

What has Evidence based Medicine done for medicine?



Khalid Khan

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EVM meeting
London
30 oct2011

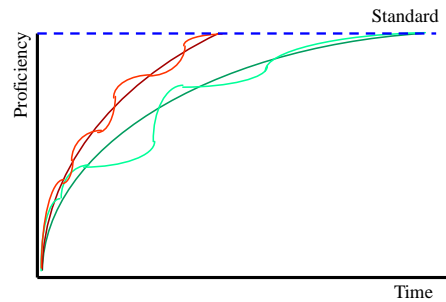
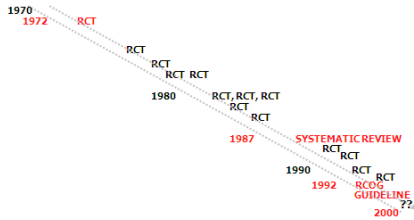
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What has Evidence based Medicine done for medicine?

- EBM – The journey
- Teaching EBM – How to get there

Antenatal steroids in preterm labour



Traditional Practice

- High value on authority based on 'expertise'
- Clinicians dependent on 'experts' for sorting out clinical problems
- Clinicians lack skills to evaluate the advice being offered by 'experts'

Chalmers. *Birth*, 83;10:151. Light. *J Health Social Behaviour* 79:310.
Olatunbosun. *BMJ* 98;316:765. EBM Working Group. *JAMA*
92;268:2420.

Paradigm Shift in Medicine

Old paradigm
Unsystematic clinical experience

Pathophysiology

Content expertise & authoritarianism

New paradigm
Systematic clinical experience

Pathophysiology necessary but not sufficient

Rules of evidence

Is the paradigm shifting?

- Developments in clinical research e.g. RCTs and meta-analyses
- **Critical appraisal of the medical literature**
- More informative abstracts in medical journals
- **Practice guidelines based on literature reviews**
- **CPD/CME focus on knowledge transfer/translation**

MODULE 3		TOPIC : Data Handling, Audit and Research				
Skill		Competence Level				
		1	2	3	4	5
Use of IT systems						
To acquire information						
To store data						
To analyse data						
To present data						
Audit						
Define standard						
Prepare project						
Collect data						
Formulate policy						
Clinical standards						
Review evidence						
Evaluate guidelines						
Prepare protocol						
Research						
Critically appraise publication						
Evaluate multicentre trial						

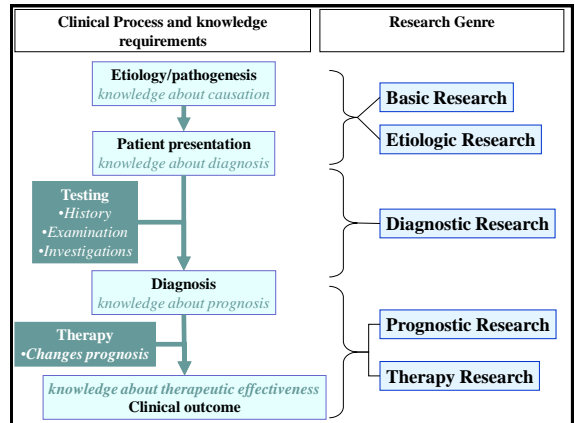
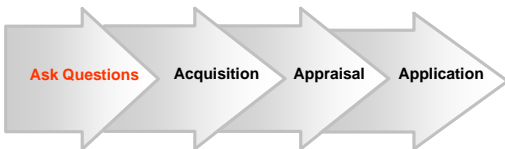
Notes for trainers

The following should be assessed:

- Computing skills by direct observation; it may be helpful to devise a specific exercise in data management
- The ability to undertake an audit project with appropriate assistance, to present and discuss the results, to suggest modification of practice and to design a re-audit project
- Competence in the interrogation of web-based information on clinical standards, in the preparation of a précis of the information acquired, in the evaluation of the quality of the evidence and in the synthesis of a practical approach for everyday use within the current working environment
- Presentation of analyses of research publications either to the trainer directly or to a journal club. A written account of the analysis is easier to assess and a copy should be included in the Training Portfolio

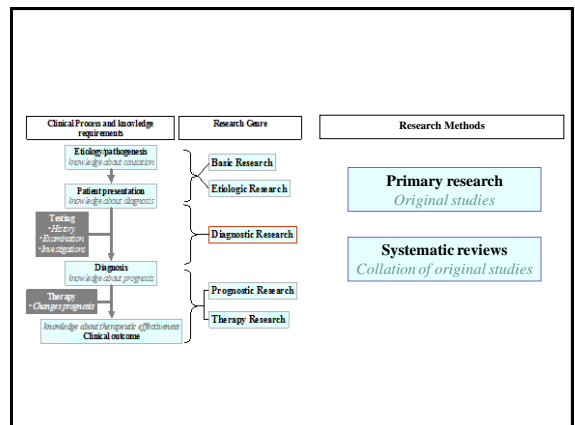
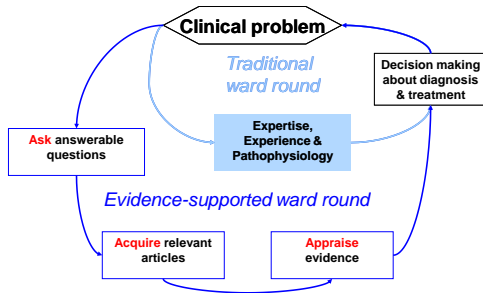
Research based practice Evidence-based Medicine

1. Formulate clear clinical questions
2. Search the literature to identify relevant articles
3. Critically appraise the evidence
4. Implement useful findings in clinical practice



Incorporating the views of obstetric clinicians in implementing evidence-supported labour and delivery suite ward rounds: a case study

Neelima Deshpande, Mary Publicover, Harry Gee and Khalid S. Khan, Birmingham Women's Health Care NHS Trust, Birmingham, UK



Levels of Evidence

- ⊕ Experimental studies
 - Randomized controlled trials
- ⊖ Controlled Observational studies
 - Cohort studies
 - Case-control studies
- ⊗ Uncontrolled Observation
 - Case series
 - Case reports
 - Expert opinion

Sacks et al. Am J Med 1982;72:233-240; Cook et al. Chest 1992;102:305s-311s; Guyatt et al. JAMA 1993;270:2598-2601

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GRADE: what is "quality of evidence" and why is it important to clinicians?

A guideline's formulation should include a clear question

Guideline developers should address the importance of their outcomes

Critical outcomes determine the rating of quality of evidence across outcomes

Study design is important in determining the quality of evidence

Outcome	Importance of end points	Decision Making Impact
Mortality	9	Critical for decision making
Myocardial infarction	8	
Fractures	7	Important but not critical for decision making
Pain due to soft tissue calcification	6	
Flatulence	2	Not important for decision making - of lower importance to patients

GRADE: an emerging consensus on rating quality of evidence and strength of recommendations

Box 2 | Quality of evidence and definitions

High quality— Further research is very unlikely to change our confidence in the estimate of effect

Moderate quality— Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate

Low quality— Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate

Very low quality— Any estimate of effect is very uncertain

Quality of evidence

High quality	⊕⊕⊕⊕ or A
Moderate quality	⊕⊕⊕○ or B
Low quality	⊕⊕○○ or C
Very low quality	⊕○○○ or D

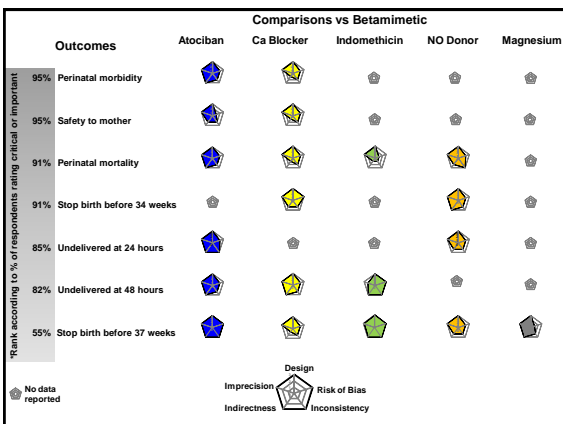
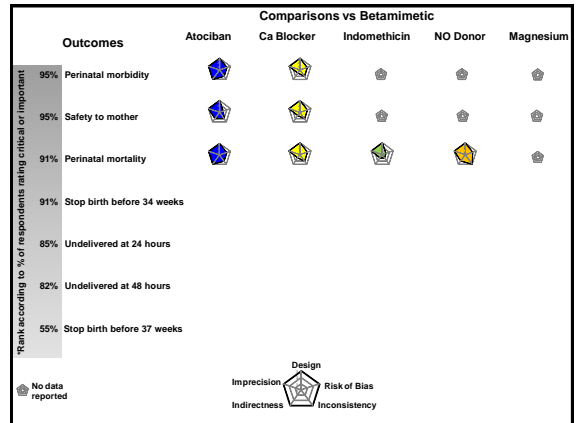
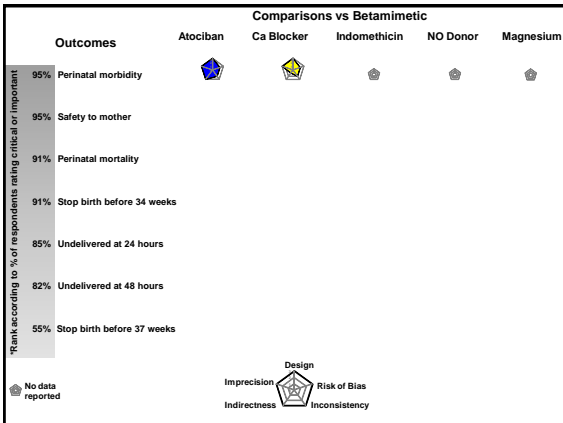
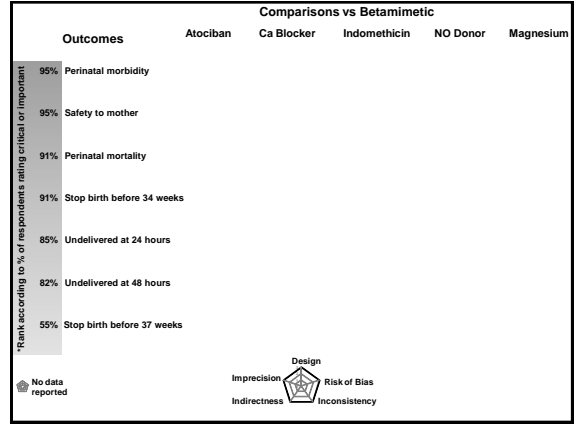
Five limitations can reduce the quality of the evidence

- **Study Limitations**
Allocation concealment, blinding, loss to follow-up, intention to treat, Stopping early for benefit, failure to report outcomes
- **Inconsistent results** (heterogeneity)
- **Indirectness of evidence**
--Indirect comparison
-- different population, intervention, comparator, outcome
- **Imprecision** (small numbers (of events))
- **Publication bias**

No. of studies	Quality assessment						Summary of findings			Quality	Importance	
	Design	Limitations	Inconsistency	Indirectness	Imprecision	Other considerations	No. of patients	Effect	Relative (95% CI)			Absolute
1	Randomized trials	No serious limitations	No serious inconsistency	No serious indirectness	No serious imprecision	None	134/246 (54.5%)	126/255 (50.2%)	SS 1.17 (0.99 to 1.37)	0%	0.0006 (95% CI: 0.0000 to 0.0012)	CRITICAL

No of studies	Quality assessment					Summary of Findings				Importance
	Design	Inclusions	Inconsistency	Indirectness	Imprecision	Other considerations	No. of patients	Effect	Quality	
1	Randomised controlled trials	100%	No serious inconsistency	No serious indirectness	No serious imprecision	None	600 (9%)	RR 0.44 (95% CI 0.12 to 1.56)	0 lower per 1000 from 0 lower to 0 more	CRITICAL

¹ Lack of blinding in ritodrine group (Goodwin 1996)
² Dosage of atociban other than registered dosage (Goodwin 1996)



Three factors can increase the quality of evidence

- Large magnitude of effect
- Plausible confounding, which would reduce a demonstrated effect
- Dose-response gradient

There are over 4,000 chemicals in cigarette smoke. Some of them damage your arteries, including the parts that keep you hard. If they go floppy, so do you.

Still want to inhale? ▶

Research based practice Evidence-based medicine

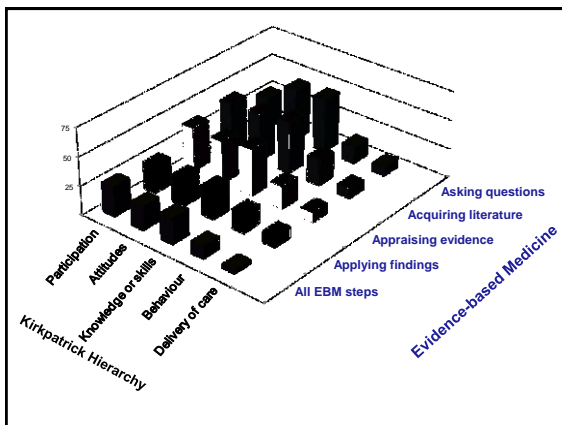
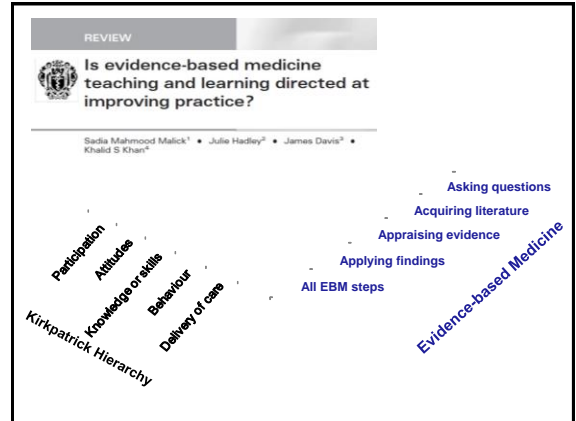
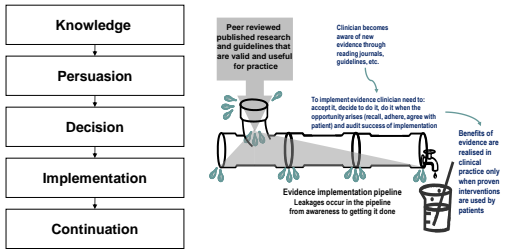
- Orientation
 - EBM is the most ethical way to practice
 - EBM incorporates expertise where evidence lacks
 - Identifying what you 'don't know' is key to initiating learning
 - Knowledge translation is key to improving outcomes
 - Need to teach and learn EBM in the workplace

What has Evidence based Medicine done for medicine?

- EBM – The journey
- Teaching EBM – How to get there

Five steps from evidence to effect: exercising clinical freedom to implement research findings

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How far did we get? How far to go?

A European survey on postgraduate courses in evidence-based medicine

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Table 1 Postgraduate educational activities in evidence-based medicine in relation to the number of doctors per country. Results refer to the time period from 1996 to 2006

	Total number of doctors (in 1000) (20,31)	Ratio doctors/1000 inhabitants (20)	Number of survey responses	Ratio course/1000 doctors	Ratio doctors/course
Austria	27	3.4	5	0.16	5600
Germany	278	3.4	58	0.21	4800
Hungary	32	3.2	6	0.19	5300
The Netherlands	49	3.1	18	0.37	2700
Poland	95	2.5	11	0.12	8500
Spain	147	3.2	232	1.57	640
Switzerland	25	3.6	10	0.26	4000
UK	132	2.2	63	0.48	2100

EBM training

- Not as frequent as we think
- Often isolated from practice
- Not directed at improving application
- Does not address barriers
- Limited in on-the-job training
- Clinical trainers are few

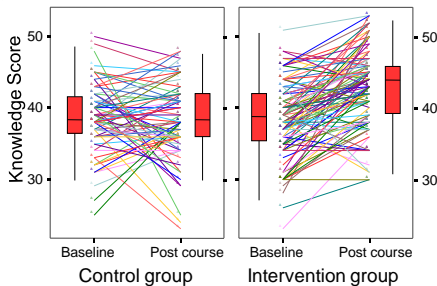
EBM Unity Projects

The EU-EBM website features a navigation menu on the left and a main content area with several project highlights. A map of Europe is visible on the right side. Logos for various partner institutions are displayed at the bottom.

The screenshot shows the 'Learning Objectives' section of the euebm website. Below the text, there is a video player displaying a slide titled 'MODULE 1 Teaching and Learning EBM during ward rounds'. The video player interface includes standard controls like play, pause, and volume.

This screenshot is similar to the previous one, showing the 'Learning Objectives' section. The video player in this instance displays a photograph of a group of people in a clinical setting, likely related to the EBM training content.

WORLD HEALTH ORGANIZATION CLINICALLY INTEGRATED E-LEARNING COURSE IN EVIDENCE-BASED MEDICINE FOR REPRODUCTIVE HEALTH TRAINING: AN INTERNATIONAL CLUSTER RANDOMISED CONTROLLED TRIAL



EBM training

- E-learning better than lectures of identical materials
 - Knowledge is improved
 - Attitudes are unchanged
- E-learning facilitates harmonisation across languages and settings
- Teacher training for on-the-job training is feasible
- E-learning for on-the job training is better than standalone teaching of identical material
 - Knowledge is better
 - Educational environment is improved

What has Evidence based Medicine done for medicine?

- It has defined what is evidentiary in medicine
- It has provided a new framework for practice that can best be learnt trough on-the-job training

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