



What is Evidence-Based Medicine?

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The Ascent of Evidence (and the exhaustion of Man)

Wissett



fig.1



fig.2

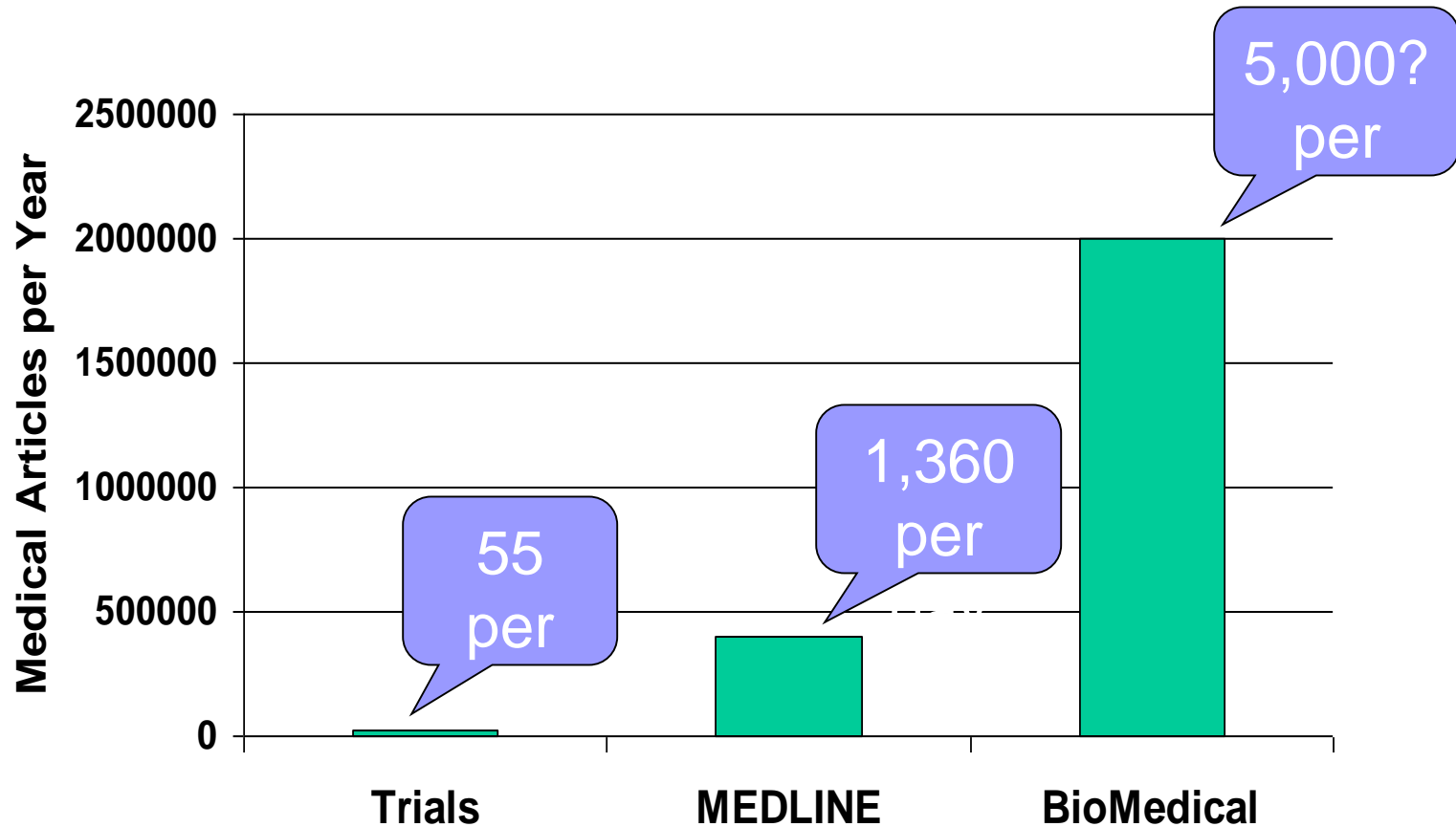


fig.3

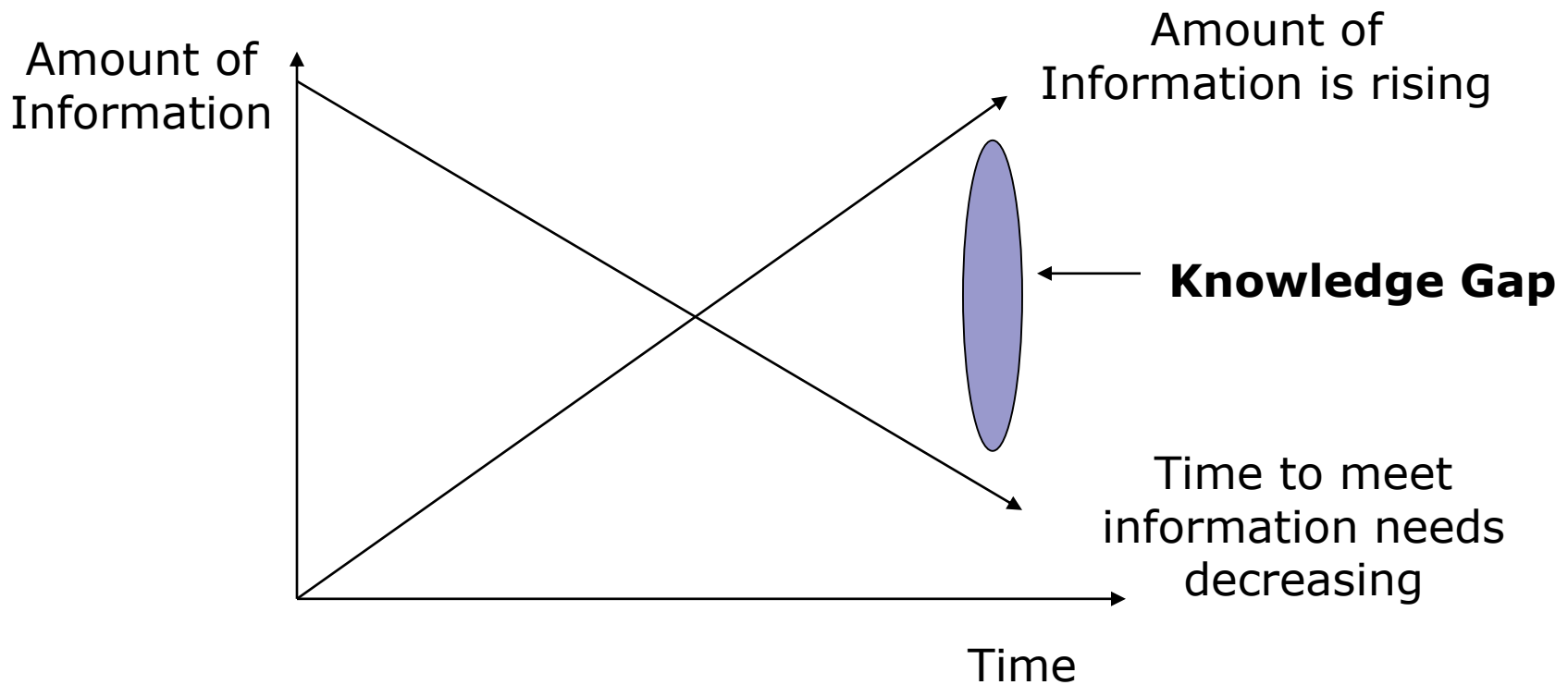


fig.4


Volume of new information a major barrier



The Problem



The Knowledge Gap



Half-time or Half-life of
Clinical Medical Science is
now

about 6 Month



Doubling time of
biomedical science was

about 19 years in 1991



Doubling time of
biomedical science was

about 20 months in 2001

So you work in a job which:

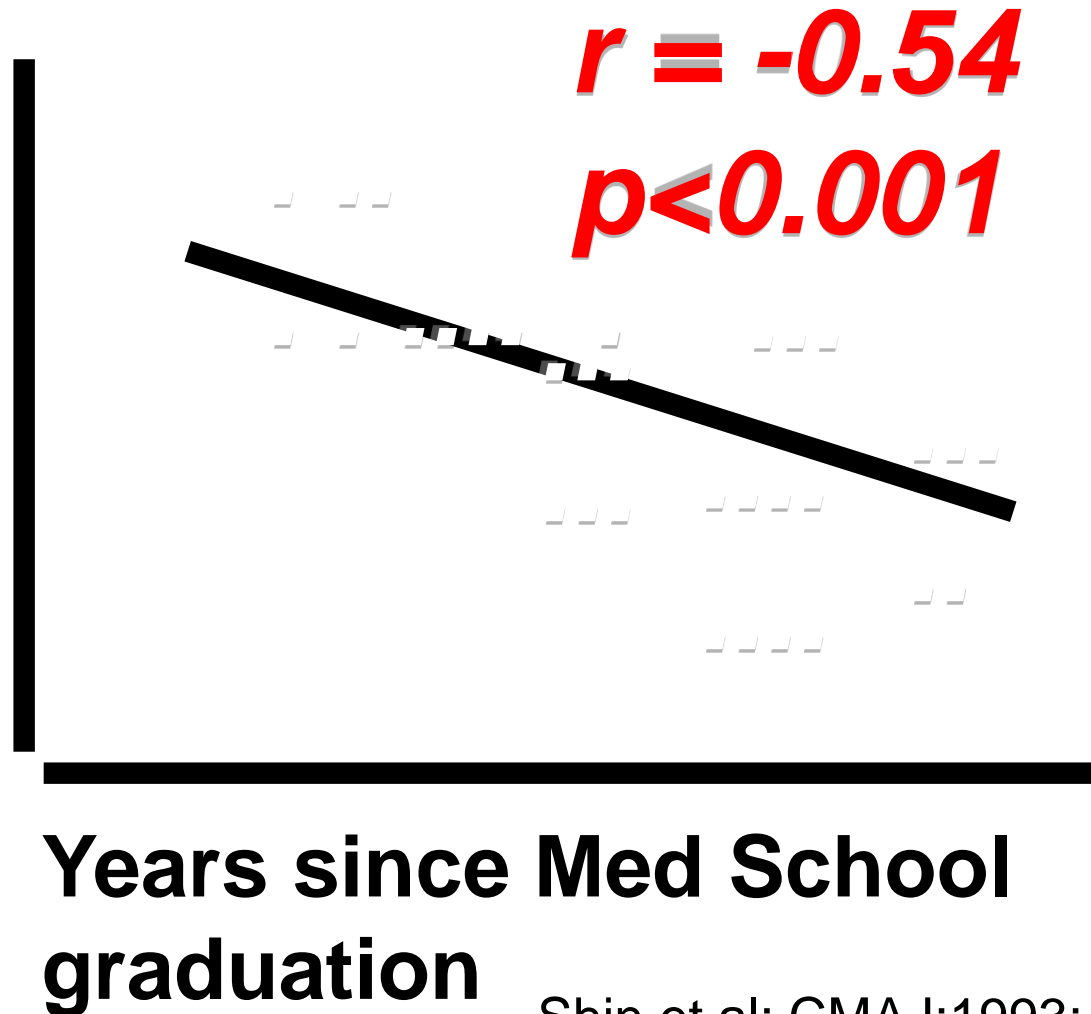
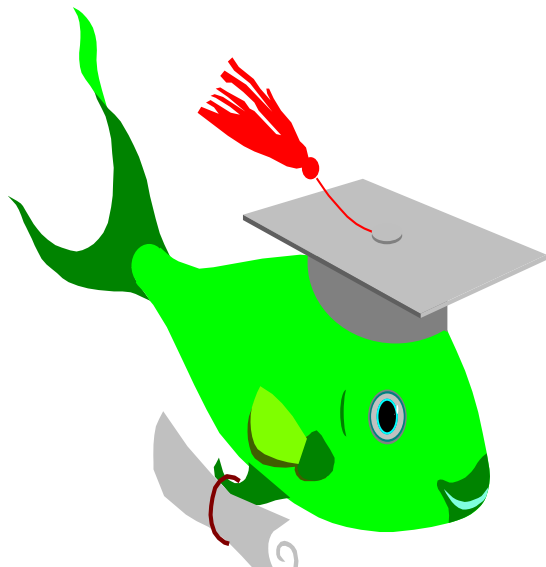
- Its **half-time** (half-life) is **6 months**, &
- Its **doubling-time** is **20 month**

- You works in a **ever-changing & ever-growing** profession !

- So you should **keep updating** !

The Slippery Slope

Knowledge
of best
current HTN
care



Shin, et al: CMAJ; 1993: 969-976



For General Physicians to keep current:

Read 19 new articles per day which appear in medical journals

19 x 2 hrs (Critical Appraisal) = 38 hrs per day

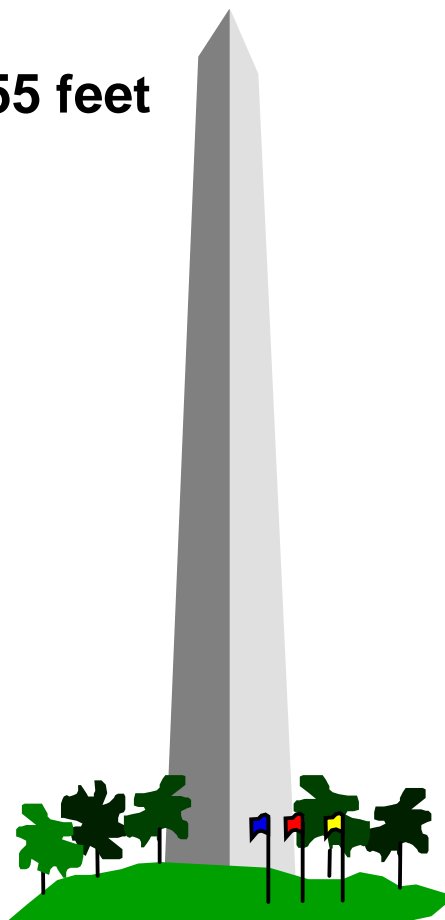
Davidoff F et al. (1995)

EBM; A new journal to help doctors identify the information they need. *BMJ* 310:1085-86.

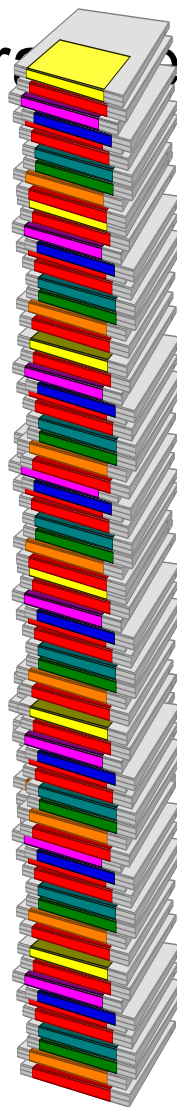
"Kill as Few Patients as Possible" - Oscar London

Rule 31- Review the world literature fortnightly

555 feet



**Washington
Monument**



**A Year of MEDLINE
indexed journals**

Can't I trust the editors?

Percent of articles meeting quality criteria

NEJM	12.6%
Ann Int Med	7.6%
JAMA	7.2%
Lancet	6.2%
BMJ	4.4%
Arch Int Med	2.4%

Random Medical News

Today's Random Medical News from the New England Journal of Panic-Inducing Gobbledygook



Jim Borgman
The Cincinnati Enquirer
King Features Syndicate



Medical Publishing

Annually:

- 20,000 journals
- 17,000 new books

MEDLINE:

- 4,000 journals
- 6 Million references
- 400,000 new entries yearly



Types of Medical articles

- Original Article
- Review Article
- Case Reports

Hierarchy of studies





EBM History

- G. Guyatt from McMaster University in 90s
- Sackett in 1995 defined EBM
 - “Our clinical decision making should be based on the best scientific available evidence”



What is Evidence?

- **Evidence** is anything used to determine or demonstrate the truth of an assertion.
- **Scientific evidence** is evidence which serves to either support or counter a scientific theory or hypothesis.
- In scientific research **evidence** is accumulated through observations of phenomena occur in the natural world, or created as experiments in a laboratory

What is 'level of evidence'?

- The extent to which one can be confident that an estimate of **effect** or **association** is **correct (unbiased)**.

Levels of Evidence

Level of Evidence	Type of Study
1a	Systematic reviews of randomized clinical trials (RCTs)
1b	Individual RCTs
2a	Systematic reviews of cohort studies
2b	Individual cohort studies and low-quality RCTs
3a	Systematic reviews of case-controlled studies
3b	Individual case-controlled studies
4	Case series and poor-quality cohort and case-control studies
5	Expert opinion based on clinical experience

Adapted from: Sackett DL et al. *Evidence-Based Medicine: How to Practice and Teach EBM*. 2nd ed. Churchill Livingstone; 2000.

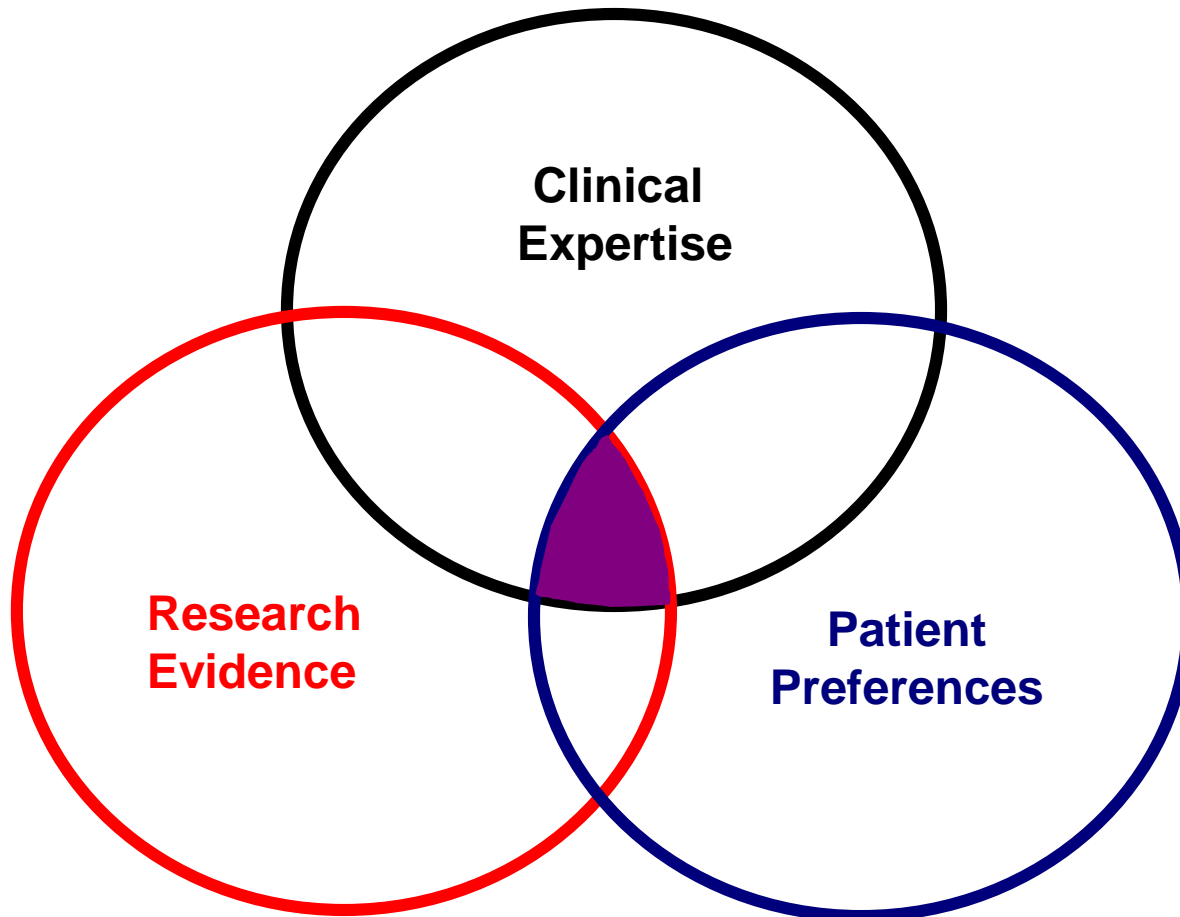


What is Evidence-Based Medicine?

“Evidence-based medicine is the integration of
best research evidence with **clinical expertise**
and **patient values**”

- *Sackett & Straus*

EBM - What is it?



Traditional Medicine

Experiences

**Pathophysiology,
references, . . .**

Patient value



By best research evidence


- clinically **relevant** research
- **Unbiased** research
- **Reproducible** research
- often from the basic sciences of medicine
- especially from **patient centered** clinical research

By clinical expertise

- We mean the **ability** to use our **clinical skills and past experience** to **rapidly identify each patient's unique health** state and diagnosis, their individual risks and benefits of potential interventions, and their personal values and expectations.

By *patient values*

- We mean the **unique preferences, concerns and expectations each patient** brings to a clinical encounter and which must be integrated into clinical decisions if they are to serve the patient.

- 
- When these **three elements** are integrated, clinicians and patients form a diagnostic and therapeutic alliance which optimizes clinical outcomes and quality of life



EBM Steps

1. **Ask** your clinical question
2. **Search** your literature for answer
3. **Appraise** the retrieved documents
4. **Apply** your findings
5. **Evaluate** the performance



The **five-step process** for using an evidence-based approach in general practice

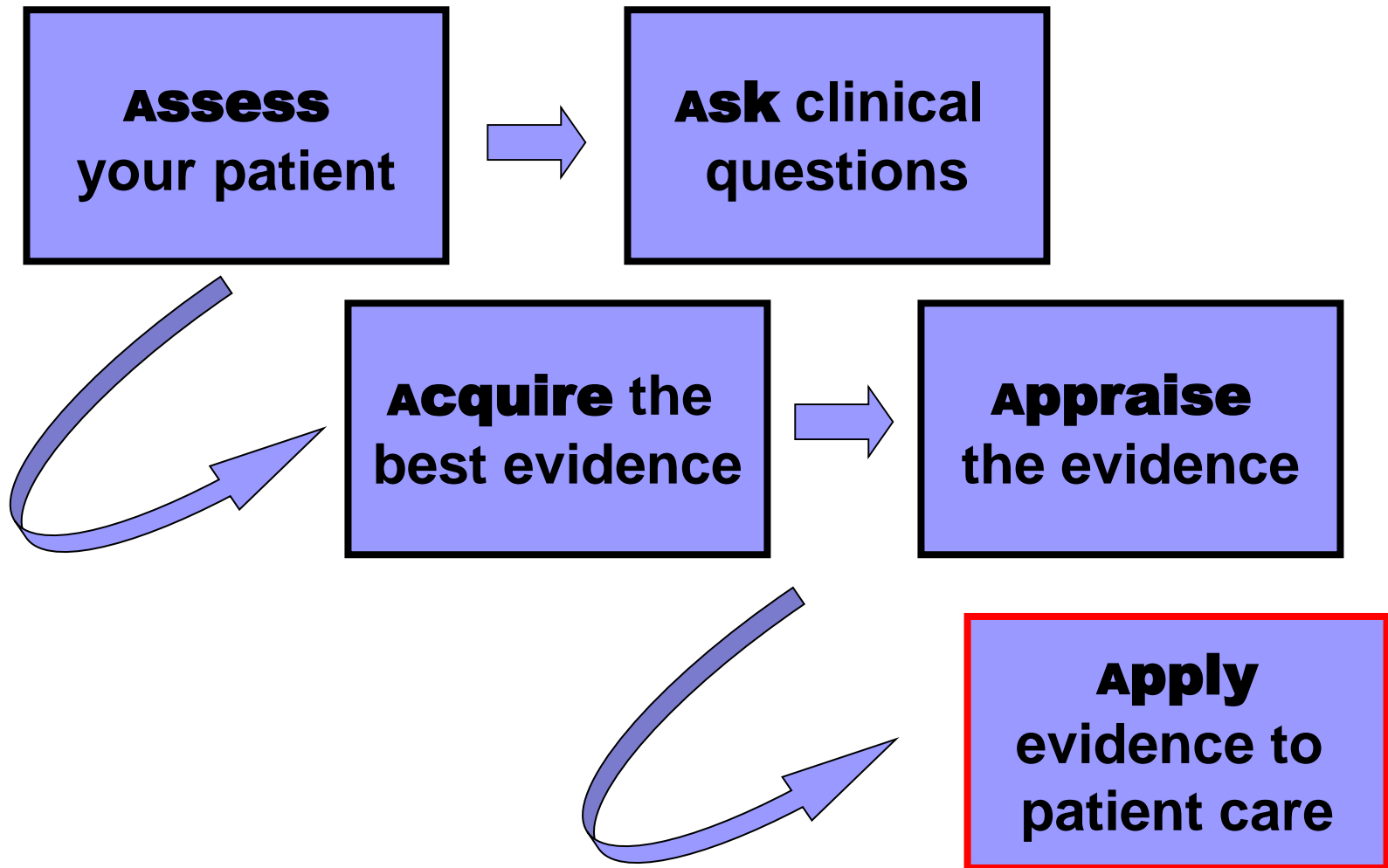
- (1) define the problem
- (2) track down the information sources you need
- (3) critically appraise the information
- (4) apply the information with your patients
- (5) evaluate how effective this application of information is.

How do we actually practice EBM?

The full-blown practice of EBM comprises **5 steps**, and this book takes them up in turn:


- **Step 1:** Converting the need for information (about prevention, diagnosis, prognosis, therapy, causation, etc) into an answerable question (Chapter 1).
- **Step 2:** Tracking down the best evidence with which to answer that question (Chapter 2).
- **Step 3:** Critically appraising that evidence for its validity (closeness to the truth), impact (size of the effect), and applicability (usefulness in our clinical practice) (the first halves of Chapters 3-7).
- **Step 4:** Integrating the critical appraisal with our clinical expertise and with our patient's unique biology, values and circumstances (the second halves of Chapters 3-7).
- **Step 5:** Evaluating our effectiveness and efficiency in executing Steps 1-4 and seeking ways to improve them both for next time (Chapter 9).

EBM Method



What are the limitations of EBM?

- **First**, the need to develop new skills in **searching** and **critical appraisal** can be daunting, although (as we pointed out above) evidence-based care can still be applied if only the former has been mastered and directed toward pre-appraised resources

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- **Second**, busy clinicians have limited time to master and apply these new skills, and the resources required for instant access to evidence are often woefully inadequate in clinical settings.
 - **Finally**, evidence that EBM “works” has been late and slow to come.



The usefulness of EBM

1. Treatments & diagnostic tests are being used at a time when their effectiveness is approved
2. EBM prevents using ineffective treatment methods, so it will probably decrease charges



The usefulness of EBM

3. It help us updateing our knowledge continously instead of reading lots of irrleavany & unreliabae litraure, so time saving.
4. It helps policy makesrs through development of clinical guidlines, providing them with enough documntsm& evidence



The usefulness of EBM

5. Instead of teaching students current standard treatment methods, it teaches them how to find the best current therapy for their disease
6. EBM promotes evidence instead of a person's authority
7. It decreases medical errors

Seven alternatives to evidence based medicine

- **Eminence** based medicine
- **Vehemence** based medicine
- **Eloquence** based medicine
- **Providence** based medicine
- **Nervousness** based medicine
- **Diffidence** based medicine
- **Confidence** based medicine

Eminence based medicine

- The eminent physician's white hair and balding pate are called the "halo" effect. The more senior the colleague, the less importance he or she placed on the need for anything as mundane as evidence. Experience, it seems, is worth any amount of evidence.



Vehemence based medicine

- The substitution of volume for evidence is an effective technique for brow beating your more timorous colleagues and for convincing relatives of your ability.



Eloquence based medicine

- The year round suntan, carnation in the button hole, silk tie, Armani suit, and tongue should all be equally smooth. Sartorial elegance and verbal eloquence are powerful substitutes for evidence.



Providence based medicine

- If the caring practitioner has no idea of what to do next, the decision may be best left in the hands of the Almighty. Too many clinicians, unfortunately, are unable to resist giving God a hand with the decision making.



Nervousness based medicine

- Fear of litigation is a powerful stimulus to overinvestigation and overtreatment. In an atmosphere of litigation phobia, the only bad test is the test you didn't think of ordering.



Diffidence based medicine

- Some doctors see a problem and look for an answer. Others merely see a problem. The diffident doctor may do nothing from a sense of despair. This, of course, may be better than doing something merely because it hurts the doctor's pride to do nothing.



Confidence Based Medicine

- This is restricted to **surgeons**.

Was it clear enough !

