

EVIDENCE BASED MEDICINE  
SERIES  
INTRODUCTION

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**EBM**

# SOURCE

- [http://www.cebm.net/critical\\_appraisal.asp](http://www.cebm.net/critical_appraisal.asp).
- EBM  
<http://www.cebm.utoronto.ca/teach/materials/caworksheets.htm>
- The foundation skills program for Egyptian Fellowship Trainees
- Executive board of the health ministers' council, 2020
- King Fahd national library cataloging-in-publication data

# INTRODUCTION

بس يجيني مرفين  
بس لك نفسي اعطيه هاد الدواء والا هاد

Traditional  
medicine

In daily practice the need for valid information about diagnosis, prevention, treatment, prognosis, and harm are growing.

- ❑ It is estimated that, on average, a clinician would need an answer for **5** questions for **every** in-patient and for **2** questions for every **3** out-patients.
- ❑ The answer for such questions must be based on **solid research evidence** rather than on **opinion, speculations**, or even **past "undocumented and untested" experiences**.  
تقصين →

□ The commonest **questions that arise** are:

- ❖ What is the best diagnostic modality to ask for ?
- ❖ What is the best treatment should I prescribe ?
- ❖ Given the large number of NSAIDs in the market, which is best for relieving arthritis or back pain ?
- ❖ With the appearance of the exercise ECHO technique, should a cardiologist shift from doing exercise ECG to exercise ECHO for diagnosing significant coronary heart disease ?

- In reality the answers to these questions, for the same patient, usually differ from one clinician to another even in the same institution as clinicians are used to base their decisions on subjective rather than objective standards.

## The Traditional Method of Medical Practice

1. Knowledge

2. Reading

3. Experience

4. Experts and  
peers opinions

# WHAT IS THE BASIS OF YOUR MEDICAL PRACTICE?

*(Check all that apply)*

A. <sup>التدريب</sup> Training, clinical experience and consultation with other professionals  
الحبرة السريرية      الاستشارة

B. <sup>ادلة مقنعة</sup> Convincing evidence (<sup>غير تجريبية</sup> non-experimental) from <sup>مقالات</sup> articles, case reports, product literature, etc.  
مستورات ← المنتجات

C. Preferences of the patient

D. <sup>البحث النشط عن التجارب العشوائية</sup> Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis Reports  
تقارير التحليل التجميعي      امراضات منهجية

# WHAT IS THE BASIS OF YOUR MEDICAL PRACTICE?

**EXCELLENT!**



A. Training, clinical experience and consultation with other professionals



B. Convincing evidence (non-experimental) from articles, case reports, product literature, etc.



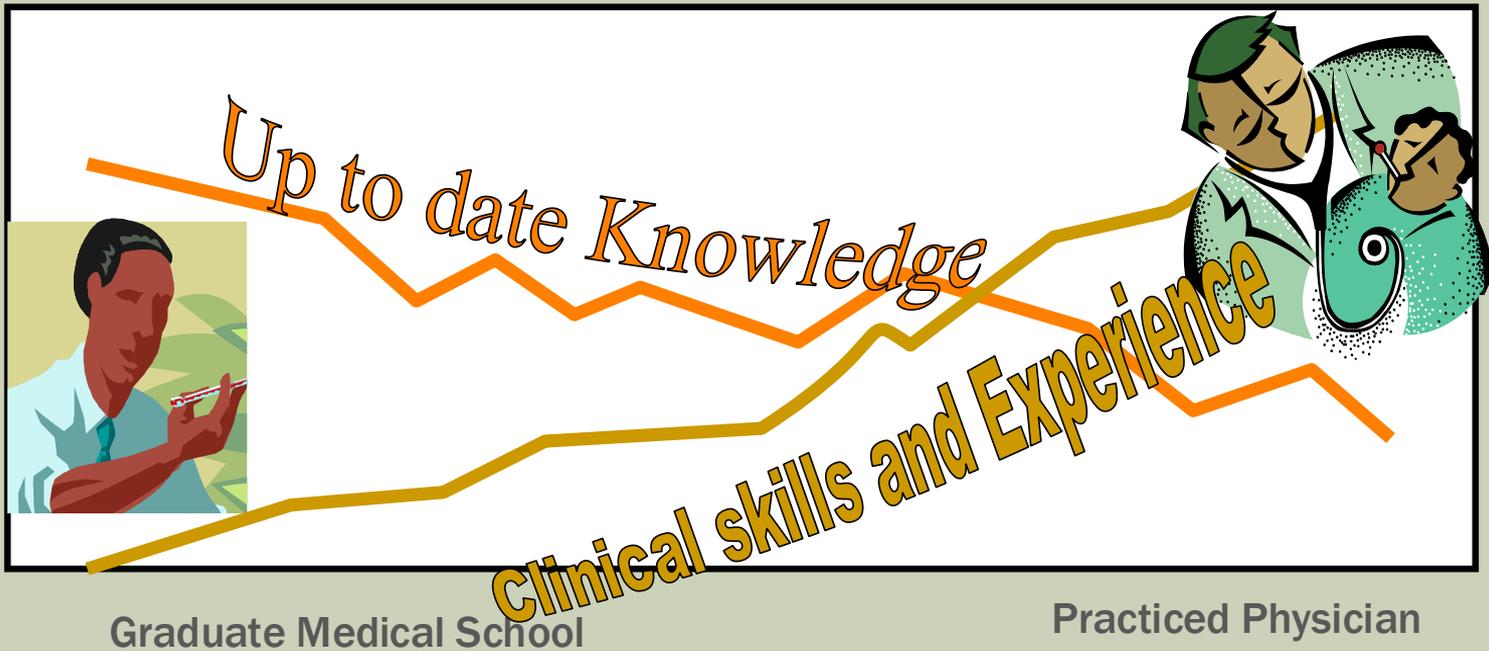
C. Preferences of the patient



D. Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis Reports

*not up to date*

BUT... Past knowledge and practice might be outdated or inadequate



# WHAT IS THE BASIS OF YOUR MEDICAL PRACTICE?

**FANTASTIC!**

- Training, clinical experience and consultation with other professionals
- Convincing evidence (non-experimental) from articles, case reports, product literature, etc.
- Preferences of the patient
- Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis reports

BUT... This evidence may be biased, outdated, incorrect, or not applicable to your patient



JOURNALS (1987 to present)



ARTICLES



ADVERTISEMENTS

# WHAT IS THE BASIS OF YOUR MEDICAL PRACTICE?

WONDERFUL!

- A. Training, clinical experience and consultation with other professionals
- B. Convincing evidence (non-experimental) from articles, case reports, product literature, etc.
- C. Preferences of the patient
- D. Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis reports

**{** Mutual Respect +  
Shared Goals =  
Better Cooperation and  
Compliance

The patient should be involved in  
all important decisions  
But this is NOT always an easy task!



And conflicts WILL occur!

No salt?  
Lose weight?  
Forget it!  
Just give me a pill!

*I WON'T take that medicine...  
The side effects are  
INTOLERABLE!*

But doctor, I DO want  
to have children!



And conflicts WILL occur!

No salt?  
Lose weight?  
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*I WON'T take that medicine...  
The side effects are  
INTOLERABLE!*

But doctor, I DO want  
to have children!



Education about current alternatives and risks is often  
needed... *for both the Patient and the Doctor!*

Wow...  
I never knew that high  
blood pressure could be  
so dangerous at my age!

Yes, I'd like to try that  
new medication!

I'll discuss those risks  
with my husband.



**Education about current alternatives and risks is often  
needed... *for both the Patient and the Doctor!***

# WHAT IS THE BASIS OF YOUR MEDICAL PRACTICE?

WOW!!! SUPERB!!!

A. Training, clinical experience and consultation with other professionals

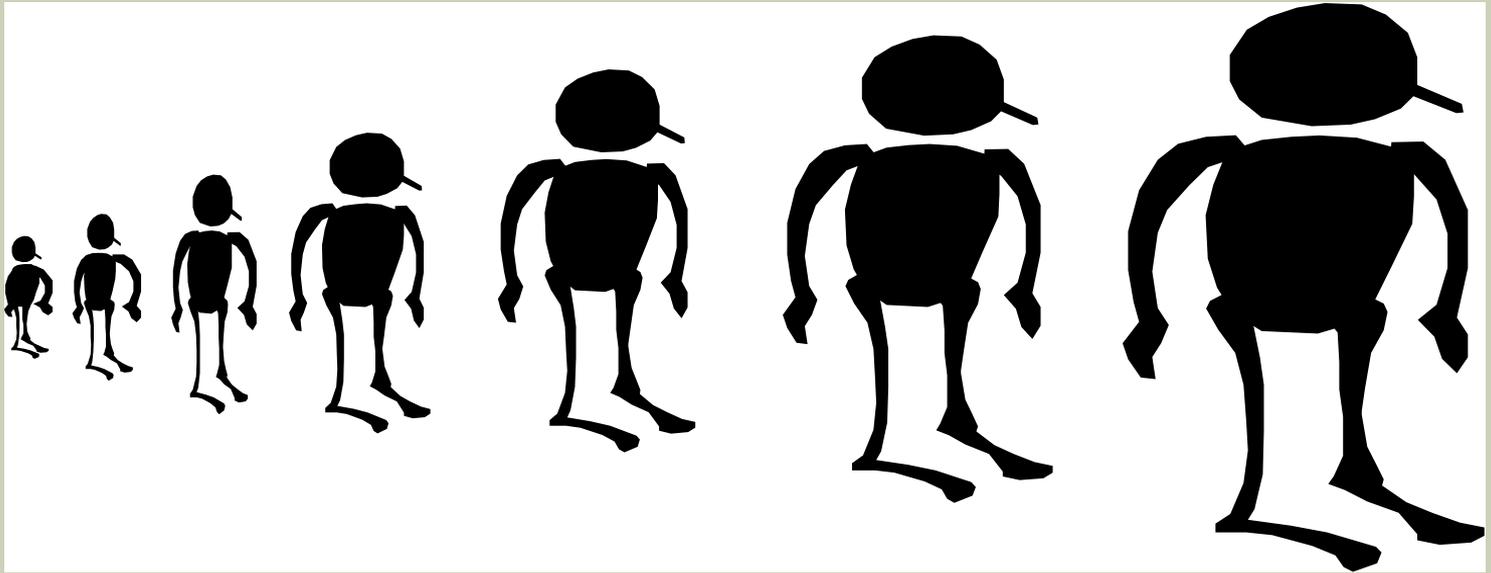
B. Convincing evidence (non-experimental) from articles, case reports, product literature, etc.

C. Preferences of the patient

D. Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis reports

But... A practice based exclusively on science and math is effective only if your patients are robots!

الحاجة الى تعالج في امريكا مش بشر تصالح عننا  
مكتة عنناهم اجهزه ادوية مش موجودة عننا



**Don't forget to allow for individual human differences and personal preferences!**

# WHAT IS THE BASIS OF YOUR MEDICAL PRACTICE?

EBM

If you checked all 4 items...



A. Training, clinical experience and consultation with other professionals



B. Convincing evidence (non-experimental) from articles, case reports, product literature, etc.



C. Preferences of the patient



D. Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis reports

# You are practicing EVIDENCE BASED MEDICINE!

## CONGRATULATIONS!



A. Training, clinical experience and consultation with other professionals



B. Convincing evidence (non-experimental) from articles, case reports, product literature, etc.



C. Preferences of the patient



D. Active search of Randomized Controlled Trials, Systematic Reviews, Meta-Analysis reports

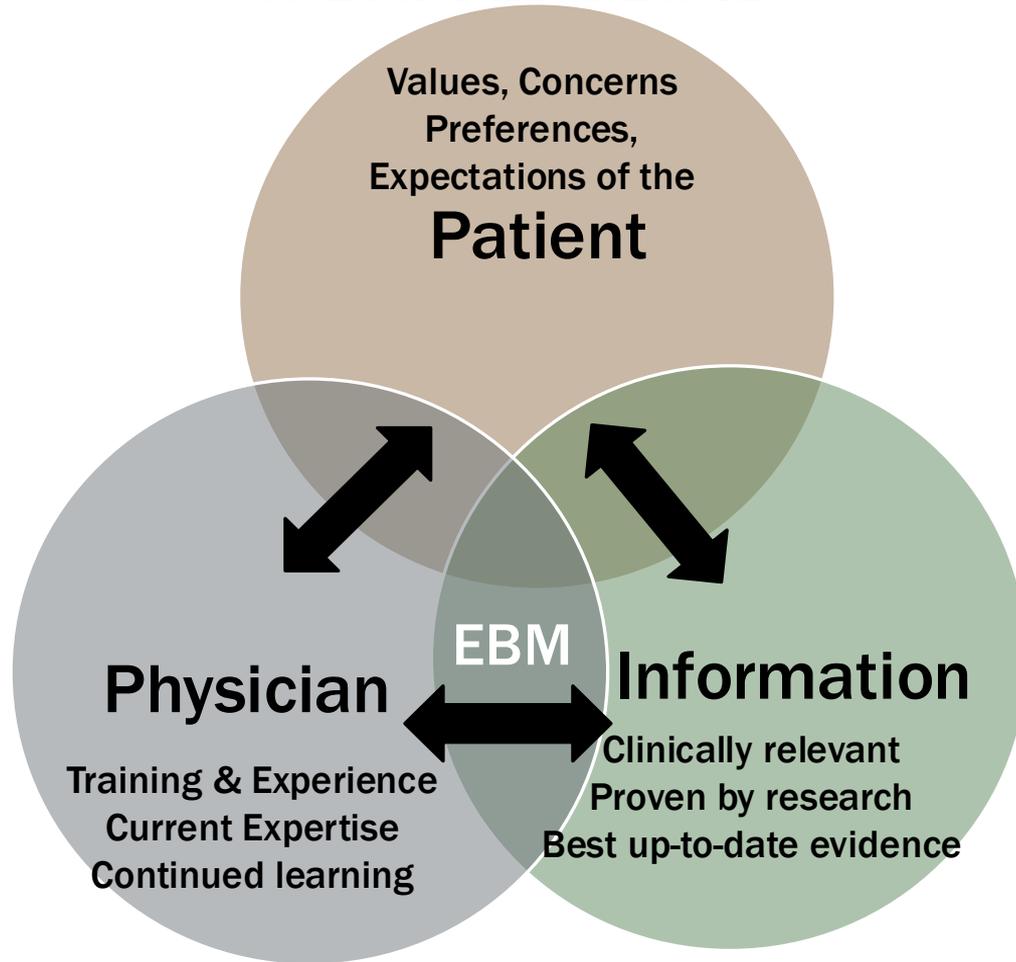
EBM: integration between

- 1- Best evidence
- 2- Patient preference
- 3- clinical experience

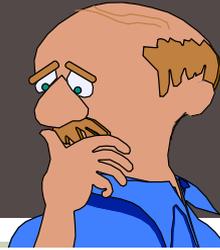
} integration between  
Patient, information, physician



# THE ADDED DETAILS



# Steps of EBM?



6 As

3 AS  
2 AP  
1 Ac

#

1. **A**ssess Patient
2. **A**sk clinical question
3. **A**cquire the evidence
4. **A**<sup>*Evaluation / Assess*</sup>ppraise the evidence
5. **A**pply the best evidence
6. **A**ssess your performance

# TYPES OF CLINICAL QUESTIONS

## 1. Background questions

*Basic information*

- Two Components
- 1. A question root *How, who:?*  
with a verb
- 2. Condition.

## 2. Foreground questions

*advanced information*

- Four Components
- PICO

# BACKGROUND AND FOREGROUND QUESTIONS (ALL PART OF EBM)

## FOREGROUND QUESTIONS

NEW POSSIBILITIES  
INDEFINITE ANSWERS

“Where do we want to go,  
and how else might  
we get there?”

“Where are we now?  
And which way are we headed?”

**BASIC & CONCRETE  
BACKGROUND QUESTIONS**



# 1.BACKGROUND QUESTIONS:

## Example :

***“what is acute appendicitis?”***

1. A question root with a verb e.g. what is...?
2. Some aspect of the disorder itself (e.g. appendicitis)

## Another example:

<sup>Q. root</sup>What <sup>verb</sup>causes pneumonia? How do we tap  
ascites? Basic

## 2. FOREGROUND QUESTIONS:

Asking for specific knowledge about how to diagnose a case. Other specific questions might address a specific treatment option for a disease. Prognosis of a condition or harm related to certain exposure .

### Example :

If abdominal ultrasound could be of help in establishing the diagnosis ?

**PICO**

نادية، 67 عاماً، تعاني من فشل قلبي احتقاني بسبب عدة نوبات قلبية. تم حجزها مرتين خلال 6 أشهر لتفاقم حالتها. تتناول الأدوية بانتظام (الانابريل، أسبرين، وسيمفاستاتين). تفكر بإضافة ديجوكسين، لكنك لست متأكدًا من فعاليته في تقليل إعادة الإدخال للمستشفى

## EXAMPLE

- Nadia is 67 years old and has a history of congestive heart failure brought on by several myocardial infarctions. She has been hospitalized twice within the last 6 months for worsening of heart failure. Now she remains in normal sinus rhythm. She is extremely diligent about taking her medications (enalapril, aspirin and simvastatin) and wants desperately to stay out of the hospital. You think she should also be taking digoxin but you are not certain if this will help in keeping her out of the hospital. You decide to research this question before her next visit.

# 1.BACKGROUND QUESTIONS



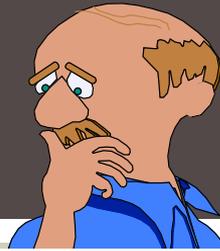
- 1. What can cause congestive heart failure?
- 2. How does myocardial infarction cause congestive heart failure?
- 3. How do you treat congestive heart failure?
- These questions ask for general knowledge about the disorder and specify the two components (question root with a verb and condition). Therefore, they are well-built background questions.

## 2. FOREGROUND QUESTIONS:

> 50 y

- In elderly patients with congestive heart failure, is digoxin plus standards of care, effective in reducing the need for re-hospitalization?
- This question asks for specific knowledge about managing the patient presented in the scenario  
Therefore, it is a foreground question **(PICO)**

# Steps of EBM?



6 As

1. *A*ssess Patient
2. **A**sk clinical question
3. *A*cquire the evidence
4. *A*ppraise the evidence
5. *A*pply the best evidence
6. *A*ssess your performance

# Steps of EBM? Asking clinical question?

6 As

PICO

Patient

Intervention

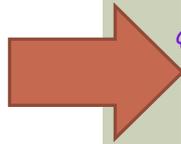
Comparison

Outcomes

# PICO

P

PATIENT



② Population

① “Patient” refers to the person presenting with the problem, or more simply, to the problem itself. Both concepts are important in searching.

I

INTER-  
VENTION

C

COMPARISON

O

OUTCOME

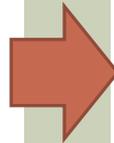
# PICO

P

PATIENT

I

INTER-  
VENTION



“**Intervention**” refers to the action taken in response to the problem. This is often a drug or surgical procedure, but it can take many forms”

C

COMPARISON

O

OUTCOME

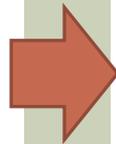
# PICO

P

PATIENT

I

INTER-  
VENTION



“**Intervention**” refers to the action taken in response to the problem. This is often a drug or surgical procedure, but it can take many forms”

C

COMPARISON

O

OUTCOME

# PICO

P

PATIENT

I

INTER-  
VENTION

C

COMPARISON  
*↳ may or may not present*



“**Comparison**” refers to the benchmark against which the intervention is measured. Often it refers to **another treatment, no treatment, or a placebo.**

O

OUTCOME

# PICO

P

PATIENT

I

INTER-  
VENTION

C

COMPARISON

O

OUTCOME

ممكن تتغير لـ F

Exposure not intervention → outcome (negative)  
keratogenicity  
harmful effect

← زي مثالك سوزات سلايد 41

“**Outcome**” refers to the anticipated result of the intervention.

Healing , recovery , improvement , control (+)

# EXAMPLE

Is there any evidence to support laser treatment as an effective therapy for lymphedema?

# USING THE PICO MODEL

- P** → Lymphedema
- I** → Laser treatment
- C** → None specified
- O** → Reduction of symptoms, healing

# CONSTRUCT AN ANSWERABLE QUESTION

Hassan, a 56 year old man, comes in for repeat prescription for his chronic **hypertension**.

- He is on **Atenolol** 50 mg per day.
- His wife, who is diabetic for the last 3 years, was started on **Capoten** tablets last month because she developed high blood pressure.

*Hassan asked you: can he be shifted to Capoten too?*

# CONSTRUCT AN ANSWERABLE QUESTION

➤ In <sup>age</sup> elderly hypertensive <sup>female / male ↗ ↘ #</sup> males **(P)**,  
<sub>chronic</sub>  
would Capoten **(I)** compared to  
Atenelol **(C)** result in better blood  
pressure control **(O)**?

# ETIOLOGY AND RISK QUESTIONS

## WHAT CAUSES A DISEASE OR HEALTH CONDITION?

- Questions deal with harmful outcomes of an activity or exposure (public health issues)
- Develop a clinical question for the case:  
Susan is a smoker and just found out that she is 3 months pregnant. She quit smoking immediately. But she is worried if her developing baby was harmed and if the baby is at risk for having developmental problems. She is asking you if smoking during the first trimester can harm her baby?

# ETIOLOGY OR RISK QUESTIONS

- P-babies of mothers who smoke

E \*smoking in first trimester

C-nothing

E ↷ *negative outcome*

O-increase risk of developmental problems

- Question: Are babies of mothers who smoke during their first trimester at an increased risk of developmental disabilities?

# Steps of EBM?



6 As

1. **A**ssess Patient
2. **A**sk clinical question
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6. **A**ssess your performance

# EBM RESOURCES

When encountered with a foreground clinical question, which needs to be answered, one may find the answer by:

- 1- searching pre appraised Evidence Based Medicine resources (e.g. The Cochrane Library) → لو لعتبت الدليل  
فيما سن جعل  
Step 4 (Appraise)
- 2- Searching traditional (non-appraised) resources (e.g. Medline) and then appraising the search results. ↪ google
- 3- Questions that do not have an answer in either might be good points for primary research

# Accessing the Cochrane Library

**Via the Cochrane Collaboration,**

**web site: <http://www.Cochrane.org>**

**Via the Cochrane Library web site:**

**<http://www.thecochranelibrary.com>**

**THANKS**