6-11 years indicate *any type* of neglect?

"concepts" within a Question

"What is the effect of	(concept #1) on	(concept #2) ?"
"What is the role of	(concept #1) in	(concept #2) ?"
"How has the use of	(concept #1) affected	(concept #2) ?"
"Why has	(concept #1) led to	(concept #2) ?"

Example 'Are newer hormone replacement preparations better?'

Patient/ Problem	Intervention	Comparison	Outcome
	Hormone replacement preparations		

EXAMPLE: What is the effect of newer hormone replacement preparations compared to non hormonal preparations in postmenopausal women suffering from osteoporosis?

Patient/ Problem	Intervention	Comparison	Outcome
Post menopausal women	HRT preparations	Non HRT preparations	Effect on osteoporosis

Identifying search terms to describe the concepts

Review Question

Is bruising suggestive of child abuse?

 1. What patterns of bruising suggest physical child abuse

2. Can we age a bruise accurately?

Maguire et al. *Archives of Disease in Childhood* 2005;**90**:187-189

Example

infant children toddler baby preschool child babies	child abuse child maltreatment non-accidental injury non-accidental trauma soft tissue injury physical abuse battered child shaken baby	bruises petechiae ecchymoses haematoma contusion purpura	pattern age date

Database selection

Bibliographic databases

ASSIA

Embase

Medline

Psycinfo

CINAHL

Social care online

Web of Science

Subject specific databases

Child data

Websites and grey literature

Child Welfare Information Gateway

British Association for the Study and Prevention of Child Abuse and Neglect

Open SIGLE

Electronic databases

General	ASSIA, CINAHL, Cochrane Library Embase, Medline, Science Citation Index, SCOPUS Social Care Online, Sociological Abstracts, Social Sciences Citation Index
Specialist	Age Line, Community Wise, ERIC, IBSS, IDOX PsycINFO, SPORTDiscus
Grey Literature	HMIC, Open SIGLE, conference abstracts, websites

"Grey Literature"

- Unpublished or hard-to-find studies, i.e., "grey
- Literature"
- Conference or society websites for meeting abstracts
- Databases specializing in governmental research, e.g., NTIS Database and RePORT
- Databases of clinical trials: Cochrane Controlled Trials
- Register, or Clinicaltrials.gov
- Google or Google Scholar

Free information resources

- Biomed Central

http://www.biomedcentral.com/

- Directory of Open access journals

http://www.doaj.org/

- Open J-Gate

http://www.openj-gate.com/Search/QuickSearch.aspx

- SCIRUS

http://www.scirus.com/

- SUMSearch

http://sumsearch.uthscsa.edu/

- SSRN: Social Science Research Network

http://papers.ssrn.com/sol3/DisplayAbstractSearch.cfm

- TRIP Database

http://www.tripdatabase.com/

Where to look for evidence

Cochrane Library

There are four ways of searching the Cochrane Library:

- 1. **Simple search-** Using the single search box on the home page
- 2. **Advanced search -** Advanced search allows you build a search strategy
- 3. **MeSH search -**This is a specific method of searching using the index terms. It is best used in conjunction with free text searching carried out within search history.
- 4. **Search using a review group-** quick way to find evidence on a topic

Campbell Library

- The Campbell Collaboration (C2) helps people make well-informed decisions by preparing, maintaining and disseminating systematic reviews in education, crime and justice, and social welfare.

Campbell Library user guide

http://www.campbellcollaboration.org/Library/user_guide.php

Reducing gang related crime: a systematic review of 'comprehensive' interventions

What do we want to know?

- Are 'comprehensive' interventions more effective at reducing gang related criminal activity and anti-social behaviour than usual service provision

http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2444&language=en-US

Databases searched

Criminal Justice

Criminology: a SAGE full-text collection

Lexis Nexis (legal journals)

NCJRS (National Criminal Justice Reference Service)

Proquest (includes a Criminal Justice Periodicals Index)

Medline

EMBASE

ASSIA (Applied Social Sciences Index and Abstracts)

IBSS (International Bibliography of the Social Sciences)

PsycINFO

PAIS (Public Affairs Information Service)

PolicyFile

Social services abstract

Sociological Abstracts

http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2444&language=en-US

Developing a search strategy

Keywords and indexed terms
- indexed terms/subject headings
    - Identify key concepts/topics
    - Vary between databases
- Match keywords to headings
- Explode or Focus

Synonyms and spellings
- Synonyms & acronyms
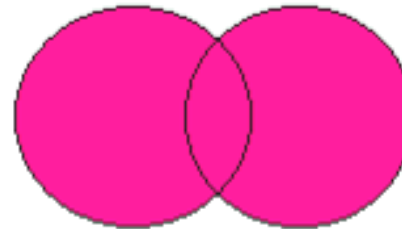- American & British spellings
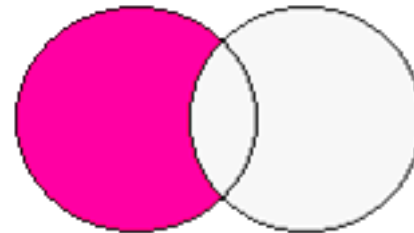- Hyphenated vs. non-hyphenated

Boolean operators

AND

OR

NOT
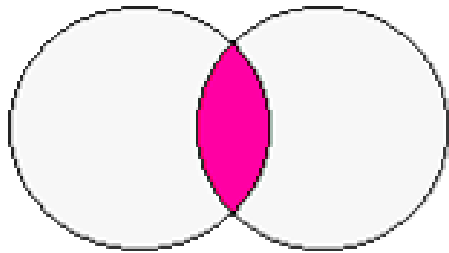
Istanbul AND
University

university OR
higher education

student NOT part-time

Proximity and adjacency

Retrieves records containing terms in any order within a specified number of words of each other

eg asthma ADJ inhaler   Asthma NEAR inhaler

The words must appear next to one another

"an asthma inhaler"

eg asthma ADJ3 inhaler   Asthma near3 inhaler

The words must be within 3 of each other (in any order):

"an inhaler for asthma"

"using an inhaler for moderate asthma"

Wildcard symbols can expand the scope of your search.

*	*(n)	?	#
Manag*	**Home*1**	**Colo?r**	**Wom#n**
Manage **Manages** **Manager** **Managers** **Managing** **Management**	**Home** **Homes** *(not homeless or homelessness)*	colour color	**woman** **women** **dog#** *(retrieves dogs not dog)*

Set Limits

- Consider inclusion/exclusion criteria
  - Age group
  - Publication date
  - Language
  - Settings
  - Study Design

• Search Filters/Quality Filters /Search Hedges

Filters operate: using a specific study design; by topic; by database

Group Exercise

- Develop a search strategy to determine the efficacy of physiotherapy interventions for disorders resulting in pain, stiffness and/or disability of the shoulder.
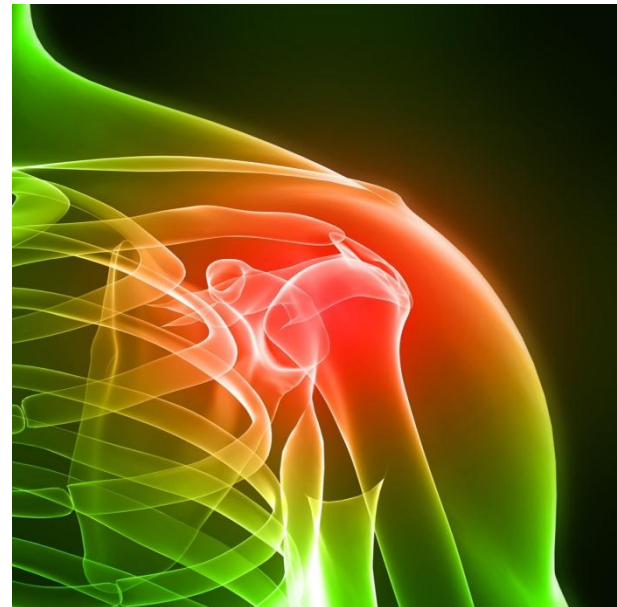
Medline search strategy

- 1 Shoulder Pain/
- 2 Shoulder Impingement Syndrome/
- 3 Rotator Cuff/
- 4 exp Bursitis/
- 5 ((shoulder$ or rotator cuff) adj5 (bursitis or frozen or impinge$
- or tendinitis or tendonitis or pain$)).mp.
- 6 rotator cuff.mp.
- 7 adhesive capulitis.mp.
- 8 or/1-7
- 9 exp Rehabilitation/
- 10 exp Physical Therapy Techniques/
- 11 exp Musculoskeletal Manipulations/
- 12 exp Exercise Movement Techniques/
- 13 exp Ultrasonography, Interventional/
- 14 (rehabilitat$ or physiotherap$ or physical therap$ or manual
- therap$ or exercis$ or ultrasound or ultrasonograph$ or TNS or
- TENS or shockwave or electrotherap$ or mobili$). mp.
- 15 or/9-14
- 16 Clinical trial.pt
- 17 random$.mp.
- 18 ((single or double) adj (blind$ or mask$)).mp.
- 19 placebo$.mp.
- 20 or/16-19
- 21 8 and 15 an 20

Physiotherapy interventions for shoulder pain (Review)

Green S, Buchbinder R, Hetrick SE

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And finally …

- It is quite likely that you will not find research on every topic
- Try a few quick searches to help you identify what are the best keywords to use

- **Documenting a search**
  - Helps to avoid duplication, allows replication in future
  - e.g. date of search, sources searched, no. of hits, details of strategy, search process etc.
- **Reference management**
  - Reference Manager, EndNote, etc.
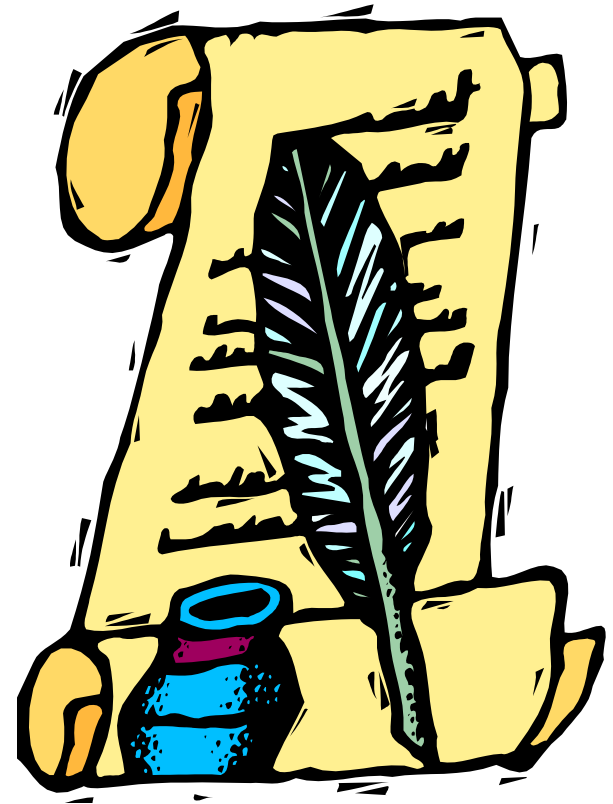
Thank you
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Librarians can become significant contributors

www.cardiff.ac.uk/insrv/sure