

第二節課： EBP (Q / S / A / P / O)

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Evidence-based Practice

1. 應以病人、人口和實驗室作為健康照護決策的依據
2. The problem determines the nature and source of evidence to be sought, rather than our habits, protocols or traditions
3. experience+pathophysiology+epidemiology+biostatistic
4. The conclusions of this search are worthwhile only if they are translated into actions that affect our patients
5. We should continuously evaluate our performance in applying these ideas

Evidence-based Practice

1. Health care decisions should be: patient-based, population-based and laboratory-based
2. 決定搜尋證據的性質和來源是問題本身而非我們的習慣，規定或傳統
3. experience+pathophysiology+epidemiology+biostatistic
4. The conclusions of this search are worthwhile only if they are translated into actions that affect our patients
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Evidence-based Practice

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2. The problem determines the nature and source of evidence to be sought, rather than our habits, protocols or traditions
3. 經驗 + 病生理學 + 流行病學 + 生物統計學
4. The conclusions of this search are worthwhile only if they are translated into actions that affect our patients
5. We should continuously evaluate our performance in applying these ideas

Evidence-based Practice

1. Health care decisions should be: patient-based, population-based and laboratory-based
2. The problem determines the nature and source of evidence to be sought, rather than our habits, protocols or traditions
3. experience+pathophysiology+epidemiology+biostatistic
4. 只有將搜尋的結論轉化成行動而影響我們的患者的健康才有價值
5. We should continuously evaluate our performance in applying these ideas



Evidence-based Practice

1. Health care decisions should be: patient-based, population-based and laboratory-based
2. The problem determines the nature and source of evidence to be sought, rather than our habits, protocols or traditions
3. experience+pathophysiology+epidemiology+biostatistic
4. The conclusions of this search are worthwhile only if they are translated into actions that affect our patients
5. 必須持續評估我們實證醫學執行的表現



Evidence-based Practice

Q: Ask a clinical question 問

S: Search evidences 搜

A: Appraise those evidences 評

P: translated into actions 行

O: evaluate our performance 果



Attitude : a new way of learning

- Against experience ? no
- Against teachers ? no
- Against textbook ? no
- Against pathophysiology ? no
- Against our tradition ? no
- Only : RCT / review / WWW ? no



The way : CME to EBM

- From CME (Slide & Notes. Lecture by specialist...) to EBM (Q / S / A / P / O)
- Performance review by audit
- Keep up to date by WWW & CD-ROM
- Learning reviews and practice guidelines
- Journals: ACP journal club. the Journal of EBM.....



EBM practice

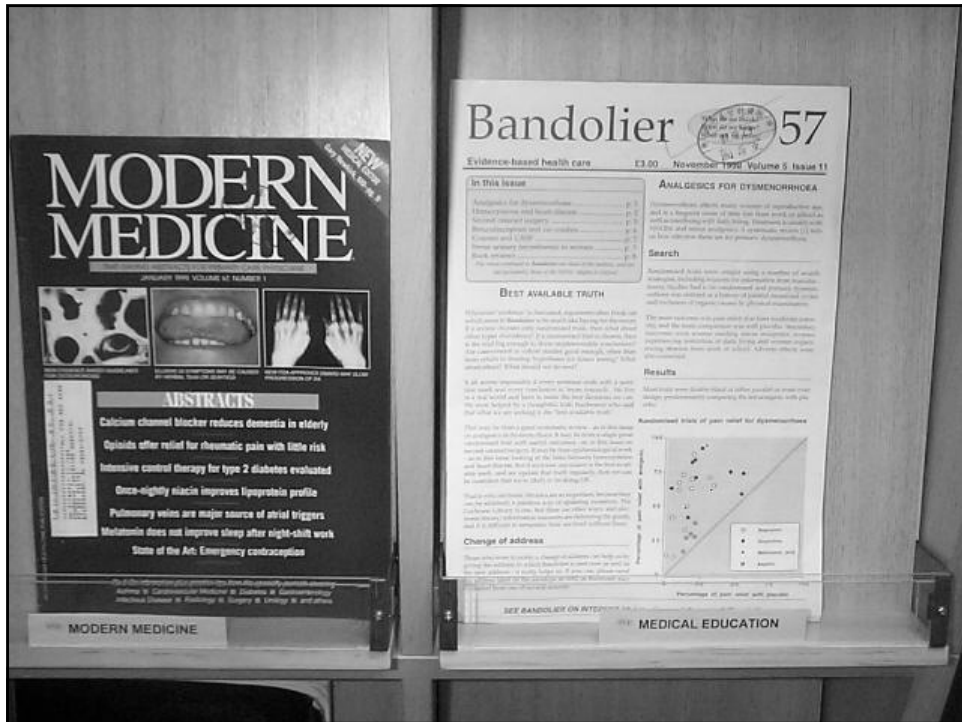
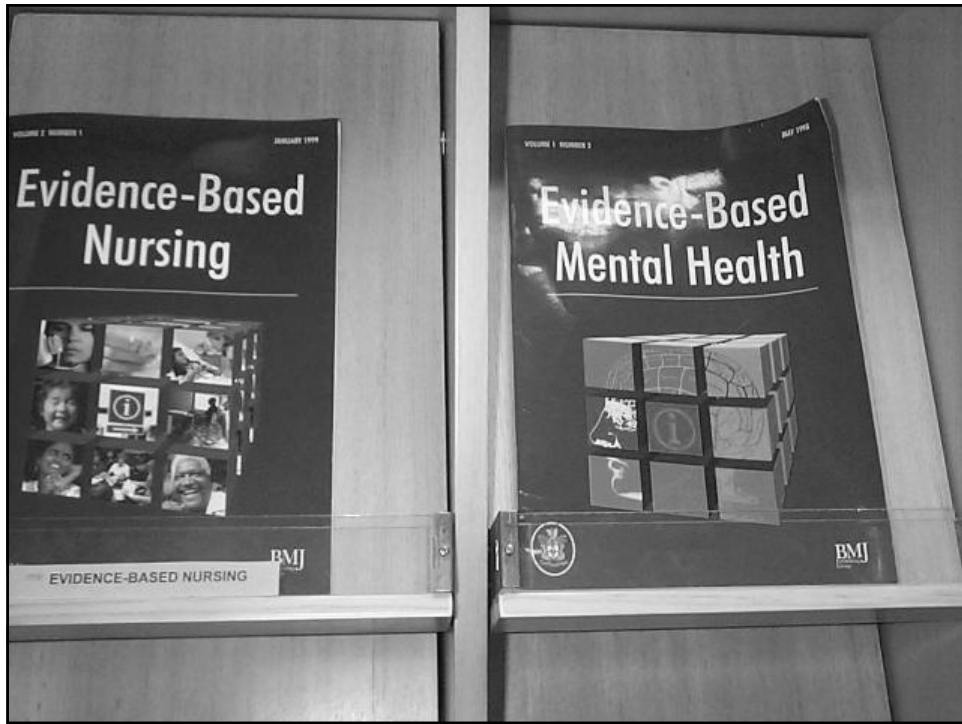
- Question : task or patient / intervention / comparison / outcome.
- Search : PubMed / Healthgate / Cochrane L.
- Appraise : RCT's / evidence I-VI.
- Practice : guideline / review / pathway
- Outcome : mortality / morbidity / activity / quality / performance measurement system.



Resources

- the journal of Evidence-Based Medicine
- the journal of Bandolier
- The Cochrane Library CD-ROM
- handbook: How to practice and teach EBM
- ACP journal club in Annals of Int Med
- WWW: UK-EBMC / Bandolier / Cochrane





MODERN MEDICINE



ABSTRACTS

- Calcium channel blocker reduces dementia in elderly
- Opioids offer relief for rheumatic pain with little risk
- Intensive control therapy for type 2 diabetes evaluated
- Once-daily statin improves lipoprotein profile
- Pulmonary veins are major source of atrial fibrillation
- Melatonin does not improve sleep after night-shift work
- State of the Art: Emergency contraception

MODERN MEDICINE

Bandolier 57

Evidence-based health care £3.00 November 1998 Volume 5 Issue 11

In this issue

- Analgesics for dysmenorrhoea p. 5
- Hypercholesterolaemia and heart disease p. 6
- Intensive control therapy for type 2 diabetes p. 7
- Respiratory support and ventilation p. 8
- Exercise and CVD p. 9
- General practice consultation in women p. 10
- Black patients p. 11
- The new evidence-based medicine p. 12

BEST AVAILABLE TRUTH

"Medicine's weakness" is increased dependence on drugs and technology. Bandolier is the world's leading journal for doctors. It is a journal for doctors only, not for patients. It is a journal that is not about the patient, but about the doctor. It is a journal that is not about the patient, but about the doctor. It is a journal that is not about the patient, but about the doctor.

It is an issue responsibility of every journal to make sure that it is not only a journal for doctors, but also a journal for patients. It is a journal that is not about the patient, but about the doctor. It is a journal that is not about the patient, but about the doctor.

Change of address

Bandolier is now published by the British Medical Association, 11, St Andrews Place, Regents Park, London NW1 2AP. Tel: 020 7611 8888. Fax: 020 7611 8889. Email: bandolier@bma.org.uk

ANALGESICS FOR DYSMENORRHOEA

Dysmenorrhoea affects about 50% of reproductive age women. It is a frequent cause of absence from work or school. The aim of this study was to evaluate the effectiveness of analgesics for the treatment of dysmenorrhoea.

Search

Randomised trials were sought using a number of search strategies. The search was limited to randomised trials. The search was limited to randomised trials. The search was limited to randomised trials.

The main outcome was pain relief. The main outcome was pain relief. The main outcome was pain relief. The main outcome was pain relief. The main outcome was pain relief.

Results

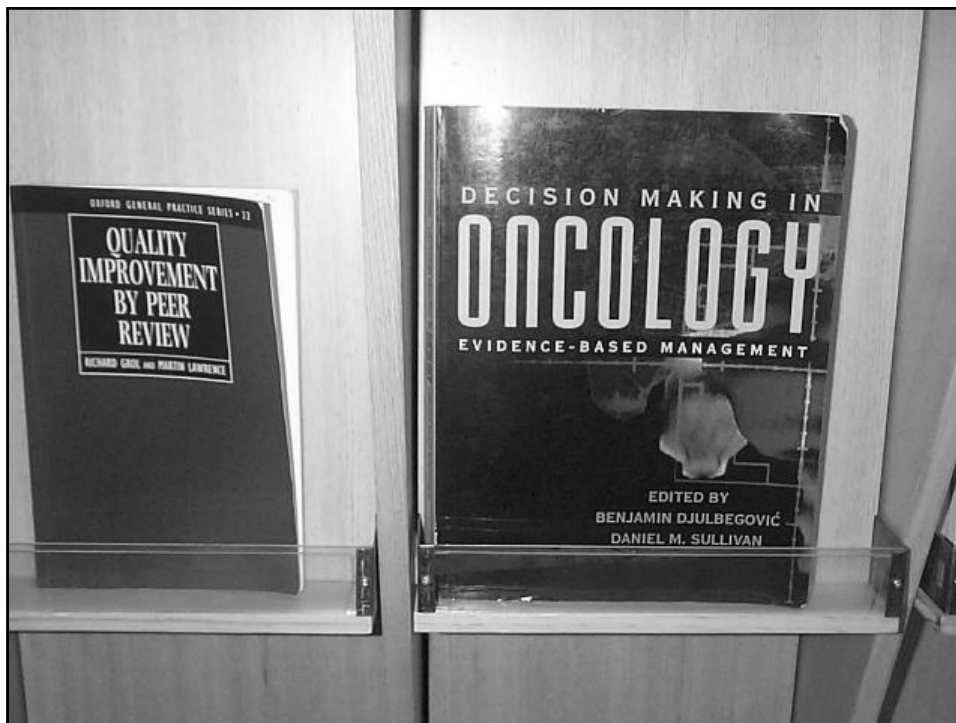
Fourteen trials were included in the meta-analysis. The main outcome was pain relief. The main outcome was pain relief. The main outcome was pain relief.

Randomised trials of pain relief for dysmenorrhoea



SEE BANDOLIER ON INTERNET AT www.bma.org.uk/bandolier

MEDICAL EDUCATION



資訊處理

- 航空工業
 - Boeing 777 manuals
 - 24 binders
 - 10 feet shelf space
 - Conversion to CD
 - Reduced search by 60%
- 健康照護行業
 - Memorize “the manuals”
 - Exams, audits, etc to check



Systematic review of bed rest after medical procedures

- 10 trials of bed rest after spinal puncture
 - no change in headache with bed rest
 - Increase in back pain
- 英國神經內科的處置規定 - 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



Getting Evidence in to Practice How do you “do” EBP?

- What EBP do you do/help with?
- What other EBP do you know of?
- Compare with you neighbour

Teaching Tip:
Special
background
for activities.

處理資訊的方法 “Push” and “Pull” methods

- “Push” – 提醒我們新的資訊
 - “Just in Case” learning (以防萬一的學習法)
 - Use ONLY for important, new, valid research
- “Pull” – access information when needed
 - “Just in Time” learning (及時的學習法)
 - Use whenever questions arise
 - EBM Steps: question; search; appraise; practice; outcome

Information “pull” Steps in EBM process



1. 確切的陳述一個可回答的問題
2. 搜尋最佳的證據
3. 評析鑑定這些證據
4. 和臨床專門的知識技術以及病患的標準相結合

“以防萬一的”雙週期刊 Valid, Relevant & (almost) No Effort!

- 80 journals scanned
- Is it **valid**?
 - Intervention: RCT
 - Prognosis: inception cohort
 - Etc
- Is it **relevant**?
 - GPs & specialists ask: Will this change your practice?



www.evidence-basedmedicine.com

“Just in Time” learning: 住院醫師的資訊需求

- 情境： 64 residents at 2 New Haven hospitals
- 方法： Interviewed after 401 consultations
- 問題：
 - Asked 280 questions (2 per 3 patients)
 - Pursued an answer for 80 questions (29%)
 - Not pursued because
 - Lack of time
 - Forgot the question
- 答案的出處：
 - Textbooks (31%), articles (21%), consultants (17%)

Green, Am J Med 2000

住院醫師的資訊需求

- Most of our questions are NEVER answered
- When answered, the information is likely to be neither the best nor up-to-date

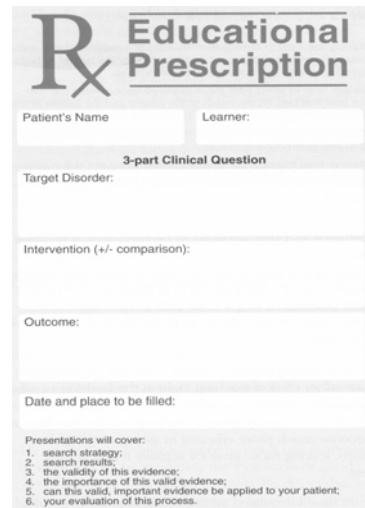
Evidence-Based Medicine

- Asking an answerable question
- *Does interferon beta-1b reduce the progression of secondary progressive MS in this 40 y/o lady ?*

- **Four components**
 1. patient / problem
 2. intervention (history, PE, test, prognostic factor, treatment etc)
 3. comparison intervention
 4. outcome
- **Educational prescription**

Evidence-Based Medicine

- Educational prescription



R_x Educational Prescription

Patient's Name: _____ Learner: _____

3-part Clinical Question

Target Disorder: _____

Intervention (+/- comparison): _____

Outcome: _____

Date and place to be filled: _____

Presentations will cover:

1. search strategy;
2. search results;
3. the validity of this evidence;
4. the importance of this valid evidence;
5. can this valid, important evidence be applied to your patient;
6. your evaluation of this process.

您的臨床提問

- 寫下近來患者的一個問題
- 哪一個是要緊的問題?
- 您做了回答嗎? If so, how?

Which type of evidence would you like to appraise:

Diagnosis	Elderly woman with possible iron deficiency anaemia
Prognosis	Man with a history of a stroke who is concerned about his risk of seizure
Therapy	Single trials - man with stroke, moderate carotid stenosis Systematic review - man with a stroke who gets admitted to stroke unit
Harm	Man with extrasystoles on sotalol

Step 2: The “best” evidence depends on the type of question

1. What are the phenomena/problems?
 - Observation (e.g., qualitative research)
2. What is frequency of the problem? (FREQUENCY)
 - Random (or consecutive) sample
3. Does this person have the problem? (DIAGNOSIS)
 - Random (or consecutive) sample with Gold Standard
4. Who will get the problem? (PROGNOSIS)
 - Follow-up of inception cohort
5. How can we alleviate the problem? (INTERVENTION/THERAPY)

Randomised controlled trial

患者或問題	介入	對照的介入	成果
Patient or Problem	Intervention	Comparison Intervention	Outcome
Description of the patient or the target disorder of interest	Could include: <ul style="list-style-type: none"> • Exposure • Diagnostic test • Prognostic factor • Therapy • Patient perception etc. 	Relevant most often when looking at therapy questions	Clinical outcome of interest to you and your patient

患者或問題	介入	對照的介入	成果
Patient or Problem	Intervention	Comparison Intervention	Outcome
65 year old man with a stroke and moderate carotid stenosis	ASA	Placebo	Stroke

範例: “the first sign of hyperkalaemia is death”

- An anxious laboratory technician phoned about a potassium of 7.3 mmol/l (Ref Range 3.5-5.0) found on a routine blood test of a 50 year old woman.
- Arranged an urgent repeat of the electrolytes (to rule out a spurious elevation) and an ECG.
- The latter was reassuringly normal, but, : Does a normal ECG rule out a serious elevation of potassium?



1. The question

- Does a normal ECG rule out a serious elevation of potassium?
 - Population - In suspected hyperkalemia
 - Indicator - does a normal ECG
 - Comparator -
 - Outcome - rule out hyperkalemia?

1. The question

- Does a normal ECG rule out a serious elevation of potassium?
 - Population – hyperkal*
 - Indicator – ECG OR EKG
 - Comparator -
 - Outcome – hyperkal*
- Underline keywords; think of synonyms

The screenshot shows the PubMed Clinical Queries search interface. The browser title is "PubMed Clinical Queries - Microsoft Internet Explorer". The address bar shows "http://www.ncbi.nlm.nih.gov/entrez/...". The page content includes a search box with the text "Enter subject search:" and the query "(hyperkalem* OR hyperkalaem*) AND (ECG OR EK)". The query is annotated with callouts: "PubMed via Google" points to the search bar, "Diagnosis button" points to the "diagnosis" radio button, "OR synonyms" points to the "OR" in the query, and "* Means any letters" points to the asterisk in "hyperkalem*". The interface also features a "Clinical Queries" section with "Methodology Filters" and "Systematic Reviews" options. The footer includes "Write to the Help Desk NCB I NLM I NIH".

PubMed Clinical Queries - Microsoft Internet Explorer

Address <http://www.ncbi.nlm.nih.gov/entrez/query/static/clinical.html>

NCBI PubMed

Select from two filters to limit your retrieval. Choose either Clinical Queries or Systematic Reviews. Enter your search topic in the box below and click Go.

Clinical Queries using Research Methodology Filters

This specialized search is based on built-in search "filters" based largely on [Haynes RB et al.](#) Four study categories are provided, and the emphasis is on the most relevant articles but probably some less relevant ones) or more specific (i.e., filter table for details.

Indicate the category and emphasis below.

Category: therapy diagnosis etiology prognosis

Emphasis: sensitivity specificity

Systematic Reviews

This feature retrieves systematic reviews and meta-analysis studies for your search topic(s). For more information, see [Help](#).

Enter subject search:

Note: If you want to retrieve everything on a subject area, you should not use this screen. The objective of filtering is to reduce the retrieval to articles that represent research conducted with specific methodology.

Address http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1952310&dopt=Abstract

Entrez PubMed Overview Help | FAQ Tutorial New/Noteworthy

PubMed Services Journal Browser MeSH Browser Single Citation Matcher Batch Citation Matcher Clinical Queries LinkOut Cubby

Related Resources Order Documents NLM Gateway TOXNET Consumer Health Clinical Alerts ClinicalTrials.gov PubMed Central Privacy Policy

1: Ann Emerg Med 1991 Nov;20(11):1229-32

Related Articles, [NEW Books](#), [LinkOut](#)

The ability of physicians to predict hyperkalemia from the ECG.

Wrenn KD, Slovis CM, Slovis BS.

Division of Emergency Medicine, University of Rochester, New York.

STUDY OBJECTIVE: To determine whether physicians blinded to the serum potassium level can predict hyperkalemia (potassium concentration of more than 5.0 mmol/L) from the ECG. **DESIGN:** ECGs of patients at high risk for hyperkalemia were analyzed retrospectively by two physicians blinded not only to the specific clinical diagnosis of the patient at the time of the ECG measurement but also to each other's interpretation. The physicians predicted the presence or absence of hyperkalemia on a nominal scale (mild, moderate, or severe). **SETTING:** The emergency department of an affiliated urban county hospital. **PATIENTS:** Two hundred twenty consecutive patients admitted to the emergency department with a diagnosis of renal failure or hyperkalemia. Eighty-seven patients had hyperkalemia, and 133 did not. **RESULTS:** The sensitivities of the readers for predicting hyperkalemia were .43 and .34, respectively (best positive predictive value, .65). The respective specificities for detecting hyperkalemia were .85 and .86 (best negative predictive value, .69). **When only patients with moderate-to-severe hyperkalemia (potassium of more than 6.5 mmol/L) were analyzed, sensitivities were .62 and .55.** The readers' ability to predict the severity of hyperkalemia was equally poor. **CONCLUSION:** The ECG is not a sensitive method of detecting hyperkalemia, even in high-risk patients. The specificity of the ECG is better for hyperkalemia, but empiric treatment of hyperkalemia based on the ECG alone will lead to mistreatment of at least 15% of patients.

PMID: 1952310 [PubMed - indexed for MEDLINE]

Evidence-Based Medicine

- Tracking down the best evidence
- *Placebo-controlled multi-center randomized trial of interferon beta-1b in treatment of 2nd progressive MS. Lancet 1998 Nov 7;352:1491-7*
- Grades of evidence & levels of recommendation
- systematic review/ RCT / cohort / case control / survey
- **selecting resource:** HINT / Best Evidence (ACPJC & EBM), Cochrane Library, 2nd journals OR HINT / Medline / 1st journals
- **searching strategy**

Evidence-Based Medicine

- Searching strategy for Medline

Evidence-Based Medicine

- Critical appraisal
 - self-appraisal
 - pre-appraised in *ACPJC. 130:69, May-June, 1999*
 - pre-appraised by *SE Straus in the form of CAT, to be updated*
- **Validity**
 - randomized & concealed assignment (☑)
 - sufficiently long & complete follow-up (progression at 33 months)
 - intention-to-treat analysis (☑)
 - double blind / groups similar & treated equally except for the therapy (☑)

Evidence-Based Medicine

- Critical appraisal
 - self-appraisal
 - pre-appraised in *ACPJC. 130:69, May-June, 1999*
 - pre-appraised by *SE Straus in the form of CAT, to be updated*
- **Important**
 - the magnitude of the treatment effect
 - precision of the effect estimate
 - CER = 50%, EER = 39%
 - RRR = (CER-EER)/CER = 22%
 - ARR = CER-EER = 11%
 - NNT = 1/ARR = 9 (95%CI = 6-27)
 - NNH = 1/(64%-37%) = 4

Evidence-Based Medicine

- Integrating the appraisal with clinical expertise & patients' preference
- **Applicable to my patient**
- not so different (☒)
- feasible in our setting (☒)
- patient's benefit & harm
- patient's value & expectation
- $NNT/f_t = 9/3 = 3$
- $NNH/f_h = 4/1 = 4$
- $s = \text{progression/side-effect} = 0.95/0.05 = 19$
- $LHH = [(1/NNT) \times f_t \times s] \text{ vs } [(1/NNH) \times f_h] = 25 : 1$

Evidence-Based Medicine

- Auditing performance in step 1-4
- **Self-evaluation in**
- asking answerable questions
- tracking down the best evidence
- critically appraising the evidence
- integrating the appraisal with clinical expertise & patients' preference

Self-evaluation in asking answerable questions

1. Am I asking any clinical questions at all?
2. Am I asking well-formulated (3-part) questions?
3. Am I using a "map" to locate my knowledge gaps and articulate questions?
4. Can I get myself unstuck when asking questions?
5. Do I have a working method to save my questions for later answering?
6. Is my success rate of asking answerable questions rising?
7. Am I modeling the asking of answerable questions for my learners?
8. Am I writing any educational prescriptions in my teaching? Are they being filled?
9. Are we incorporating question asking and answering into everyday activities?
10. How well am I guiding my learners in their question asking?
11. Are my learners writing educational prescriptions for me?

Self-evaluation in finding the best external evidence

1. Am I searching at all?
2. Do I know the best sources of current evidence for my clinical discipline?
3. Have I achieved immediate access to searching hardware, software and the best evidence for my clinical discipline?
4. Am I finding useful external evidence from a widening array of sources?
5. Am I becoming more efficient in my searching?
6. Am I using MeSH headings, thesaurus, limiters, and intelligent, free text when searching MEDLINE?
7. How do my searches compare with those of research librarians or other respected colleagues who have a passion for providing best current patient care?



Self-evaluation in critically appraising the evidence for its validity and potential usefulness

1. Am I critically appraising external evidence at all?
2. Are the critical appraisal guides becoming easier for me to apply?
3. Am I becoming more accurate and efficient in applying some of the critical appraisal measures? (such as likelihood ratios, and NNTs)
4. Am I creating any CATs?



Self-evaluation in integrating the critical appraisal with clinical expertise and applying the result in clinical practice

1. Am I integrating my critical appraisals into my practice at all?
2. Am I becoming more accurate and efficient in adjusting some of the critical appraisal measures to fit my individual patients? (such as pretest probabilities, NNTs etc)
3. Can I explain (and resolve) disagreements about management decisions in terms of this integration?
4. Have I conducted any clinical decision analyses?
5. Have I carried out any audits of my diagnostic, therapeutic or other EBM performance?



Self-evaluation in teaching EBM

1. When did I last issue an educational prescription?
2. Am I helping my trainees learn how to ask answerable questions?
3. Am I teaching and modeling searching skills?
4. Am I teaching and modeling critical appraisal skills?
5. Am I teaching and modeling the generation of CATs?
6. Am I teaching and modeling the integration of best evidence with my clinical expertise and my patients' preferences?
7. Am I developing new ways of evaluating the effectiveness of my teaching?
8. Am I developing new EBM educational material?



Self-evaluation of continuing professional development

1. Am I a member of an EBM-style journal club?
2. Have I participated in or tutored at one of the workshops on how to practice or teach EBM?
3. Have I joined the evidence-based health e-mail discussion group?
4. Have I established links with other practitioners or teachers of EBM?



EBM: toolbox

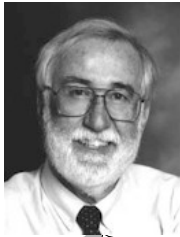
- critical appraisal guides (cards)
- **specific tools & data**
- CATbank, CATnipper, & CATmaker
- levels of evidence & grades of recommendation

EBM: toolbox

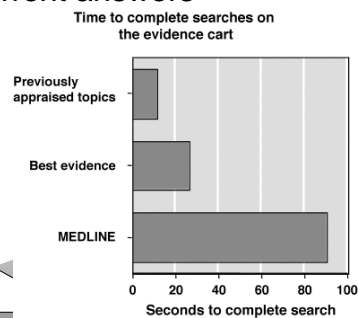
- **Specific tool & data: medical decision-making techniques**
- pre-test probability, likelihood ratio, post-test probability
- number-needed to treat (NNT), number-needed to harm (NNH)
- decision analysis
- treatment & testing thresholds
- cost-effective analysis (economic analysis)

“Just in Time” learning EBM的另類方法

- Shift focus to current patient problems (“just in time” education)
 - Relevant to YOUR practice
 - Memorable
 - Up to date
- Learn to obtain best current answers



Dave Sackett



EBP的障礙

1. Attitude of question & inquiry
2. Know-how in finding, appraising, and applying evidence
3. Information Resources on tap(現成的)
4. Lack of Time

EBP in Teams

- Question focused journal clubs
 - Structure:
 - Appraise & apply “homework” article
 - New questions? Discuss & assign
- Plan and monitor changes
 - Are there barriers to the change?
 - Can we measure the change?



Summary

- 資訊氾濫嗎?
 - Yes – 5,000 articles per day
- 繼續教育績分有幫忙嗎?
 - Maybe a little
- Can EBM (patient-centred learning) help?
 - Yes, it uses the more effective methods of CME
- 障礙為何?
 - Evidence resources, skills, inquiring attitude

