

# The Epidemiology of Ignorance

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# Knowledge Gaps

between what is known and what is done

- ▶ *What are the “gaps” between research and practice?*
- ▶ *Why do such “gaps” exist?*
- ▶ *How can we close a specific gap?*
- ▶ *How can we close **all** gaps?*





# Knowledge Gaps

between what is known and what is done

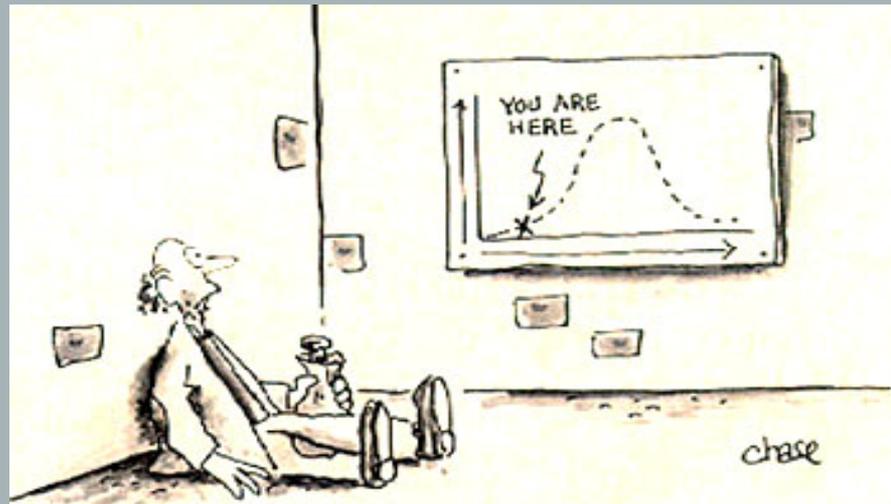
- ▶ *What “gaps” between research and practice are you involved in?*





# The Epidemiology of Ignorance in Health Care

- ▶ *What do we know about what we know?*
  - ▶ *Prevalence & Incidence*
  - ▶ *Aetiology/Causation*
  - ▶ *Prognosis*
  - ▶ *Treatment*





# Is bed rest ever helpful?

A systematic review of trials\*



▲ *10 trials of bed rest after spinal puncture*

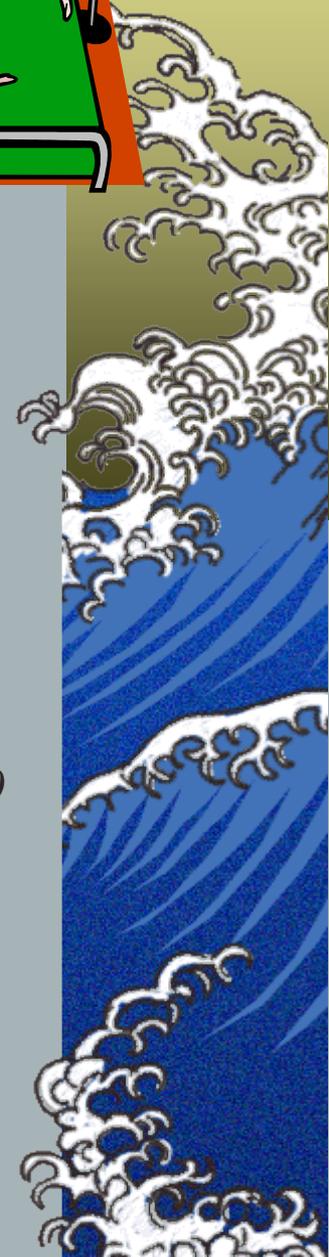
▲ *no change in headache with bed rest*

▲ *Increase in back pain*

▲ *Protocols in UK neurology units - 80% still recommend bed rest after LP*

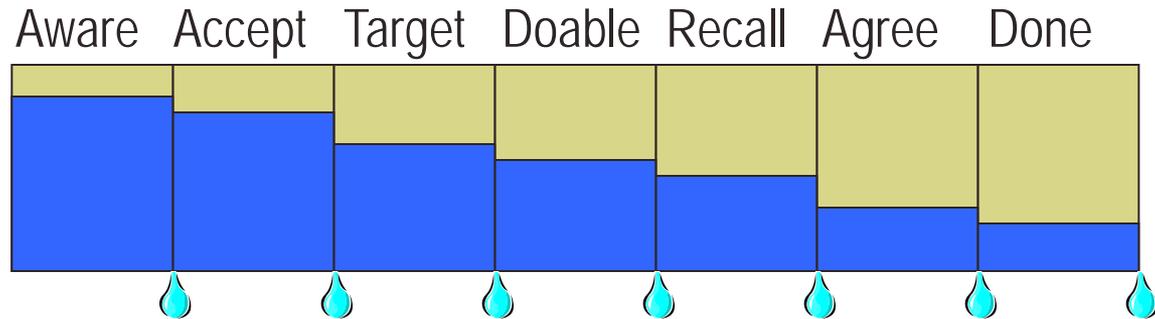
*Serpell M, BMJ 1998;316:1709-10*

▲ *...evidence of harm available for 17 years preceding...*



\*Allen, Glasziou, Del Mar. Lancet, 1999

# Many “Leaks” from research & practice



If 80% achieved at each stage then  
 $0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 = 0.21$

Another case of  
"economy" class  
syndrome.  
Shouldn't everyone  
take an aspirin and  
wear stockings?

© 1992, '994 P. SCHWADRON



What do you think about "flight socks?"



# Knowledge Gaps

between what is known and what is done

▲ *What “gaps” between research and practice are you involved in?*

▲ *Why does the “gap” exist?*

▲ *(list several possible causes)*

Not  
Organised

0

Aware    Accept    Target    Doable    Recall    Agree    Done

1	2	3	4	5	6	7
---	---	---	---	---	---	---



# Causes

1. Too much information
2. Too much information
3. Too much information



# JASPA\*

(Journal associated score of personal angst)

***J:** Are you ambivalent about renewing your **JOURNAL** subscriptions?*

***A:** Do you feel **ANGER** towards prolific authors?*

***S:** Do you ever use journals to help you **SLEEP**?*

***P:** Are you surrounded by **PILES** of **PERIODICALS**?*

***A:** Do you feel **ANXIOUS** when journals arrive?*

*YOUR SCORE? (0 TO 5)*

0 (?liar)

1-3 (normal range)

>3 (sick; at risk for polythemia gravis and related conditions)

\* Modified from: BMJ 1995;311:1666-1668





# Size of Medical Knowledge

## ▲ *NLM MetaThesaurus*

▲ *875,255 concepts*

▲ *2.14 million concept names*

## ▲ *Diagnosis Pro*

▲ *9,200 diseases*

1 per day for  
25 years

▲ *20,000 abnormalities (symptoms, signs, lab, X-ray,)*

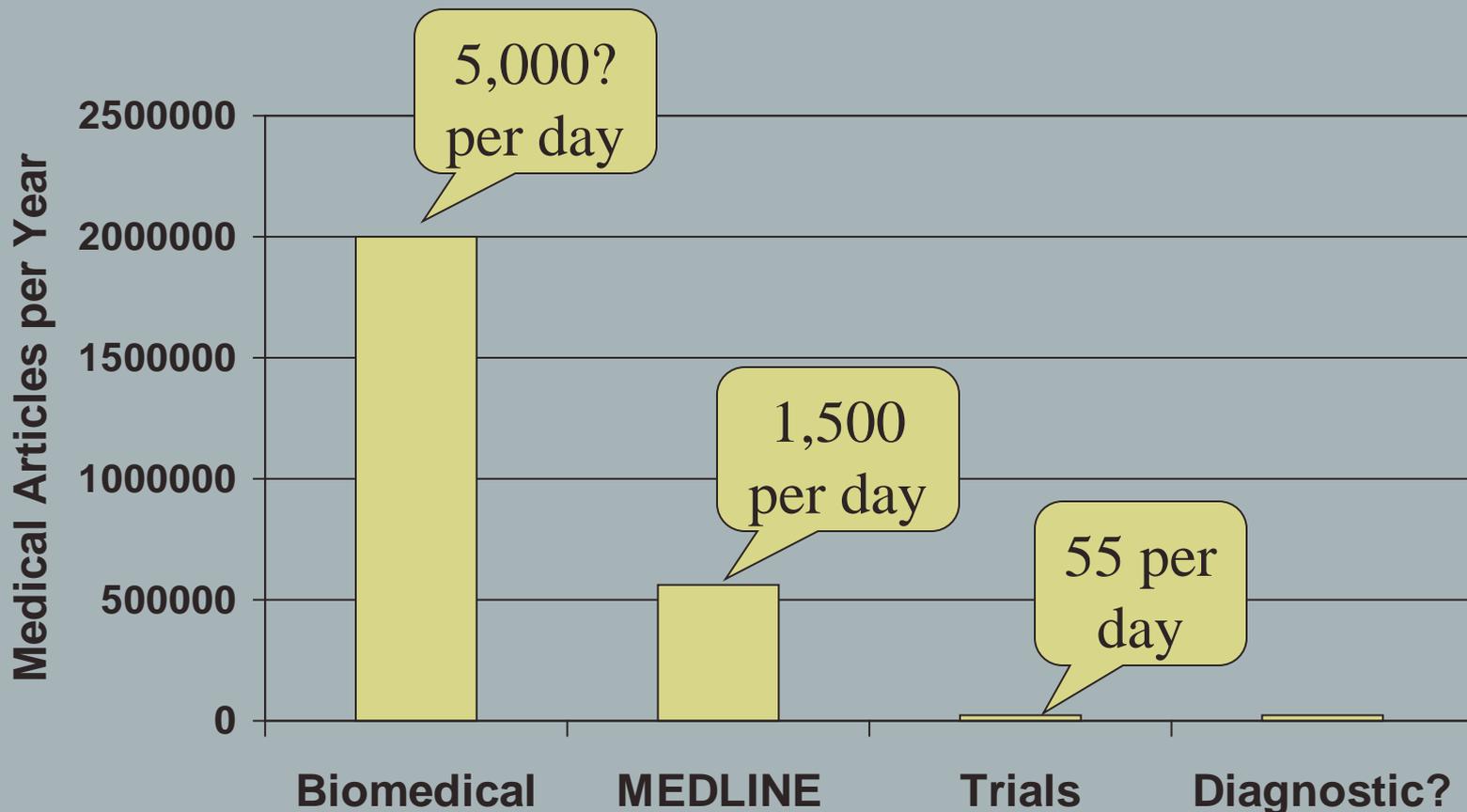
▲ *3,200 drugs (cf FDAs 18,283 products)*





# Rule 31 – Review the World Literature Fortnightly\*

\*"Kill as Few Patients as Possible" - Oscar London





# And the information we need is widely scattered

## Studies of BNP in MEDLINE

Natriuretic Peptide 10,110

MeSH BNP 2,204

PubMed: Clinical Queries

broad 799

narrow 82

Our systematic review

Of BNP accuracy for the

Diagnosis of heart failure

20 studies qualified;

Found in 16 journals

Age Ageing

Am J Med

Br Heart J

[BMJ 3](#)

Circulation

Clin Cardiol

Clin Chem Acta

Eur J Heart Fail

Hypertension

JAMA

J Card Fail

J Hypertens

[Lancet 3](#)

N Engl J Med

Rev Esp Cardiol

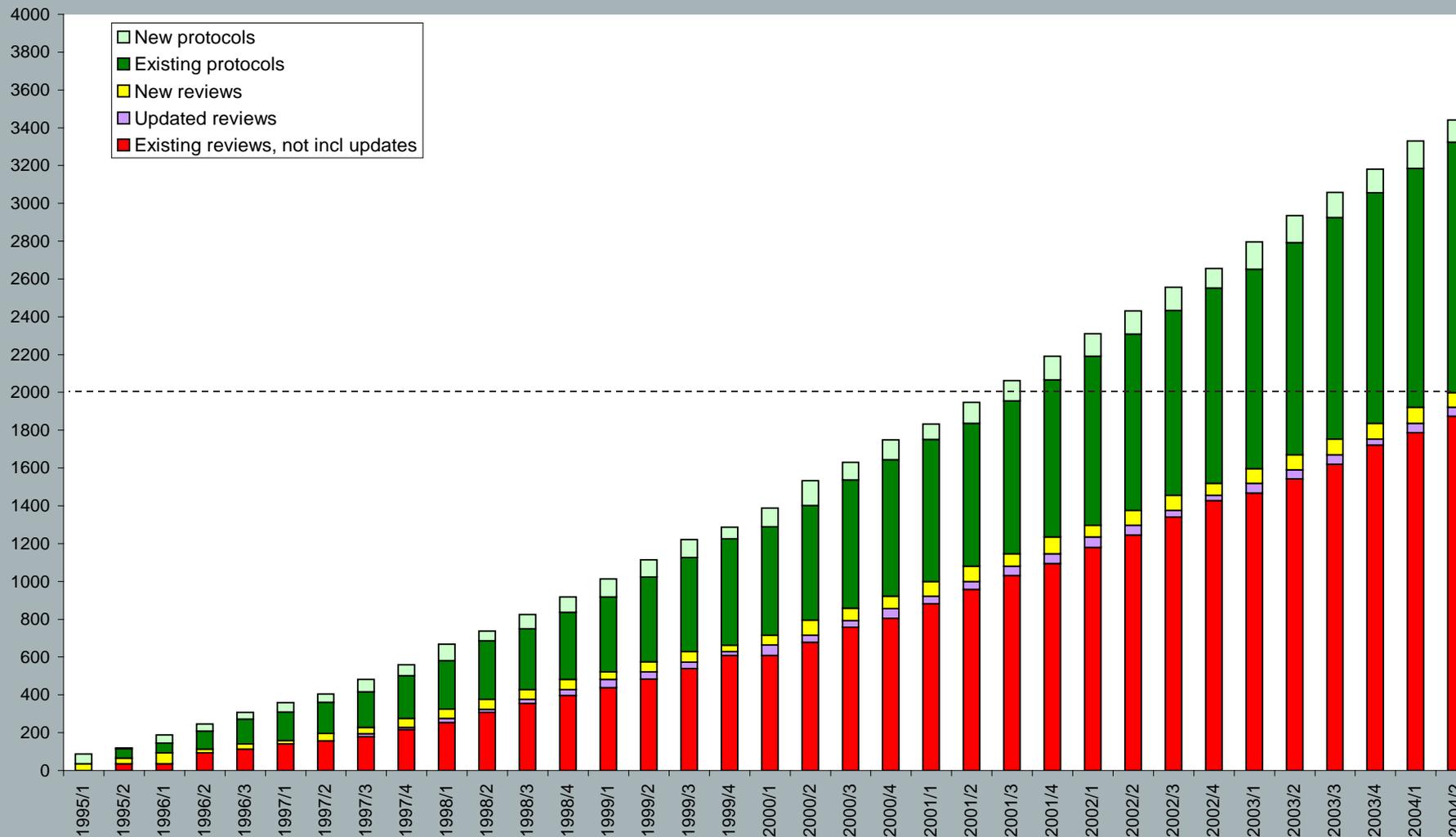
Rev Port Cardiol



# Organising I: systematic reviews - 20% done for therapy

Reviews and protocols for reviews on  
*The Cochrane Database of Systematic Reviews*  
Issue 1/2005

Alderson, 2005





# Knowledge Gaps

between what is known and what is done

- ▶ *What “gaps” between research and practice are you involved in?*
- ▶ *Why does the “gap” exist?*
- ▶ *What would you do to “fix” the gap?*

Not  
Organised

0

Aware    Accept    Target    Doable    Recall    Agree    Done

1	2	3	4	5	6	7
---	---	---	---	---	---	---

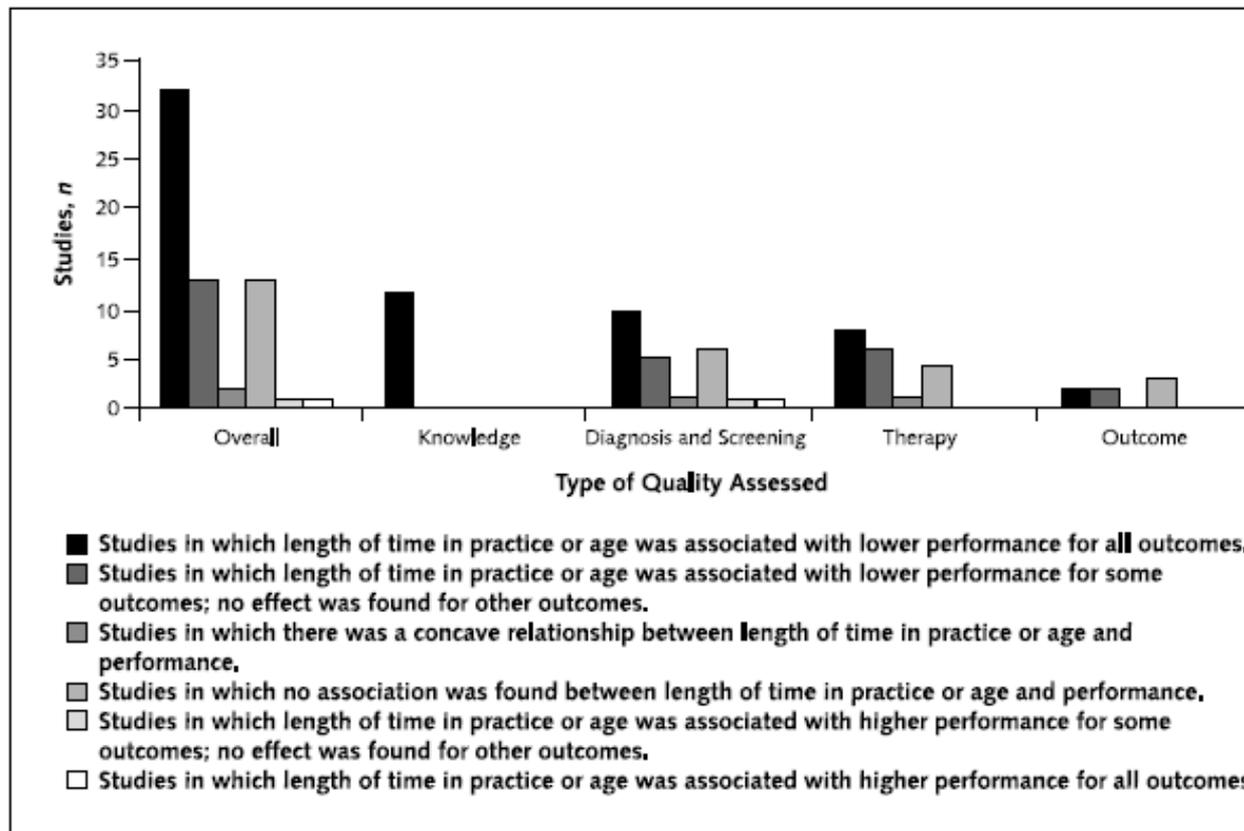




# The Prognosis of Ignorance is Poor



Figure 2. Distribution of study results relating physician age to clinical performance in various domains.





# Prevention & Treatment



Myth,  
opinion, poor  
research

### Evidence-Based Medicine

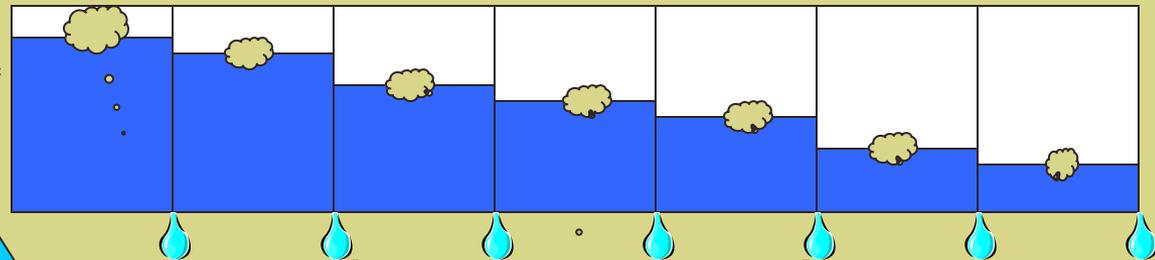
- Questioning
- Skills in EBM
- Evidence Resources
- Time (substitution)

### Patient Choice

- Decision Aids
- Education
- Compliance aids

Where is your  
main activity?

Aware Accepted Applicable Able Acted on Agreed Adhered to



### Quality Improvement

- Skills
- Systems

Research Synthesis,  
Guidelines, EBJs, ...

Systematic Reviews & CATs  
(search; appraise; synthesis)

Studies

(primary research studies: sound & unsound)



# “Just in Time” learning: Intern’s information needs

- ▶ *Setting: 64 residents at 2 New Haven hospitals*
- ▶ *Method: Interviewed after 401 consultations*
- ▶ *Questions*
  - ▶ *Asked 280 questions (2 per 3 patients)*
  - ▶ *Pursued an answer for 80 questions (29%)*
  - ▶ *Not pursued because*
    - ▶ *Lack of time*
    - ▶ *Forgot the question*
- ▶ *Sources of answers*
  - ▶ *Textbooks (31%), articles (21%), consultants (17%)*

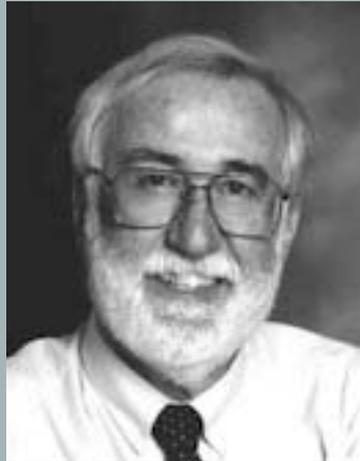




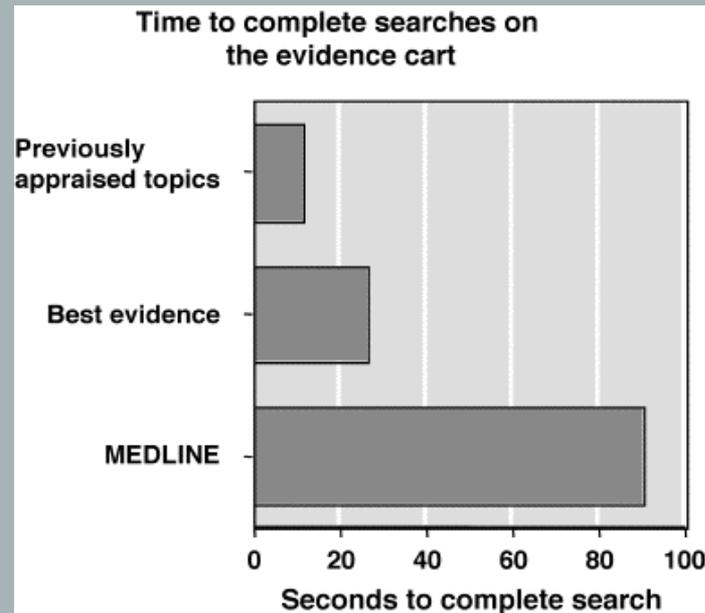
# “Just in Time” learning

## The EBM Approach to Education

- ▶ *Shift focus to current patient problems (“just in time” education)*
  - ▶ *Relevant to YOUR practice*
  - ▶ *Memorable – and behaviour changed!*
  - ▶ *Up to date*
- ▶ *Skills and resources for best current answers*



Dave Sackett





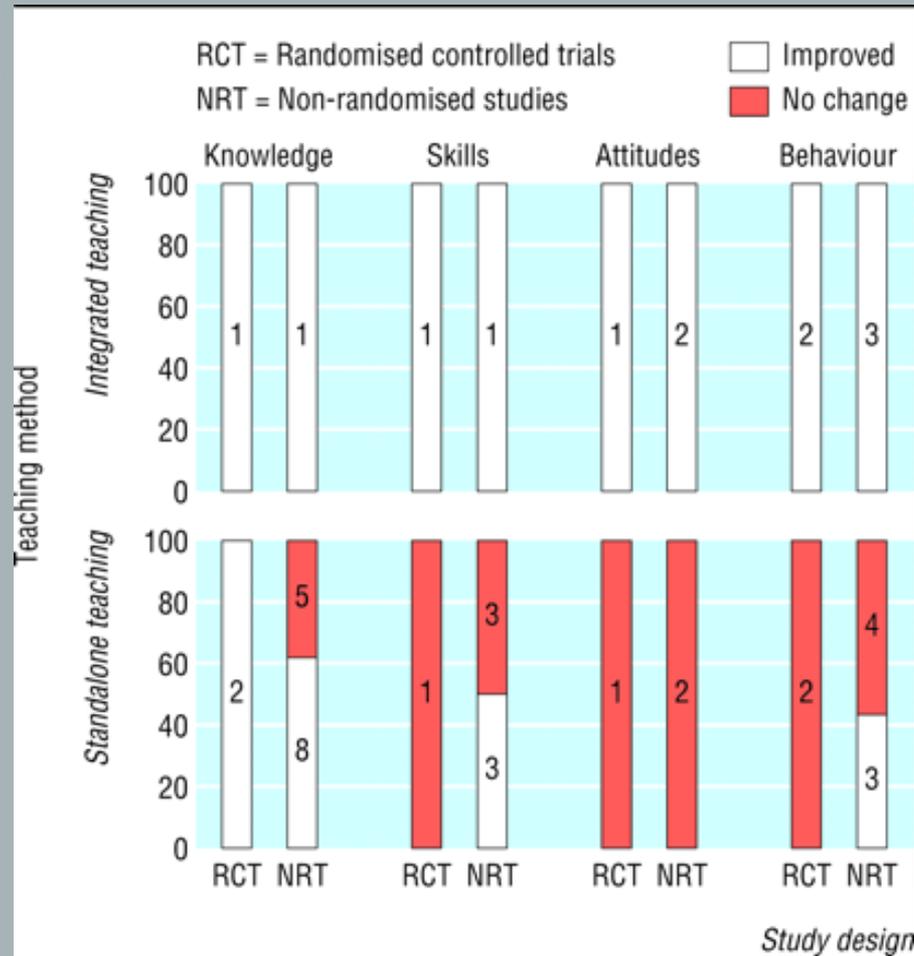
# Teaching EBM: a systematic review of 23 controlled studies

## ▶ *Integrated teaching*

- ▶ *Real patients*
- ▶ *Current problems*

## ▶ *Results in better*

- ▶ *Knowledge*
- ▶ *Skills*
- ▶ *Attitudes*
- ▶ *Behaviour*



# Treatment of Ignorance



Topic lists -> Cochrane Effective Practice and Organisation of Care Group

- Reviews of specific types of interventions (39)
  - Continuing education and quality assurance (15)
    - Distribution of educational materials (2)
      - ▢ Printed educational materials: effects on professional practice and health care outcomes
      - ▢ Printed educational materials: effects on professional practice and health care outcomes
    - Educational meetings (including lectures, workshops and traineeships) (1)
      - ▢ Continuing education meetings and workshops: effects on professional practice and health care outcomes
  - Local consensus processes (1)
  - Educational outreach visits (1)
  - Local opinion leaders (1)
  - Patient mediated interventions (0)
  - Audit and feedback (2)
  - Reminders (including computerised decision support systems) (3)
    - ▢ Computer-generated paper reminders: effects on professional practice and health care outcomes
    - ▢ Manual paper reminders: effects on professional practice and health care outcomes
    - ▢ On-screen computer reminders: effects on professional practice and health care outcomes
  - Marketing (1)
  - Mass media (1)
  - Other (2)
  - Financial interventions (6)
  - Organisational interventions (18)
  - Provider oriented (10)

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## CONTINUING EDUCATION MEETINGS AND WORKSHOPS: EFFECTS ON PROFESSIONAL PRACTICE AND HEALTH CARE OUTCOMES

Thomson O'Brien MA, Freemantle N, Oxman AD, Wolf F, Davis DA, Herrin J

Date of most recent amendment: 26 February 2001  
Date of most recent substantive amendment: 09 November 2000

This review should be cited as: Thomson O'Brien MA, Freemantle N, Oxman AD, Wolf F, Davis DA, Herrin J. Continuing education meetings and workshops: effects on professional practice and health care outcomes (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2003. Oxford: Update Software.

### ABSTRACT

#### Background

Educational meetings and printed educational materials are the two most common types of continuing education for health professionals. An important aim of continuing education is to improve professional practice so that patients can receive improved health care.

#### Objectives

To assess the effects of educational meetings on professional practice and health care outcomes.

#### Search Strategy

We searched the Cochrane Effective Practice and Organisation of Care Group specialised register, MEDLINE (from 1966), the Research and Development Resource Base in Continuing Medical Education in January 1999 and reference lists of articles.

#### Selection Criteria

Randomised trials or well designed quasi-experimental studies examining the effect of continuing education meetings (including lectures, workshops, and courses) on the clinical practice of health professionals or health care outcomes.

#### Data collection and analysis

Two reviewers independently applied inclusion criteria, assessed the quality of the studies, and conducted both qualitative and quantitative analyses.

#### Main Results

Thirty-two studies were included with a total of 36 comparisons. The studies were of moderate or high quality, although methods were generally poorly reported. For compliance, the characteristics of the interventions and the results. The comparisons of interactive workshops, there were moderate or moderate to high quality (eleven of which was statistically significant). For interventions that combined interactive workshops with other educational materials (eleven of which were statistically significant) and small group presentations, there were no statistically significant effects.

#### Reviewers' conclusions

Interactive workshops can result in moderately large changes in professional practice. Didactic sessions alone are unlikely to change professional practice.

#### This review should be cited as:

Thomson O'Brien MA, Freemantle N, Oxman AD, Wolf F, Davis DA, Herrin J. Continuing education meetings and workshops: effects on professional practice and health care outcomes (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2003. Oxford: Update Software.

**Implications for practice**  
Interactive workshops can improve professional practice. Lectures alone are unlikely to change professional practice



# Dissemination and diffusion

## What do we know?

- ★ *Roger's work in rural sociology*
- ★ *Greenhalgh T, et al. A systematic review of the literature on diffusion, dissemination and sustainability of innovations in health service delivery and organisation. London, NHSSDO Programme, 2004*
- ★ *EPOC reviews*

