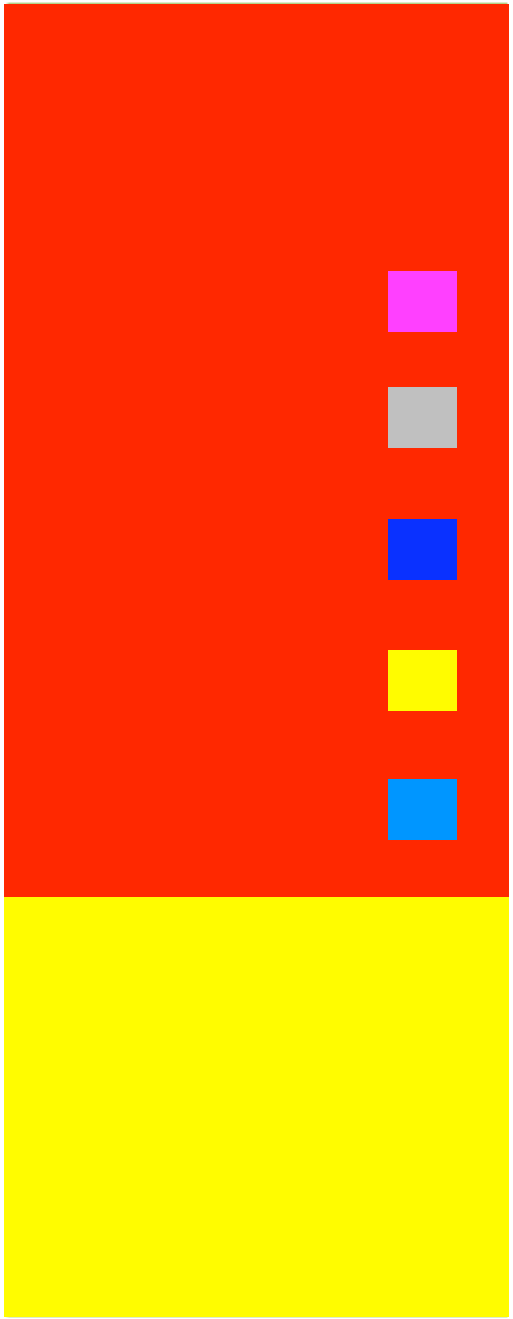
SAPIENZA
UNIVERSITÀ DI ROMA

EBM Project

Applying language and technology skills to evidence-based patient care

I Facoltà di Medicina e Chirurgia
English for Medical Purposes. V-VI
Prof. Huon Snelgrove
Corso di Laurea Magistrale D 2011-12



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Huon Snelgrove
Coordinator English for Medical Purposes

Introduction

to the EBM Project (1)

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Introduction (2)
What is EBM?

- Clinical Practice is about making choices
- David Sackett coined the term 'Evidence-based medicine' in the early 90s
- Essential elements of the EBM approach
  i. Recognize uncertainties in clinical knowledge
  ii. Use research information to reduce uncertainties
  iii. Discriminate between strong and weak evidence
  iv. Quantify and communicate uncertainties with probabilities
- EBM is about improving the quality of information on which health care decisions are made
- Evidence based practice is concerned with actual clinical outcomes.

Sackett DL Haynes, W (2000) Evidence-based medicine : how to practice and teach EBM Churchill Livingstone, Edingburgh

.....the integration of best research evidence with clinical expertise and patient values

Dave Sackett

1 *Engage with a patient's problem*

- Start your project with a patient you have seen in the hospital wards.
- Discover what the patient knows about her condition, the diagnosis, or the therapy and her expectations & concerns
- Examine the patient's clinical record (cartella clinica).
- Identify personal learning objectives for your clinical studies

Assessment of student learning outcomes I: *Problem solving skills*

In this component of the EBM project the students should demonstrate the ability to:

- Maintain the focus on the patient and patient outcomes of care
- Describe the psycho-social as well as clinical determinants of health
- Describe the patient's expectations, concerns and understanding of her own condition
- Demonstrate professionalism and respect for patient confidentiality

2 *Formulate an answerable question (1)*

For example:

- What should I do about this condition or problem? *(Intervention)*
- What causes the problem? *(Aetiology and Risk factors)*
- Does this person have the condition or problem? *(Diagnosis)*
- Who will get the condition or problem? *(Prognosis and prediction)*
- How common is the problem? *(Frequency and rate)*
- What are the types of problems? *(Phenomena or thoughts)*

Clinical problems and questions: an online practice exercise

Work through the online study resource (see link below) to develop your ability to formulate clinical questions

http://ktclearinghouse.ca/cebm/practise/formulate/tips1

Formulate an answerable question: (2) the 'PICO' principle

Population
Intervention
Control
Outcome
(Time frame)

Population and clinical problem	This shows who the relevant people are in relation to the clinical problem.
Intervention (or indicator or index text)*	This shows the management strategy, exposure or test you want to know more about in relation to the clinical problem • procedure. e.g. drug treatment, surgery or diet **(Intervention)** • exposure to an environmental chemical or other hazard, a physical feature (obesity) or a factor that might efect a health outcome ***(Indicator)*** • *a diagnostic test, such as a blood test or brain scan* ***(Index test)***
Comparator	This shows an alternative to control strategy, exposure or test for comparison with the one you are interested in.
Outcome	This shows: • what you are most concerned about happening (or preventing happening) AND/ OR •what the patient is most concerned about.

Formulate an answerable question: (3)
The question guides the search

Construct your search strategy using PICO and then use the components to direct your MEDLINE searches with Boolean operators: (AND/OR/NOT)*

General Structure of the Question

(Population OR synonym1 OR synonym2...) AND
(Intervention OR synonym1 OR synonym2...) AND
(Comparator OR synonym1 OR synonym2...) AND
(Outcome OR synonym1 OR synonym...)

* See the CD Study Notes for more explanations and exercises.

Formulate an answerable question: (4) Example:

Question: **In adults screened with faecal occult blood testing, compared with no screening, is there a reduction in the mortality from colorectal cancer?**

PICO question Component	Key words	Synonyms
Population/problem	Adult, human, colorectal cancer	Bowel cancer,colorectal neoplasm
Intervention	Screening	Screen, early detection
Comparator	No screening	-
Outcome	Mortality	Death, survival

Formulate an answerable question: (5)
MeSH (synonyms) textwords

So, for the colorectal cancer term in the previous slide:

Use the MeSH function to find synonyms and related concepts to build your search strategy

colonic neoplasm (exp)
will incorporate all the MeSH terms below colonic neoplasm:
colorectal neoplasms
colonic polyps
adenomatous polyposis coli
colorectal neoplasms
colorectal neoplasms, hereditary nonpolyposis
sigmoid neoplasm

IMPORTANT: Do the series of PubMed tutorials at: http://www.nlm.nih.gov/bsd/disted/pubmed.html for further information on how to use MeSH.

Formulate an answerable question: (6) Combining key words

- Combine the PICO components with Boolean operators.
- You should compare the results of different strategies to make sure you do not miss important evidence.

Thus one of your search strategies would look like this:

(screen* OR early detection) AND (colorectal cancer OR bowel cancer) AND (mortality OR death* OR survival)

Assessment of student outcomes II
Medical Search skills

In this component of the EBM project students should demonstrate the ability to:

- Formulate focussed answerable questions relating to a patient's problem
- Show precision in the use of current concepts, terms, related synonyms and principles
- Apply the PICO principle in constructing search strategies
- Use Boolean operators and MeSH terms appropriately
- Combine different search strategies

3 *Locate best medical evidence*

To start:

- Consult multiple medical data bases to search for evidence
- Construct multiple search strategies and compare results to match the patient's problem and your clinical queries
- Keep detailed written records of your search strategies, filters applied, and results obtained for each search.

Locate best medical Evidence: medical databases (1)

Primary Internet sites for Clinical medicine	Description/URL
M E D L I N E	PubMed is the web interface of the National Library of Medicine **http://www.ncbi.nlm.nih.gov/pubmed**
National Guidelines Clearing House	A public resource for Evidence-based clinical practice guidelines with guideline comparisons and links to full text. **www.guidelines.gov**
The Cochrane Library	Systematic reviews, reviews of effectiveness 'DARE', controlled trial registry 'CENTRAL' and methodology database: http://www.thecochranelibrary.com/view/0/index.html

Locate best medical Evidence: medical databases (2)

Primary Internet sites for Clinical medicine	Description/URL
C I N A H L D a t a b a s e	The primary nursing science and paramedic database. Includes also patient-centred clinical research evidence
PsycINFO	Data base of the American Psychological Association (available on BIblioteca Digitale of La Sapienza)
Health Services technology Assessment (HSTAT)	A free electronic resource with access to full text documents useful in healthcare decision making. Included are clinical practice guidelines, quick reference guides for clinicians and clinical studies. **http://text.nlm.nih.gov**
Agency for Health Care Research and Quality	Clinical guidelines and Preventive information for consumers:http://www.ahrq.gov/

Example of personal research record

DATE _____

Data Base	Key words/ PICO	Boolean Combinations	Filters	Results
MEDLINE				
Cochrane				
Embase				

- Your presentation should include one slide showing the data bases you used to search for evidence. Use this slide as a model.

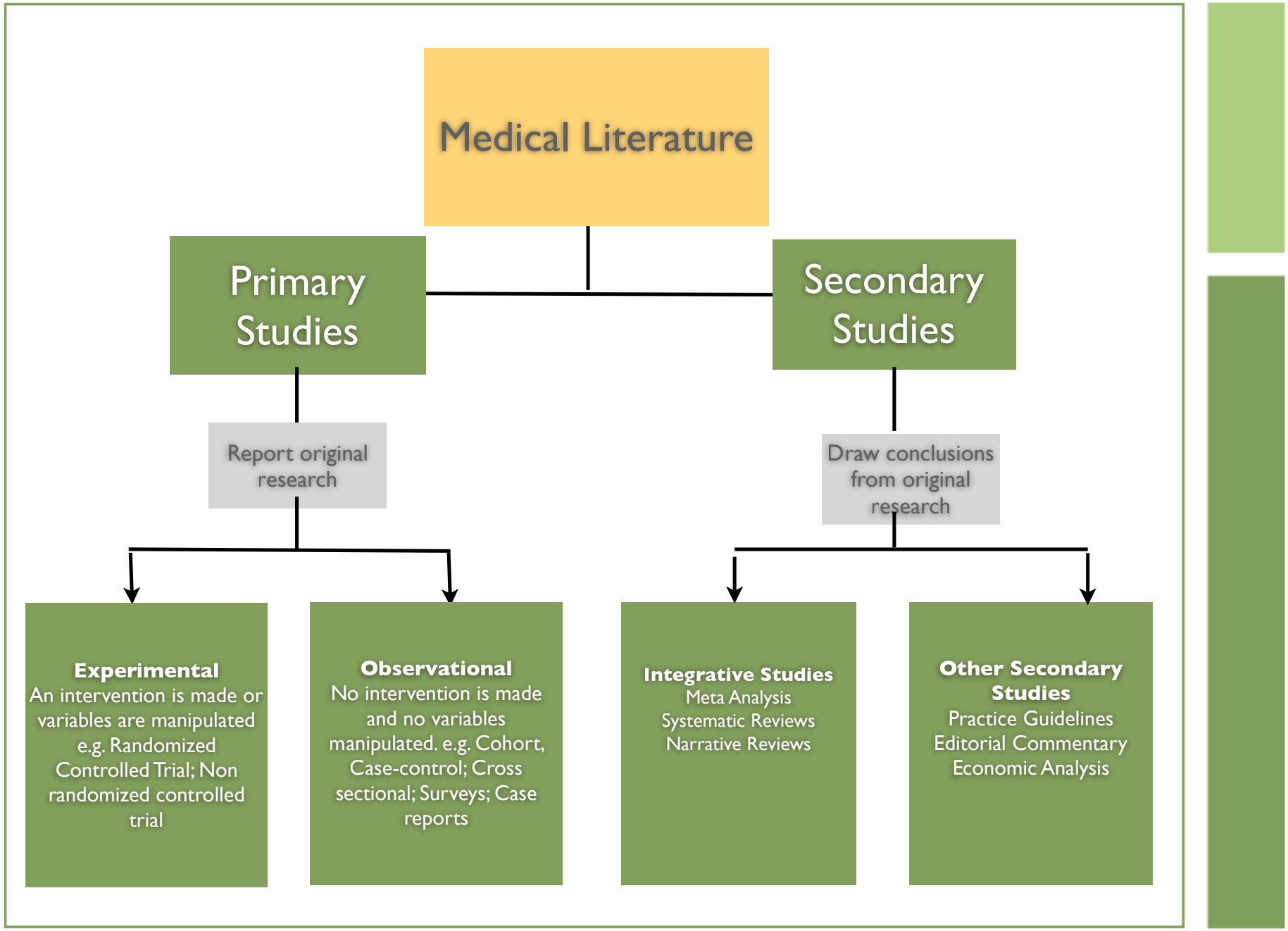
Summary of student learning outcomes III: Medical databases

In this component of the EBM project the students should demonstrate the ability to:

- Use the major medical databases and their respective search engines
- Apply appropriate filters to make searches up-to-date and focussed on patient problems
- Keep personal search records to manage retrieval of information
- Report search strategies and results obtained professionally in a public presentation
- Locate clinical evidence in university libraries using "BIDS" and "ANCP"

4 Evaluate the Sources

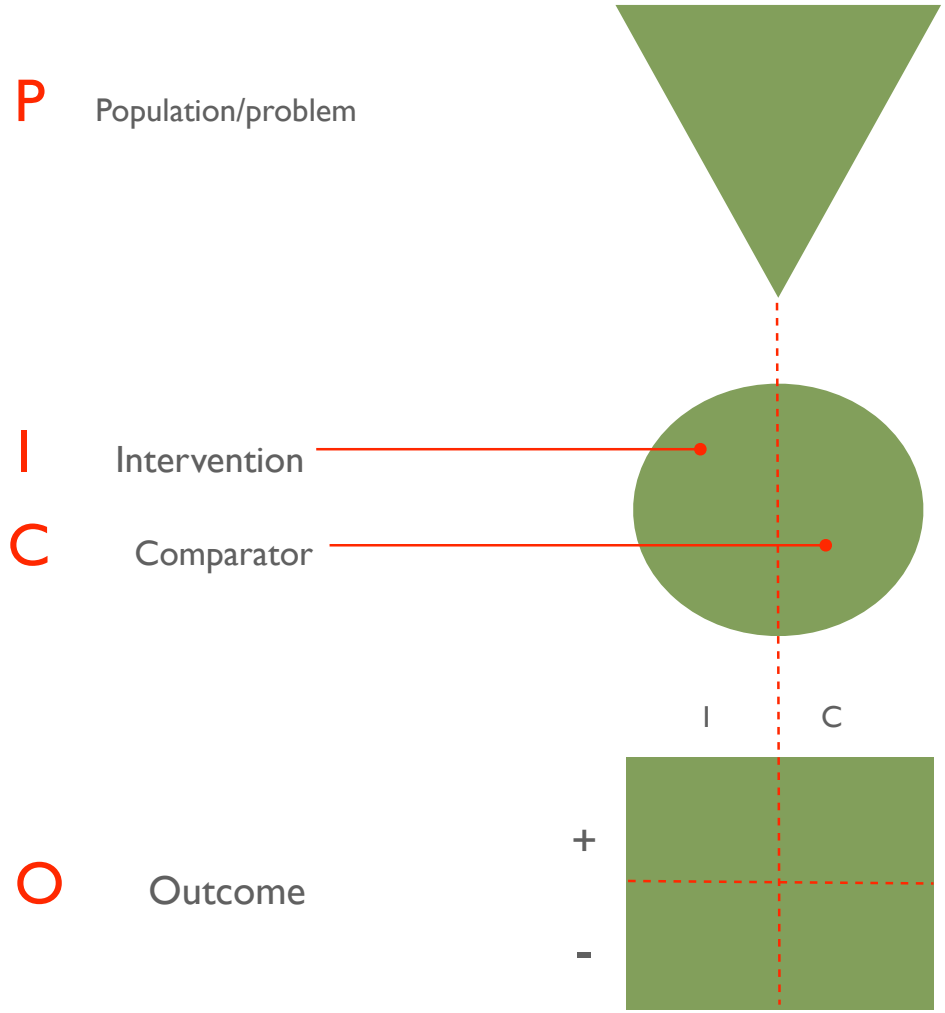
What study designs should you be looking for?


Medical Literature
Primary Studies
Secondary Studies
Report original research
Draw conclusions from original research
Experimental
An intervention is made or variables are manipulated e.g. Randomized Controlled Trial; Non randomized controlled trial
Observational
No intervention is made and no variables manipulated. e.g. Cohort, Case-control; Cross sectional; Surveys; Case reports
Integrative Studies
Meta Analysis
Systematic Reviews
Narrative Reviews
Other Secondary Studies
Practice Guidelines
Editorial Commentary
Economic Analysis

Question	Best Study Design *(primary studies)*	Description
Intervention	• Randomised Controlled Trial	Subjects are randomly allocated to treatment or control groups and outcomes assessed
Aetiology and Risk factors	• Randomised Controlled Trial • Cohort Study • Case Contol Study	RCT is usually not ethical or practical to assess harmful outcomes. Outcomes compared for matched groups with or without exposure (Prospective study) Subjects with or without outcome of interest are
Frequency and Rate	• Cohort Study • Cross sectional study	As above Measurement of condition in a representative (preferably random)sample of people.
Diagnosis	• Cross sectional study with random or consecutive sample	Preferably an independent, blind, comparison with 'gold standard' test
Prognosis and Protection	• Cohort/survival Study	Long term follow up of a representative cohort

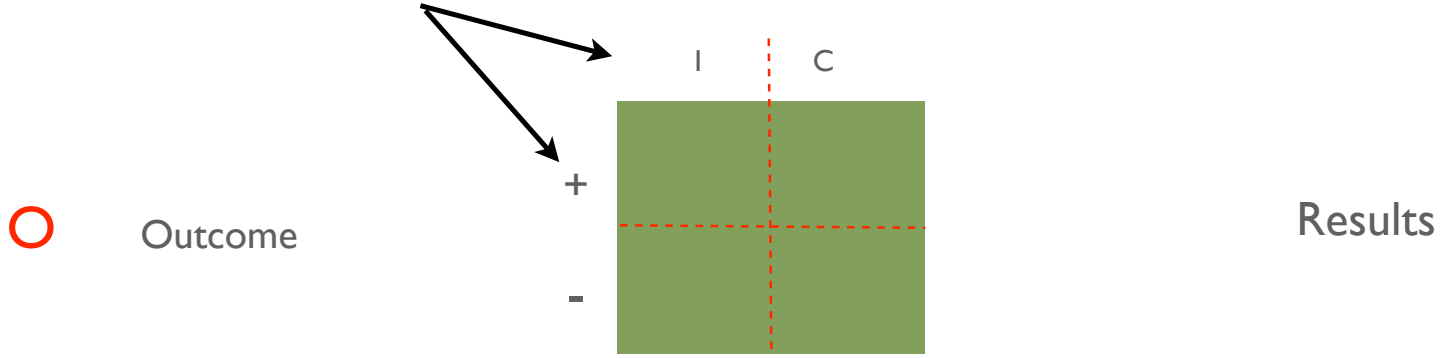
Adapted from Greenhalgh T, How to Read a paper:getting your bearings *BMJ 1997 315: 243-246*

Graphic appraisal tool for epidemiological studies (GATE)*



* Jackson, R et al(2006) The GATE frame:critical appraisal with pictures. *ACP Journal Club* 144(2):A8-11

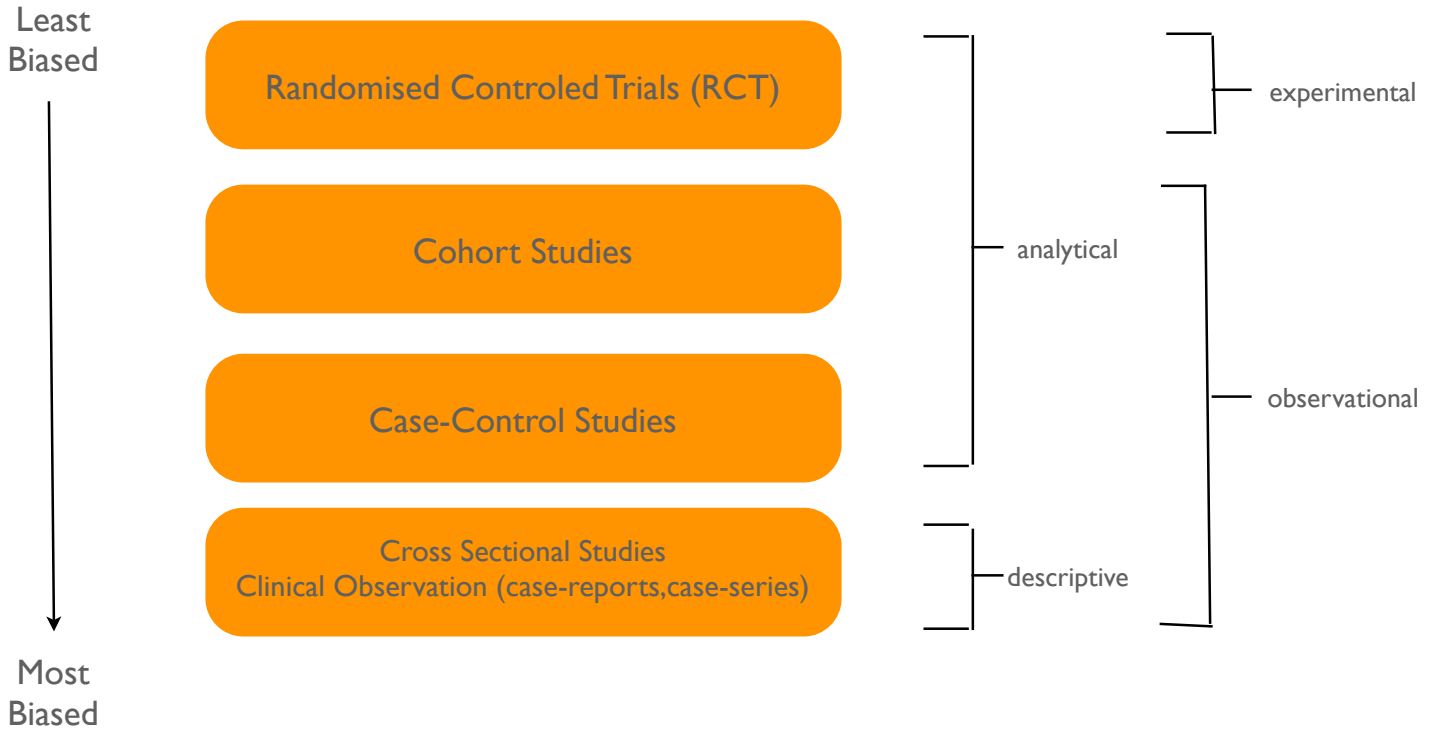
Look at the outcomes box below from the previous slide. Your critical evaluation of evidence can begin by examining the '+' and '-' results for the therapeutic 'intervention' (I) and the 'comparison' (C) concerning clinical outcomes that interest your patient.



Your next step is to evaluate the methodological strength of the studies (see also slide 35)

Hierarchy of study designs for interventions

(primary studies with real patients)



Source: Glasziou P; Del Mar C Evidence-Based Practice Workbook (2007) Blackwell Publishing Oxford

What type of study is it?

1. Was the intervention randomly allocated?

Yes ▶ RCT

No ▶ Observational Study

The main type of observational study then depend on the timing of the measurement of outcome.

2. When were the outcomes determined?

a. Some time after the exposure or intervention

▶ Cohort Study (prospective)

b. At the same time as the exposure or intervention

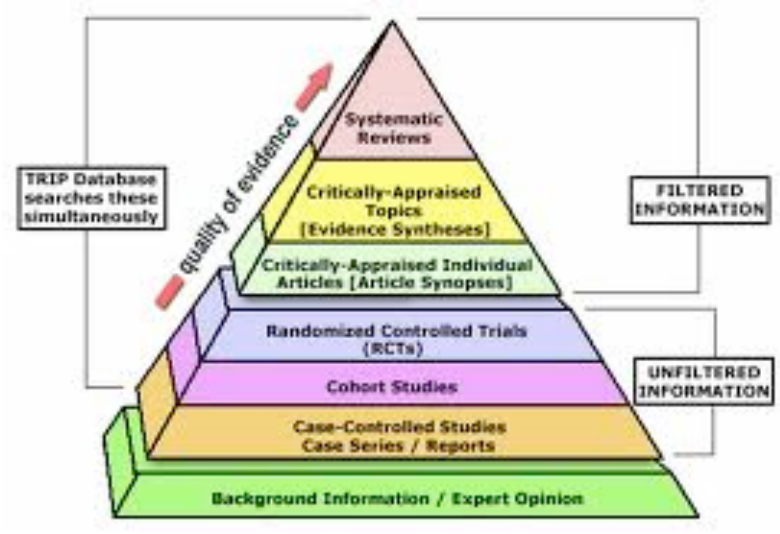
▶ Cross-sectional Study or survey

c. Before the exposure was determined.

▶ Case-control study (retrospective, based on recall)

Source: Glasziou P; Del Mar C Evidence-Based Practice Workbook (2007) Blackwell Publishing Oxford

Quality Evidence: primary or secondary studies?



The next slide applies these levels to different clinical areas

Evaluate the Sources

Levels of evidence according to research question

Least Biased	Level	Intervention	Diagnosis	Prognosis	Aetiology
	I	Systematic review of level II studies	Systematic review of level II studies	Systematic review of level II studies	Systematic review of level II studies
	II	Randomised Controlled trial (RCT)	Cross sectional study among consecutive presenting patients	Inception cohort study	Prospective cohort study
	III	*One of the following:* • non-randomised experimental study • comparative (observational) study with a concurrent control group (e.g. cohort study, case-control study)	*One of the following:* • cross sectional study among non-consecutive patients	*One of the following:* • untreated control patients in a RCT	*One of the following:* • a retrospective cohort study • a case-control study
Most biased	IV	Case series	Case series	Case series or a cohort of patients at different stages of	A cross sectional study

Source: Modified from 1. Centre for Evidence-based -Medicine (Oxford) http://www.cebm.net/levels_of_evidence.asp AND 2. NHMRC (Australia) http://www.nhmrc.gov.au

Selection Criteria

Remember!

In your oral exam you must make explicit the criteria you have used to select evidence.

Study design is one of these criteria. Always discriminate between types of evidence Try for a mix between good primary research and secondary research (e.g. a recent systematic review from Cochrane) For further information refer to the EBM resources section.

Summary of student learning outcomes IV: Evaluating sources

In this component of the EBM project the students should demonstrate the ability to:

- *Describe differences between primary and secondary research and list examples of study designs*
- *Discriminate between types of medical evidence and describe the 'hierarchy' of clinical evidence (e.g. currency, study design, authority)*
- *Match evidence and study designs to their clinical queries using PICO*
- *Identify factors which influence the accuracy or validity of medical evidence*
- *Describe the hierarchy of evidence in medical literature*

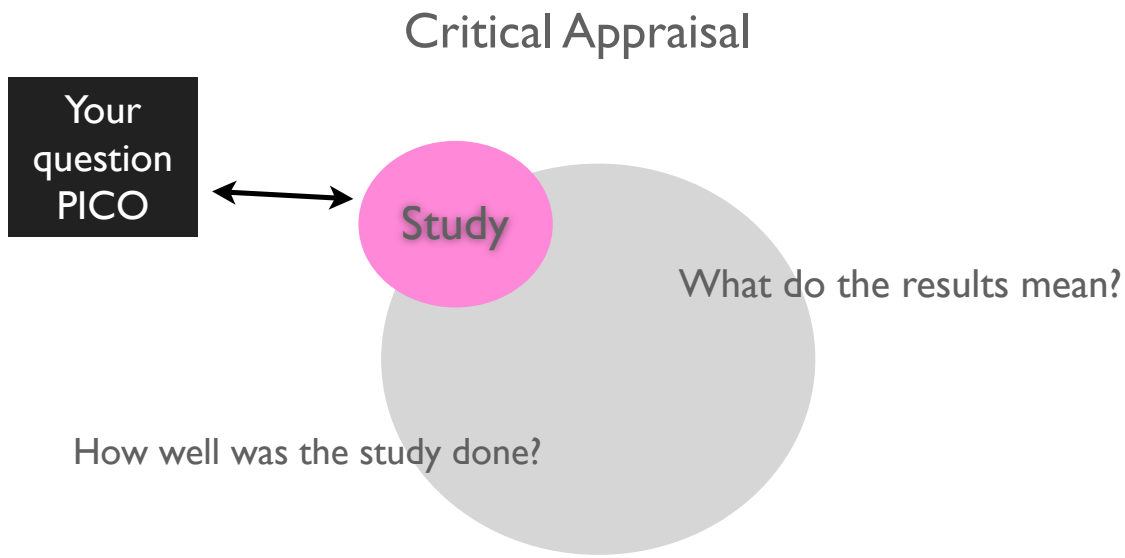
5 Appraise the Evidence

Critically appraise the evidence means
find out how good it is and what it means

Appraising primary research:

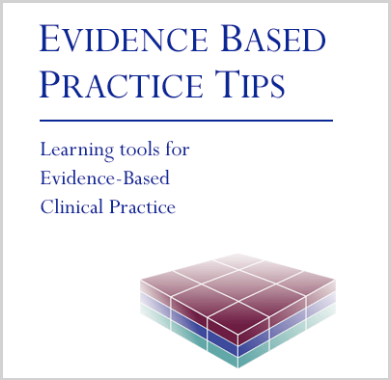
is the study you are examining relevant, valid, useful?

- What is the PICO of the study, and is it close enough to your PICO?
- How well was the study done?
- What do the results mean and could they have been due to chance?



Appraise the evidence (2):
how well was the study done?

http://www.cche.net/usersguides/main.asp



http://meta.cche.net/clint/hirex.asp?FOLDER=1414@scriptshirex&HEAD=SCRIPTS&ROOT=1414&INTERESTS=OFF

Refer to the EBM Links to give you the basic notions for critical analysis

Appraise the evidence (3): critical debate

Some questions to bear in mind to critically appraise you collection of evidence:

- Do the results represent a significant 'breakthrough' or do they confirm other studies?
- How do the studies you have chosen relate to each other?
- Highlight any controversial points
- Give a brief assessment of conflicting evidence

The next slide shows a table to help you compare and contrast the evidence in your slide presentation and answer these questions

Weigh the evidence

Outcomes	Intervention A	Intervention B
e.g. pain relief		
e.g. reduced side effected		
e.g. Relative risk reduction		

Use this slide as a template for your "Evaluation of Evidence" presentation slide

Appraise the evidence (4): What do the results mean?

Apply your knowledge of medical statistics to the evidence you examine.

For example ask these questions:

- Do the authors express their results in terms of the likely harm or benefit that an individual patient can expect? For example:
  - Relative risk reduction (RR)?
  - Absolute risk reduction?
  - Numbers needed to treat (NNT)?
  - Odds ratio?
- Do the authors express their results in *p-values* or using Confidence Intervals?
- Explain probabilities and numerical values in the evidence you cite.

Summary of student learning outcomes V: Apprasing evidence

In this component of the EBM project the students should demonstrate the ability to:

- Select evidence which is relevant to the patient
- Make judgments about the methodological quality of the evidence selected
- Explain what the evidence means by illustrating basic epidemiological concepts
- Assess conflicting evidence and show how studies relate to each other

6 Present Evidence

The conclusion of your EBM project is a 10 -13 minute talk using presentation software. Your presentation will be a *critical synthesis* of the *evidence* to address your patient's problem

Presentation Tips
Opening slide

1. Slide one should give a title, names of speakers and faculty information:

   Describe briefly to the audience:

   - What you are going to talk about
   - How the talk is structure
   - When it is going to stop? (timing is important!)
   - Why we should listen

Presentation Tips
Follow the 10-steps

1. Briefly outline your talk
2. Start with the patient
3. Describe the clinical problem
4. Give a brief overview of pathology & clinical background
5. Illustrate the clinical questions you formulated (PICO)
6. Illustrate your search strategies (PICO) and results obtained (key words/filters)
7. Describe how you selected the evidence for your analysis (selection criteria)
8. Summarise the evidence you selected critically
9. Draw your conclusions for the patient and patient outcomes
10. Thank audience and ask for questions

Presentation Tips (1):
cite sources professionally

- Cite all the sources (clinical evidence, images, textbooks, CDs) you use in your presentation professionally: consult the complete international Medical citation guidelines link here for detailed examples:

  http://www.nlm.nih.gov/bsd/uniform_requirements.htm

  http://www.nlm.nih.gov/bsd/uniform_requirements.html

Presentation tips (2)
using presentation software:

- Use a Powerpoint (or similar) templates to help prepare your talk (unless you are feeling creative!)
- For 10 a minute presentation use 8-15 slides
- Ask what is the purpose of each slide: show data? example? attract attention?
- Keep message clear: 1 slide = 1 message
- Max 40 words per slide (keep text to a minimum)
- Give each slide an informative title. Limit titles to 2 lines max – just 1 is better
- Don't use full stops at the end of slide titles.
- Avoid black background – it doesn't project well.
- Prefer a 'sans serif' font (ARIAL, HELVETICA or TAHOMA: avoid Times New Roman
- Put your presentation on a CD for projection, Provide hand outs of your slides with bibliography.

Powerpoint Tutorial: http://www.microsoft.com/Education/PPTTutorial.mspx#E3C

Presentation Tips rehearsing the talk

Rehearsing your presentation:

- Check the number of slides
- Check order
- Check your timing by speaking aloud (use PowerPoint clock to time your presentation)
- Use your group companions to check body language or a mirror
- Pracise - and then practise again
- Don't speak too fast
- Speak to the audience (don't turn your back to the audience)
- Make eye contact with the audience
- Check the volume of your voice (project your voice and never speak with your back to audience)
- Plan what you are going to do with your hands
- Practise a few gestures to emphasise important points
- Take regular pauses – pause after each slide
- Stand in the center of the stage if possible

Summary of student learning outcomes V:
Communication skills: presenting in public

In this component of the EBM project the students should demonstrate the ability to:

- Produce a detailed and coherent report in a professional manner
- Present with clarity and confidence
- Involve the audience and establish a good rapport
- Make good use of presentation software, visuals, tables
- Cite all sources professionally
- Make the talk interesting to the audience
- Answer questions professionally
- Keep to timing (10-12 min max)

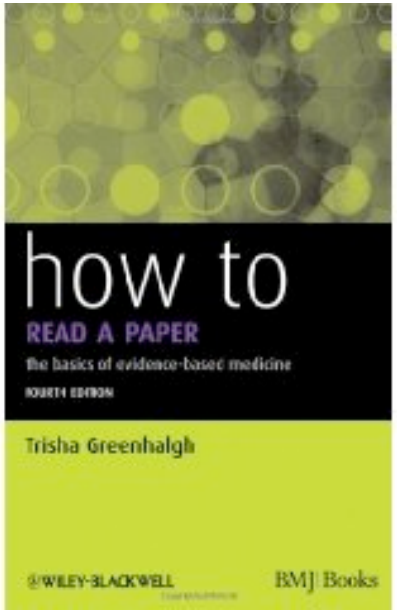
RESOURCES

There are lot's of resources on internet. Google "EBM"!

- A Google search on Internet: EBM or Evidence based medicine
- EBM library books (biblioteca I Cl. Medica
- Hospital patients:
- Clinical tutors
- EBM project Group members

Recommended Reading

- Greenhalgh T (2010)* How to read a paper: the basics of evidence based medicine



Greenhalgh's book is an excellent introduction to the basic notions and concepts of EBM (available at: Amazon.it)

I Clinica Medica Library
Policlinico Umberto I

These books are available for consultation. It is recommended you consult 1-2 reading selectively.

1. McKibbon A. (2000) Guida alla Evidence-Based Medicine. Il Pensiero Scientifico

2. Jadad A. (1998) Randomised Controlled Trials BMJ Books

3. Tognoni, G (1994) Cause-Effetti in Medicina. Il Pensiero Scientifico Editore

4. Greenhalgh T (1997)* How to read a paper: the basics of evidence based medicine

EBM web sites

These sites provide guidelines for the appraisal of evidence

1. How to read a paper series: evaluation sheets for different question types:
http://www.bmj.com/cgi/content/full/315/7103/305

2. User's Guide to the Medical Literature: various EBM resoucres
http://www.cche.net/usersguides/main.asp

3. Italian Diabetes site with definitions and history of EBM

http://www.diabete.it/ebm/view.asp?ID=329

4. Centre for EBM: resources and worksheets
http://www.cebm.net/index.aspx?o=1039

EBM Project Guide

Feedback & help

2011

To receive written feedback please send me your project presentations via email before the exam