

Evidence-Based Practice (EBP):

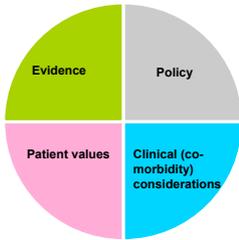
how to inform your clinical (practice) decisions with the best, up-to-date evidence

Rod Jackson
February 2011

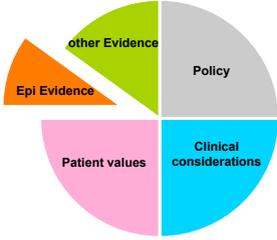



'Traditional' Evidence Based Practice (EBP)

Anatomy
Physiology
Pathology
Biochemistry
Psychology
etc.



'Modern' EBP emphasises 'current' clinical epidemiological evidence of outcomes



Clinical Epidemiological* evidence

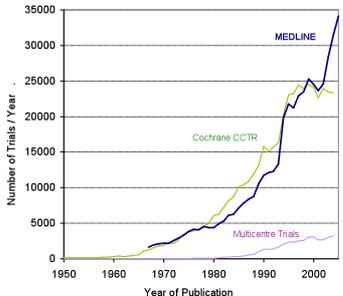
- The accuracy of diagnostic tests
- The power of prognostic markers
- The effectiveness of interventions
 - Therapy
 - Screening
 - Prevention

* the study of the frequency of outcomes in groups of patients

Clinical evidence increasing so rapidly that we all need EBP skills to keep up-to-date

MEDLINE 2006
1,600 articles / day

approx 100 new trials published every day



Bastian, Glasziou, Chalmers, (accepted for PLOS 2009)



Evidence-Based Practice

'using the **current best** evidence from epidemiology to help inform decisions'

- more critically
- more systematically

Less than 10% of published evidence is worth reading

About 1/3 of evidence eventually refuted or attenuated



"...and, as you go out into the world, I predict that you will, gradually and imperceptibly, forget all you ever learned at this university."

The first 4 steps of EBP

1. **Ask** a focused question.
2. **Access** (systematically search for) epidemiological evidence to help answer question.
3. **Appraise** evidence found for its validity, effect size, precision (ideally **all** the relevant evidence)
4. **Apply** the evidence:
 - a. **amalgamate** the valid evidence with other relevant information (patient/community values, clinical/health issues, & policy context) and make an evidence-based decision; and
 - b. **Act** (implement) the decision in practice

About 1/2 of relevant evidence is not implemented



"...and, as you go out into the world, I predict that you will, gradually and imperceptibly, forget all you ever learned at this university."

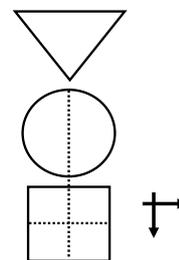
The 5th step of EBP

5. **Audit your practice:**

check your actual practice against best (evidence-based) practice

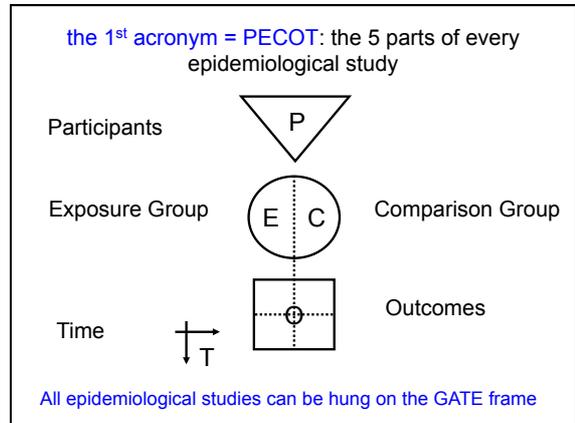
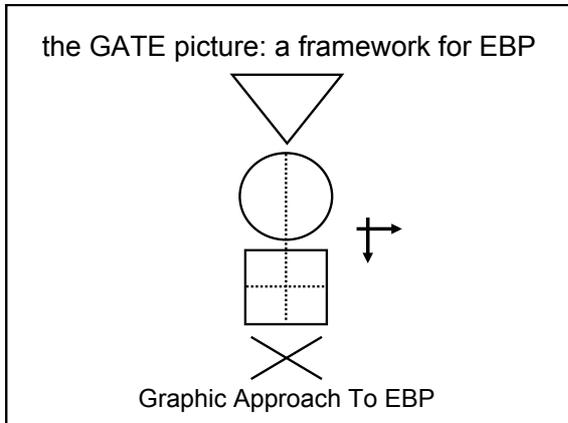
i.e. the gap between your evidence-based decisions and your actions

GATE: Graphic Appraisal Tool for Epidemiology



1 picture, 2 formulas & 3 acronyms

12



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- EBP Step 1: **ASK** - turn your question into a 5-part PECOT question
1. Participants (the patient problem)
 2. Exposure (e.g. a therapy)
 3. Comparison (there is always an alternative! - another therapy or no treatment...)
 4. Outcome (e.g. a disease you want to prevent or manage)
 5. Time frame (over which you expect a result)

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- EBP Step 2: **ACCESS** the evidence – use PECOT to choose search terms
1. **Participants** (the patient problem)
 2. **Exposure** (e.g. a therapy)
 3. Comparison (there is always an alternative! - another therapy or no treatment...)
 4. **Outcome** (e.g. a disease you want to prevent or manage)
 5. Time frame (over which you expect a result)
- 16

ACCESSING the best evidence to answer your questions

Are you an effective searcher?

Are you familiar with MESH terms- the index to PubMed?

Are you familiar with Evidence-Based Guideline websites? Cochrane reviews? Journals of Evidence-Based summaries? Google Scholar? PubMed?

doing a search is like doing a lab test

EBP Step 3: APPRAISE the evidence

'using the best evidence from epidemiology to help inform decisions'

- more critically (using GATE)
- more systematically

The 2nd acronym = RAMBO* : assessing bias



P
E
C
O
T

Recruitment
Allocation
Maintenance
Blind or
Objective assessment of
outcomes

19

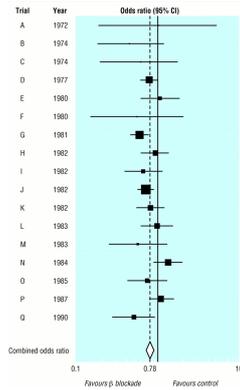
* Paul Glasziou

EBP Step 3: **Appraise** evidence found for its validity, effect size, precision
(ideally All the relevant evidence)

'using the best evidence from epidemiology to help inform decisions'

- more critically
- more systematically

Total mortality from trials of β -blockers in 2^o prevention after MI.

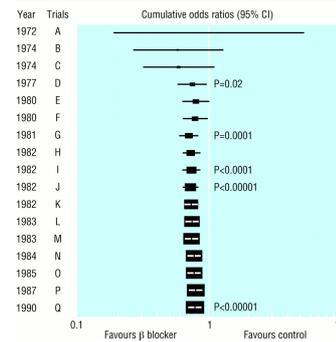


Black square & horizontal line correspond to odds ratio (OR) & 95% confidence interval (CI) for each trial. The size of the black square reflects the weight of each trial. The diamond represents the combined OR & 95 CI, showing a 22% reduction in odds of death

Egger, M. et al. BMJ 1997;315:1533-1537

BMJ

Cumulative meta-analysis of total mortality results from trials of oral β -blockers after MI.

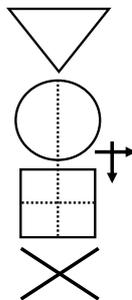


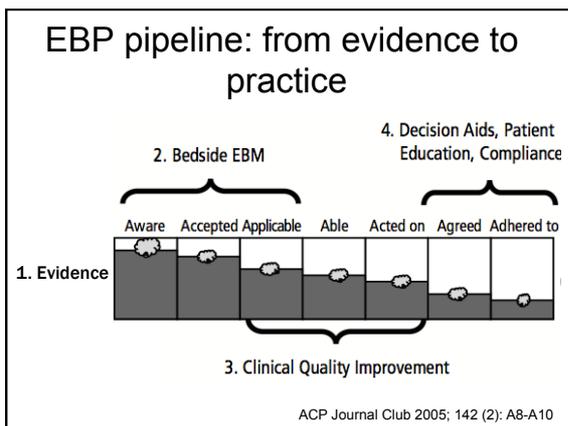
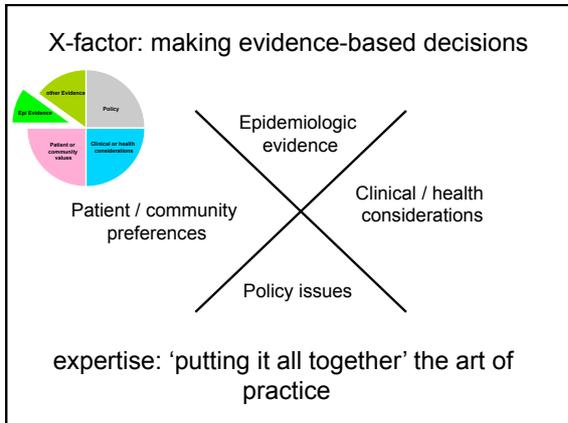
Size of squares reflect amount of statistical information available at a given point in time

Egger, M. et al. BMJ 1997;315:1371-1374

BMJ

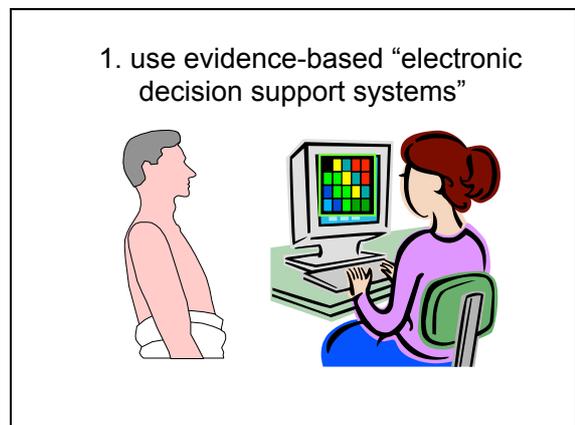
EBP Step 4: APPLY the evidence by: a. AMALGAMATING the relevant information & making an evidence-based decision: the X-factor





- The 5th Step: EBP 360°**
1. **Ask** a focused question.
 2. **Access** (systematically search for) epidemiological evidence to help answer question.
 3. **Appraise** evidence AND then **meta-analyse** (systematically review) ALL relevant valid evidence.
 4. **Apply** the best evidence:
 - a. **amalgamate** the valid evidence with other relevant information to make a good decision; and
 - b. **ACT on your decision**
 5. **AUDIT** your practice (i.e. check your actual practice – 'actions' – against 'best' evidence-based practice)
- = Quality Improvement**

How can busy practitioners do EBP?



2. use evidence-based guidelines (& EB text bks?)

3. use Systematic Reviews

MEDLINE 2006/day
 1,600 articles
 95 trials
 4 reviews*

*Cochrane Database of Systematic Reviews (SR)
 per day
 1 new SR
 1 updated SR

Bastian, Glasziou, Chalmers, (accepted for PLoS 2009)

Final appraisal task: search for & appraise SRs / meta-analyses using 3rd acronym (FAITH)

- **F**ind appropriate studies?
- **A**ppraise selected studies?
- **I**nclude only valid studies?
- **T**otal-up (synthesise) appropriately?
- **H**eterogeneity adequately addressed?

33

Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases (Review)

Bjelakovic G, Nikolova D, Glund LL, Simonetti RG, Glund C

Vitamins 'may shorten lifespan'
 Review finds antioxidant supplements may be more harmful than beneficial

This is a report of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in The Cochrane Library 2008, Issue 2
<http://www.thecochranelibrary.com>

4. use individual studies

The evidence pyramid	Examples
Systems	Computerised decision support systems (CDSS)
Synopses	Evidence-based guidelines
Syntheses	Cochrane reviews
Studies	Original published articles in journals

Haynes RB (2001). Evidence-Based Mental Health 4:37-38.

This course is mainly about studies and syntheses:
 the foundations of the evidence pyramid

CATs (Critically Appraised Topics)

A tool for documenting the steps of EBP

GATE-lite: a rapid tool for Step 3 (Appraisal)

A tool for documenting the steps of EBP