

# EBM

**Dr. Nada A. Al-Yousefi**

**Assistant Professor & Consultant**

**Family Medicine Unit**

**Department of Family and Community**

**Medicine**

**College of Medicine(KSU)**

**[nalyousefi@ksu.edu.sa](mailto:nalyousefi@ksu.edu.sa)**

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# Aims

- What is EBM/ EBHC?
- Why the sudden interest in EBM/EBHC?
- How to do it?
  - ✓ 5 steps
  - ✓ Step 1- PICO formulation
- The way forwards ...

# Motivation: EBM “Successes”

- Theophylline and asthma
  - We were doing the wrong thing
    - Littenberg, 1988
- Beta blockers and MIs
  - We weren't doing the right thing
    - Yusuf, 1987

# What Is EBM?

- EBM is a style of practice in which doctors manage problems by reference to *valid* and *relevant* information.



# What is Evidence-Based Medicine?

- “The integration of individual clinical expertise with the best available clinical evidence from systematic research.”
  - David L Sackett, W Scott Richardson, William Rosenberg, R Brian Haynes *Evidence Based Medicine-- How to Practice and Teach EBM*, 1996
    - [Various definitions](#)

# What Is EBM?

- EBM is the *conscientious*, *explicit* and *judicious* use of **current best evidence** in **making decisions** about the care of individual patients.

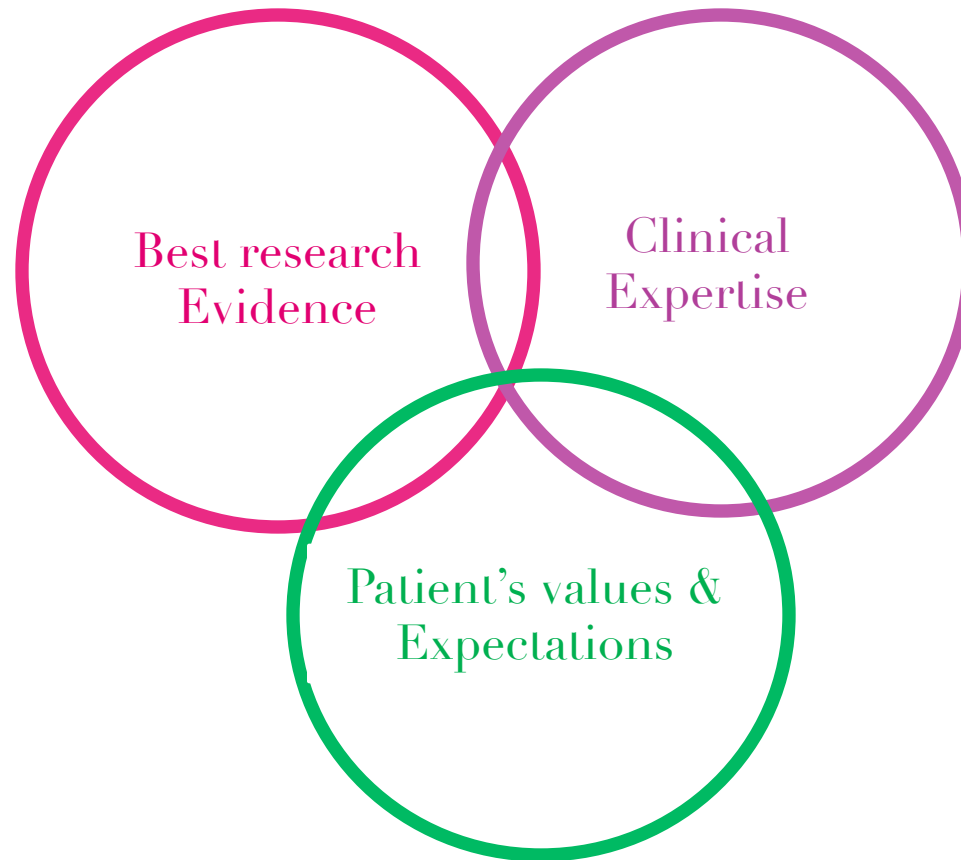
(Sackett, et al 1992)

# What Is EBM?

‘The new paradigm...de-emphasizing *intuition*, *unsystematic clinical experience*, and *patho-physiological rationale* as sufficient grounds for clinical decision making and stresses the examination of *evidence* from clinical research’\*

\* *Evidence-based medicine working group: Evidence-based medicine: A new approach to teaching the practice of medicine. JAMA 1992; 268: 2420-5.*

# What is EBM (3 E's) ?



(Sackett, et al 1996)

Individual  
Clinical  
Expertise

The diagram features a central red triangle with the text "Improved Patient Outcomes" inside. Three yellow arrows form a circular loop around the triangle, pointing clockwise. The arrows originate from the three boxes: "Individual Clinical Expertise" on the left, "Patient's Values and Expectations" on the right, and "Best Available Clinical Evidence" at the bottom. The entire diagram is set against a white background with a purple header bar at the top.

Improved Patient  
Outcomes

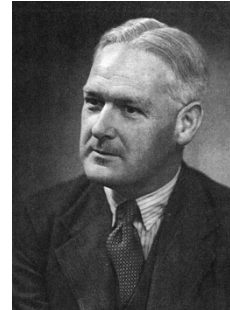
Patient's  
Values and  
Expectations

Best Available Clinical Evidence

# Some milestones in the history of EBM



**James Lind**  
publishes review &  
clinical trial in  
*Treatise on Scurvy*



**Bradford-Hill**  
publishes *Principles of Medical  
Statistics* &  
MRC trial of streptomycin



Inspiring Innovation and Discovery

Home

More About

**Clinical  
Epidemiology  
& Biostatistics**

900 AD

1780

1840

1937/48

1967

1970's



Al-Rhazi

**Al-Rhazi**

For I once saved one group  
by it, while I intentionally  
neglected another group.  
By doing that, I wished to  
reach a conclusion.

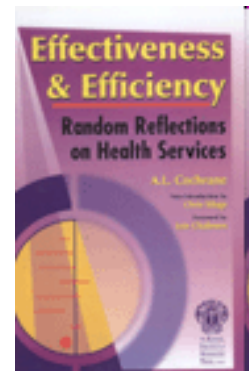


Pierre-Charles-Alexandre Louis (1787–1872).

**Pierre Louis**  
Develops his “numerical  
method” and changes  
blood letting practice in  
France



**Alvan Feinstein**  
publishes his book  
*Clinical Judgement*



# Unexpected Bad Effects





# Hoped-For Effects That Don't Materialise

HRT and heart attacks

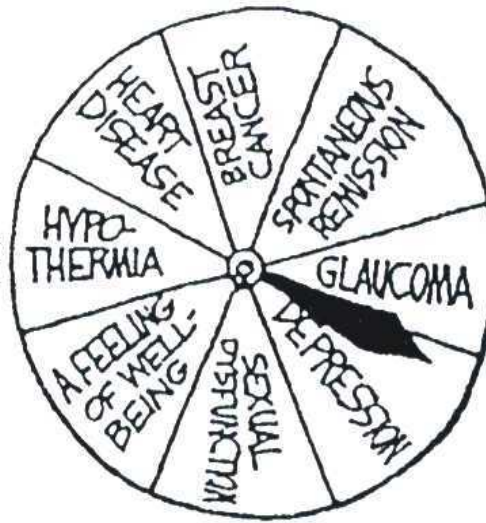


# Today's Random Medical News

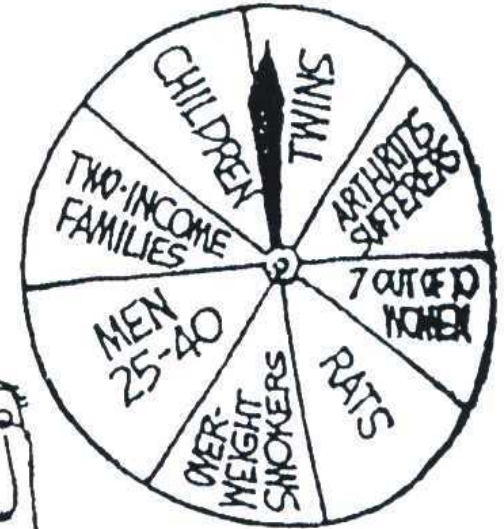
from the New England  
Journal of  
Panic-Inducing  
Gobbledygook



CAN CAUSE



IN



ACCORDING TO A  
REPORT RELEASED  
TODAY....



About 10% of published evidence is worth reading

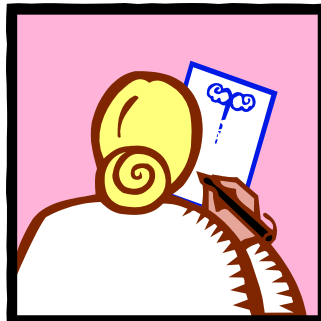
About 1/3 of worthwhile evidence is eventually refuted or attenuated

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."

# 1. Our daily need for *valid* information



Therapy



Diagnosis



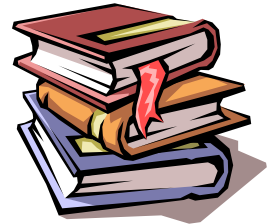
Prognosis

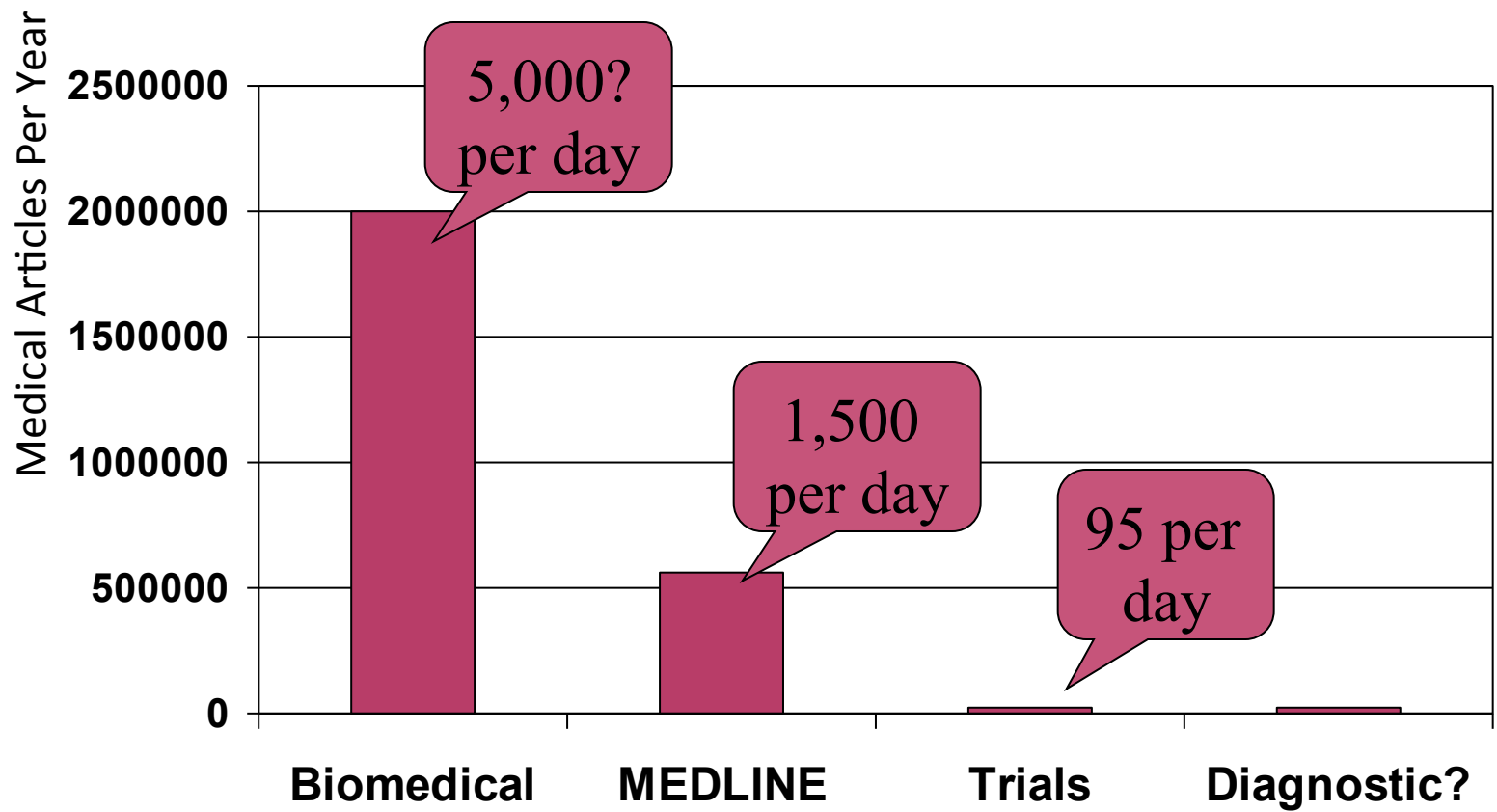


Prevention

## 2. The inadequacy of traditional sources of information

- Textbooks- out of date
- Experts- frequently wrong
- Didactic CME - ineffective
- Medical journals –  
Overwhelming in volume  
Variable in validity





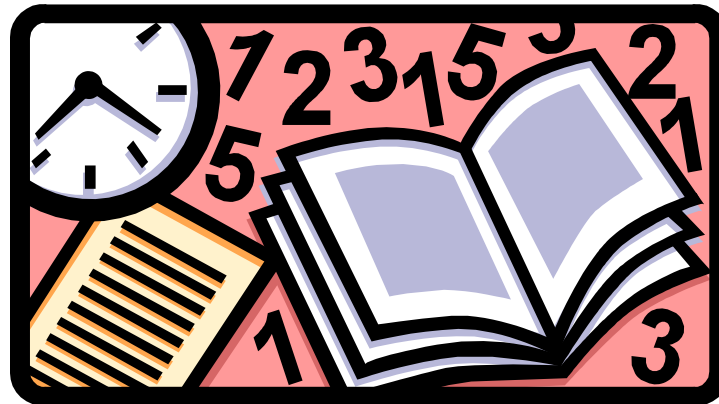
# Where's the Meat in Clinical Journals?

## *Top 20 Journals Contributing to ACPJC in 1992*

Journal	# articles with abstract	% articles meeting criteria
N Engl J Med	254	16.9
JAMA	303	12.2
Ann Intern Med	246	13.4
Lancet	410	7.3
Arch Intern Med	262	10.3
BMJ	283	8.5
J Intern Med	157	10.8



Our inability to set aside time to find & assimilate the evidence



# Our inability to set aside time to find and assimilate the evidence

Median minutes/week spent reading about 'my patients'\*:

- House officers (PGY1): 0 (up to 70%=none)
- SHOs (PGY2-4): 20 (up to 15%=none)
- Registrars: 45 (up to 40%=none)
- Sr. registrars 30 (up to 15%=none)
- Consultants Post 1975: 45 (up to 30%=none)
- Consultants Pre 1975: 30 (up to 40%=none)

\*Self-reports at 17 Grand Rounds (Internal Medicine)



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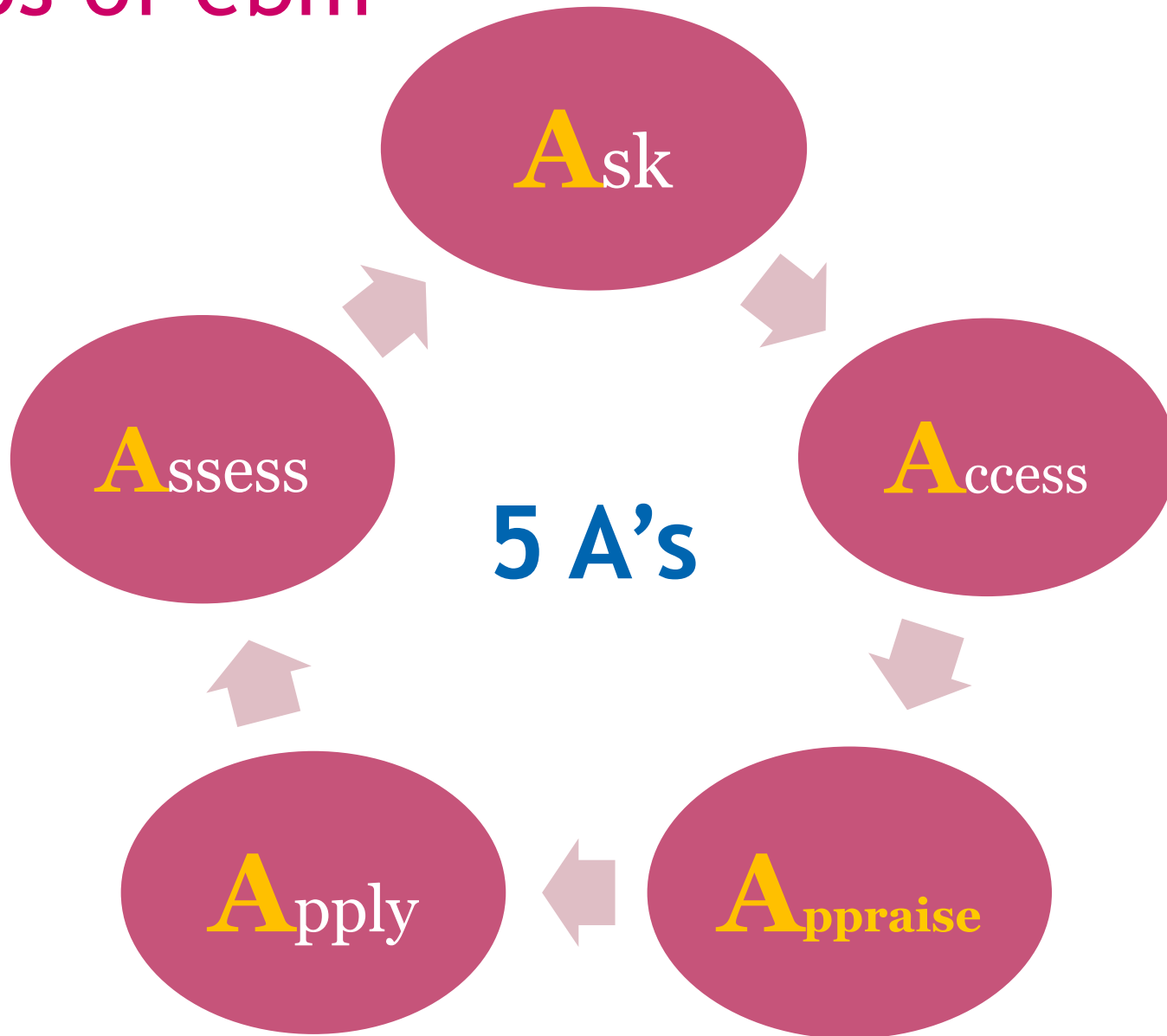


# 5 Steps of EBM: 5 As

- *Asking*
- *Accessing*
- *Appraising*
- *Applying*
- *Assessing*



# Steps of ebm



Now That I Know What I Am  
Supposed to Do, How Do I  
Actually Do It?

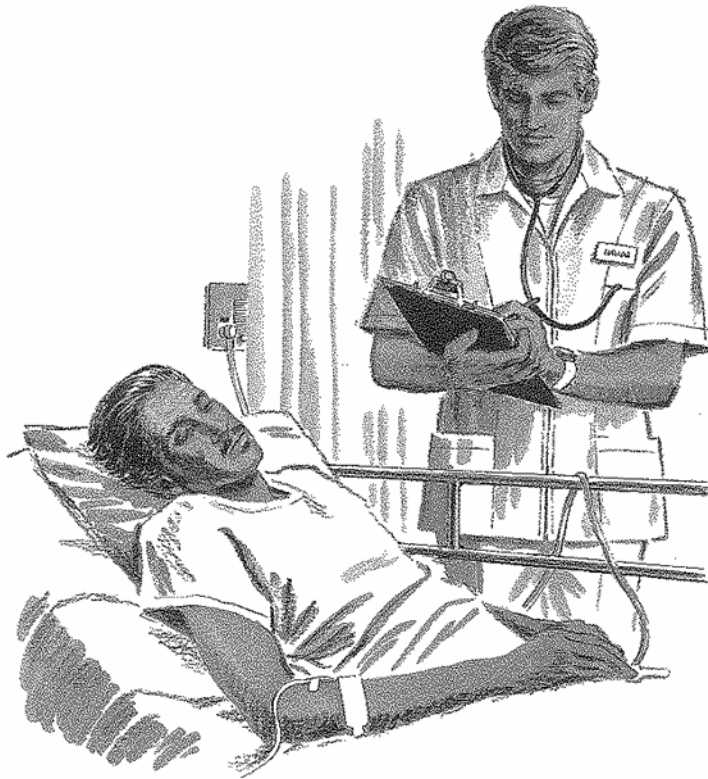


# 5 Steps of EBM: 5 As

- *Asking*



# Background and Foreground Questions





# Clinical Scenario

Mrs. Met'eba is an educated patient who presents with a complaint of fatigue and loss of interest in her usual activities. She denies any suicidal ideation, and has a normal history and physical examination. After diagnosing her with *minor depression*, you are preparing to write a prescription for a *serotonin specific reuptake inhibitor (SSRI)*. She asks, what about *St. John's Wort*?

You wonder: “Is St. John's Wort a reasonable choice for this patient?”



Blossom of  
St. John's  
Wort  
(*Hypericum  
perforatum*)



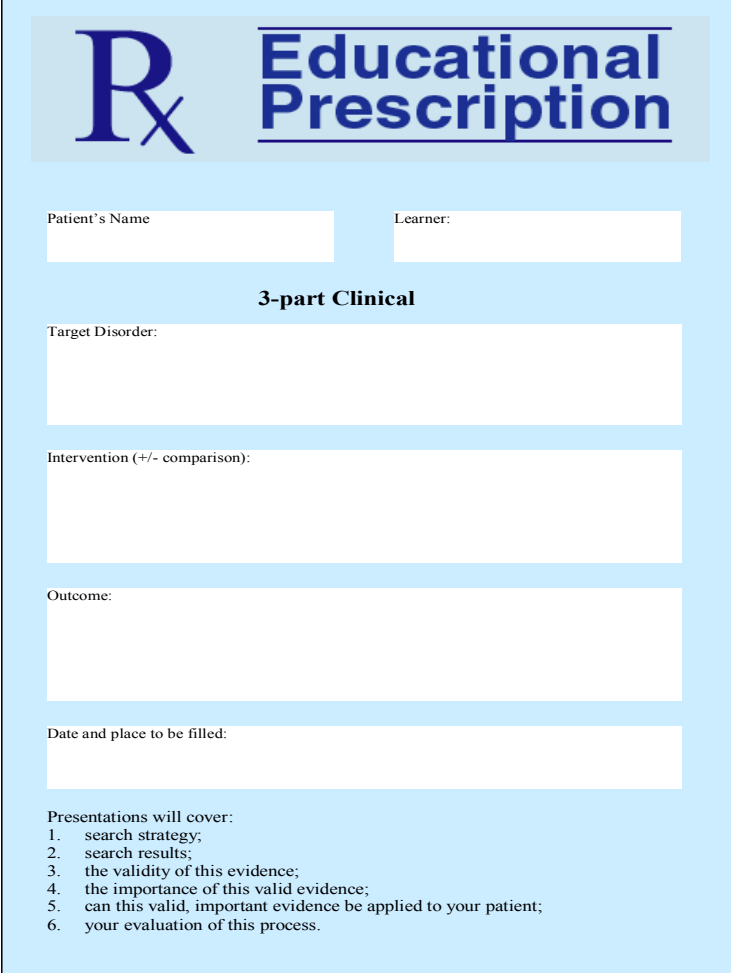
# Clinical Scenario

- **P**atient/**p**roblem      Adults with minor depression
- **I**ntervention      St. John's Wort
- **C**omparisoninterventi  
on      SSRI
- **O**utcome(s)      **Relief of symptoms**

**“In adults with minor depression, is St. John's Wort or an SSRI more effective at relieving symptoms?”**

To formulate clinical questions:

- **P**opulation
- **I**ntervention
- **C**omparison
- **O**utcome



The form is titled "Rx Educational Prescription" in a blue header. It contains several input fields: "Patient's Name" and "Learner:" at the top; "3-part Clinical" in the center; "Target Disorder:", "Intervention (+/- comparison):", and "Outcome:" in three separate boxes; and "Date and place to be filled:" at the bottom. A list of six items is provided at the very bottom, detailing what the presentations will cover.

**R<sub>x</sub> Educational Prescription**

Patient's Name  Learner:

**3-part Clinical**

Target Disorder:

Intervention (+/- comparison):

Outcome:

Date and place to be filled:

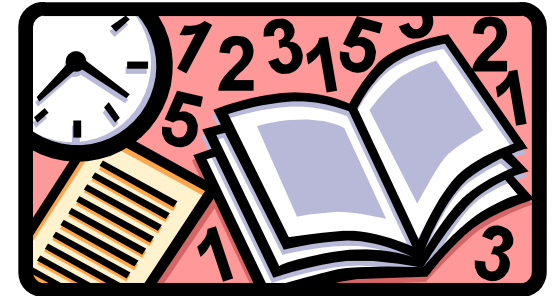
Presentations will cover:

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.

# Why Bother Formulating Qs Clearly?

To focus our scarce learning time on evidence that:

- Is directly relevant to our patient needs.
- Directly addresses our particular knowledge needs.



To suggest high yield search strategies

- PICO
- Study design

# Why Bother Formulating Qs Clearly?

To communicate clearly with colleagues when sending or receiving patients in referral

To suggest the forms that useful answers might take

To help learners understand the content of what we teach

Personal satisfaction



# 5 Steps of EBM: 5 As

- *Asking*
- *Accessing*
- *Appraising*
- *Applying*
- *Assessing*

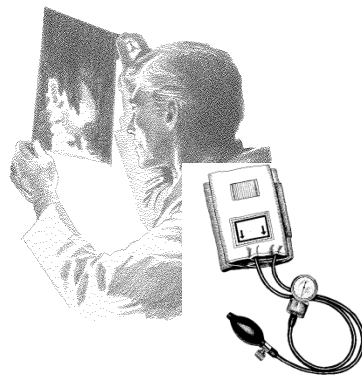


# Problems in Posing Answerable Questions

1. When we're puzzled by a patient but don't know where to start.



Therapy



Diagnosis



Prognosis

# Problems in Posing Answerable Questions

2. When we have trouble articulating the question.

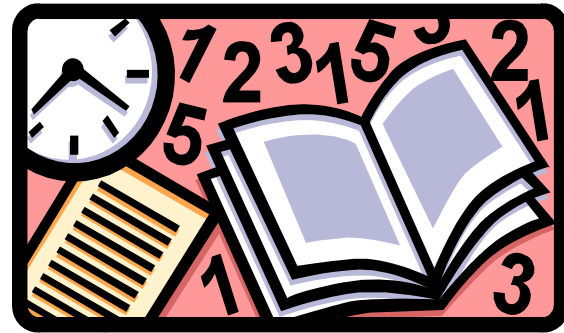
# Examples where POE does not confirm DO (surrogate) end points

Disease and intervention	<b>DOE</b>	<b>POE</b>
Ventricular arrhythmia after MI and use of lidocaine prophylaxis	Decreased risk of ventricular arrhythmia	Increase in mortality
Heart failure and use of digoxin	Increase in exercise tolerance	No effect on mortality
Blood lipid lowering and clofibrate	Lowered lipid concentration	Increased non-cardiac mortality

# Problems in Posing Answerable Questions

3. When we have more questions than time.

Prioritize Qs !



# The best evidence for different types of question

Level	Treatment	Prognosis	Diagnosis
I	<i>Systematic Review of ...</i>	<i>Systematic Review of ...</i>	<i>Systematic Review of ...</i>
II	Randomised trial	Inception Cohort	Cross sectional
III			

# Types of Studies

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Question	Best study design
Intervention	RCT
Aetiology& risk factors	RCT/ Cohort/ Case-control
Frequency & rate	Cohort / Cross-sectional
Diagnosis	Cross-sectional with random or consecutive sample
Prognosis	Cohort/ survival
Phenomena	Qualitative

---

In each case, a **systematic review** of all available studies is better than an individual study



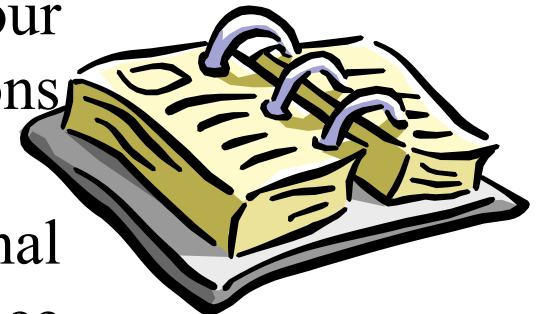
# Coping with the overload: three *possible* things you might try



A. Read an evidence-based abstraction journal  
(and cancel other journals)



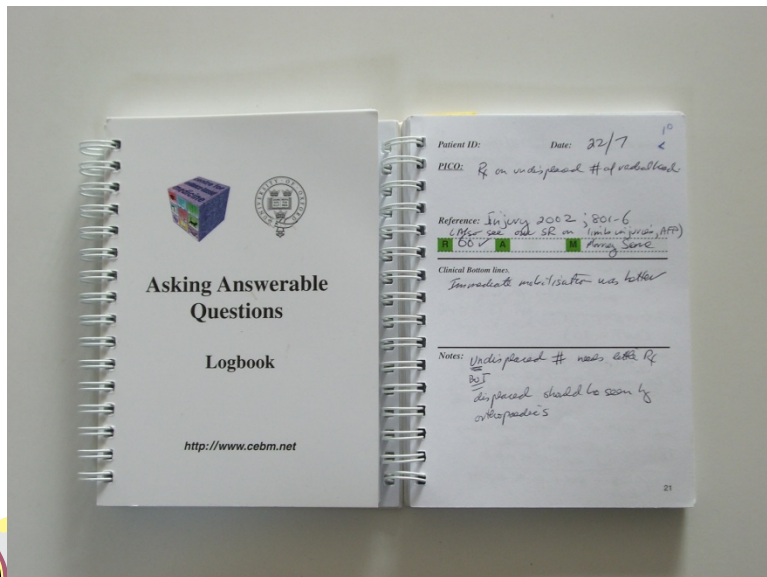
B. Keep a logbook of your  
own clinical questions



C. Run a case-discussion journal  
club with your practice

# Steps to Improve Your Ability to Ask and Answer Questions

- The educational prescription/Logbook.



**R<sub>x</sub> Educat Prescri R<sub>x</sub>**

Patient's Name: \_\_\_\_\_ Learner: \_\_\_\_\_

**3-part Clinical Questi**

Target Disorder:

Intervention (+/- comparison):

Outcome:

Date and Place to be Used:

Prescribers will cover:

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



# Steps to Improve Your Ability to Ask and Answer Questions

- Create a culture of inquiry  
*Inquire, don't advocate*



“What do you think?”

“Should I keep doing this?”

“I wonder whether there is a better way?”



# Steps to Improve Your Ability to Ask and Answer Questions

- Feel good about not knowing everything.

Only 2% of the medical literature is POEMs



# Steps to Improve Your Ability to Ask and Answer Questions

- Let someone else do the heavy lifting

Secondary literature:



the cochrane library



<http://library.ksu.edu.sa/en/>

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البوابة الإلكترونية لوزارة الصحة < التوعية الصحية



### التوعية الصحية

#### مصادر المعرفة الصحية

تُعد مصادر المعرفة الصحية بدعم القرار الطبي بالأدلة بواسطة آراء الخبراء والمختصين في الشأن الصحي عالمياً، ومن ثم تحظى هذه المصادر بثقة الأطباء لاستخدامها كمراجع في اتخاذ قرارات الرعاية الصحية الصائبة.

وإيماناً من وزارة الصحة بأهمية هذه المصادر لاكتساب المعرفة الطبية في مجال الرعاية وجودتها، فقد حرصت على تيسير الوصول إلى محتوى أهم المصادر المتخصصة في هذا الشأن، وذلك عبر الحاسب أو الجوال. ومن أهم هذه المصادر ما يلي:



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مصادر المعرفة الصحية: BMJ Learning

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الأيام العالمية <

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## البوابة الإلكترونية لوزارة الصحة المملكة العربية السعودية



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### التوعية الصحية

#### محتوى المعرفة الصحية من (BMJ)

**(ما عليك إلا أن تمارس الطب المعزّز بالبراهين، وتعمل على تحسين نتائج الرعاية الصحية)**

شركة **BMJ** هي شركة تحظى بموثوقية عالية، متخصصة في إنتاج المعرفة المتعلقة بالرعاية الصحية، وتتولى نشر المطبوعة الذائعة المسماة: "المجلة الطبية البريطانية" (The BMJ). فيما يلي، يمكنك استعراض الأدوات التي من شأنها أن تسهم في تلبية متطلباتك المهنية، وجميعها خدمات يقدمها ويستفيد منها الأطباء.

استكمال رحلة التطوير المهني والتعليم الطبي المستمر (CME/CPD) مع إتاحة الاطلاع على نماذج تعليمية عبر الإنترنت

عن طريق "BMJ Learning"، تقدم الشركة دورات تعليمية عبر الإنترنت للممارسين الصحيين، تتيح لك الدراسة على النحو الذي يناسبك وبيرضيك، سيكون في إمكانك الاختيار من بين 1000 دورة تعليمية، قد تكون عبارة عن ملفات صوت أو صورة أو رسوم متحركة، وتشمل طيقاً واسعاً من التخصصات الطبية والمجالات السريرية، وعلاوة على ذلك، تقيس هذه الدورات مقدار ما تحرزه من تقدّم من خلال الأسئلة التي يتعين عليك إجابتها قبل وبعد الدورة، وما إن تنجح في اجتياز الدورة، ستحصل على شهادة معتمدة تفيد بذلك، كما يمكنك - من خلال "حافظة BMJ" - تسجيل كافة الدورات التي أمكن اجتيازها، جنباً إلى جنب مع الدورات الأخرى التي تخطط لها أو تطمح فيها، بالإضافة إلى الشهادات التي حصلت عليها.

فضلاً عن ذلك، ترتبط هذه الدورات بما يُعرف بـ "BMJ Best Practice"، وهي أداة أخرى تتيحها الشركة يمكنك من تعيين المصادر

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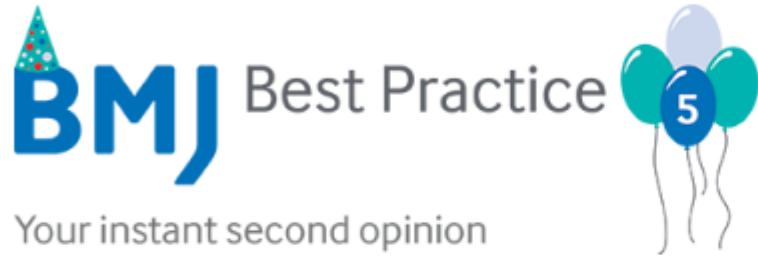
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# Hierarchy of major study designs



**Systematic review of RCTs**

**RCT**

**Interventional**

**Cohort**

**Observational**

**Case control**

**validity**





Thank You!

