INTRODUCTION
TO RESEARCH AND EBM

THIRD EDITION

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✶ Research and EBM

- Research is a methodical examination that uses organized techniques to resolve questions or decode dilemmas.

- The conclusions resulting from this focused chain of examination provide a base upon which to build a practice of care that is centered on tested solutions.

- "Research, as a scientific process, with its inherent ability to explain and predict, enhances a practice discipline's ability to anticipate and guide interactions "(Omery and Williams, 1999).

- This anticipation and guidance are related to a discipline's ability to incorporate into practice the sound evidence derived from valid research endeavors.

- Although EBP goes beyond research results, the foundation for the practice is the grounded knowledge that comes from the research process. This underpinning allows for the safe and effective provision of quality health care.

- "The gap between the publishing of research evidence and its translation into practice to improve patient care is a cause for concern in healthcare organizations and federal agencies" (Melnyk and Fineout-Overholt, 2005).

- Moving the use of researched evidence into the actual patient care setting requires that Healthcare providers become increasingly familiar and comfortable with the process of critiquing and applying the evidence to the practice arena.

✶ Research: a way to gather evidence for your practice

- Evidence-based practice (EBP) is the delivery of services based upon research evidence about their effectiveness; the service provider's clinical judgement as to the suitability and appropriateness of the service for a client; and the client's own preference as to the acceptance of the service. EBP is fast becoming a service delivery norm among many professions.

- EBP has become an important part of many other professions such as nursing, allied health services, mental health, community health, social work, psychology and teaching.

- The concept of EBP encourages professionals and other decision-makers to use evidence regarding the effectiveness of an intervention in conjunction with the characteristics and circumstance of a client and their own professional judgement to determine the appropriateness of an intervention when providing a service to a client.

- Research is one of the ways of collecting accurate, sound and reliable information about the effectiveness of your interventions, thereby providing you with evidence of its effectiveness.

- As service providers and professionals, we use techniques and procedures developed by research methodologists to consolidate, improve, develop, refine and advance clinical aspects of our practice to serve our patients better.

✶ What is Evidence-based medicine:

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

- '**EBM** is the use of mathematical estimates of the risk of benefit and harm, derived from high-quality research on population samples, to inform clinical decision-making in the diagnosis, investigation or management of individual patients.'

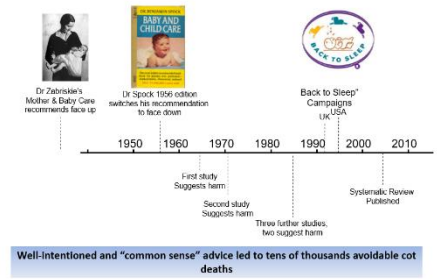
- If you follow an EBM approach to clinical decision-making, therefore, all sorts of issues relating to your patients will prompt you to ask questions about scientific evidence, seek answers to those questions in a systematic way and alter your practice accordingly.

⮝ Ex:

1- sudden infant death syndrome (cot death)

2- Thalidomide:

I. it was developed in the 1950s in Germany
II. it was known as a drug to aid sleep and was also known for its effectiveness for woman in their early morning sickness a
III. 1961 became apparent that it cause serios abnormalities in the developing fetus
IV. led to the death of approximately 2,000 children and serious birth defects in more than 10,000 children, about 5,000 of them in West Germany



What can prevent common cold?

- Vitamin C
- Vitamin D
- Garlic
- Echinacea
- Nasal steroids
- Antihistamines
- Oral antihistamine / decongestant / analgesic combinations
- Nasal decongestants used alone
- Antibiotics
- Honey
- Non steroidal anti-inflammatory drugs (NSAIDs)
- Vaccines (to prevent colds)
- Steam inhalation
- Paracetamol

Cochrane Database of Systematic Reviews
Vitamin C for preventing and treating the common cold
Cochrane Systematic Review - Intervention | Version published: 31 January 2013 see what's new

Cochrane Database of Systematic Reviews
Echinacea for preventing and treating the common cold
Cochrane Systematic Review - Intervention | Version published: 20 February 2014 see what's new

Cochrane Database of Systematic Reviews
Oral antihistamine-decongestant-analgesic combinations for the common cold
Cochrane Systematic Review - Intervention | Version published: 15 February 2012 see what's new

Cochrane Database of Systematic Reviews
Antihistamines for the common cold
Cochrane Systematic Review - Intervention | Version published: 29 November 2015

Cochrane Database of Systematic Reviews
Honey for acute cough in children
Cochrane Systematic Review - Intervention | Version published: 10 April 2018 see what's new

Vitamin D supplementation to prevent acute respiratory tract infections
BMJ 2017

✶ How to read a paper?

1. A bout a patient's **symptoms**.
2. A bout the **prognosis** of an illness.
3. A bout **therapies.**
4. A bout **cost-effectiveness**.
5. About **patients' preferences**.

⅄ The essential steps in the emerging science of EBM:

1. To formulate the problem (convert our information needs into answerable questions).

لصياغة المشكلة (تحويل احتياجاتنا من المعلومات إلى أسئلة يمكن الإجابة عليها).

2. To track down, with maximum efficiency, the best evidence with which to answer these questions – which may come from the clinical examination, the diagnostic laboratory, the published literature or other sources.

لتعقب ، بأقصى قدر من الكفاءة ، أفضل دليل للإجابة على هذه الأسئلة - والتي قد تأتي من الفحص السريري أو المختبر التشخيصي أو الأدبيات المنشورة أو مصادر أخرى.

3. To appraise the evidence critically (weigh it up) to assess its validity (closeness to the truth) and usefulness (clinical applicability).

لتقييم الأدلة بشكل نقدي (موازنة ذلك) لتقييم صحتها (القرب من الحقيقة) وفائدتها (قابلية التطبيق السريري).

4. To implement the results of this appraisal in our clinical practice.

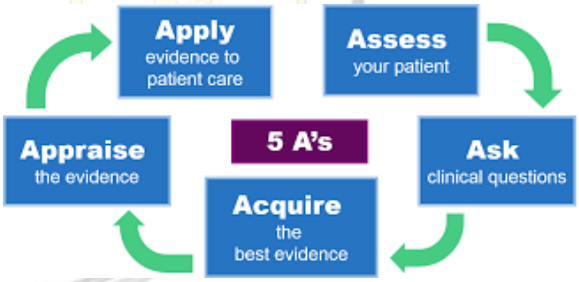
لتنفيذ نتائج هذا التقييم في ممارستنا السريرية.

5. To evaluate our performance.

لتقييم أدائنا.

✶ Steps of practicing EBM 5A's

1. assess a clinical problem
2. Ask a relevant, focused question
3. Acquire the necessary resources to answer the question
4. Appraise the evidence obtained
5. Apply to patient care



✶ Does 'EBM' simply mean reading papers in medical journals?

- EBM is much more than just reading papers.

هي أكثر بكثير من مجرد قراءة أوراق.

- EBM requires you not only to read papers, but also to read the right papers at the right time, and then to alter your behaviour (and, what is often more difficult, influence the behavior of other people) in the light of what you have found.

-لا تتطلب منك EBM قراءة الأوراق فحسب ، بل تتطلب أيضًا قراءة الأوراق الصحيحة في الوقت المناسب ، ثم تغيير سلوكك (والأكثر صعوبة في كثير من الأحيان ، التأثير على سلوك الآخرين) في ضوء ما تفعله وجدت.

✶ Why do people sometimes groan when you mention EBM?

لماذا يتأوه الناس أحيانًا عند ذكرEBM ؟

- No health-related action should ever be taken by a doctor, a nurse, a purchaser of health services, or a policymaker, unless and until the results of several large and expensive research trials have appeared in print and approved by a committee of experts'.

لا ينبغي أبدًا اتخاذ أي إجراء متعلق بالصحة من قبل طبيب أو ممرضة أو مشتر للخدمات الصحية أو صانع سياسات ، ما لم تظهر نتائج العديد من التجارب البحثية الكبيرة والمكلفة في شكل مطبوع وتمت الموافقة عليها من قبل لجنة من الخبراء. .

- It is not so much about what you have read in the past, but about how you go about identifying and meeting your ongoing learning needs and applying your knowledge appropriately and consistently in new clinical situations.

لا يتعلق الأمر كثيرًا بما قرأته في الماضي ، بل يتعلق بكيفية تحديد وتلبية احتياجات التعلم المستمر الخاصة بك وتطبيق معرفتك بشكل مناسب ومتسق في المواقف السريرية الجديدة.

- Doctors (from the old school style) never admitting ignorance and may find it hard to accept that a major element of scientific uncertainty exists in practically every clinical encounter.

الأطباء (من المدرسة القديمة) لا يعترفون أبدًا بالجهل وقد يجدون صعوبة في قبول وجود عنصر رئيسي من عدم اليقين العلمي في كل لقاء سريري عمليًا.

- The fact that none of us – not even the cleverest or most experienced can answer all the questions that arise in the average clinical encounter.

حقيقة أنه لا أحد منا - ولا حتى الأذكى أو الأكثر خبرة يمكنه الإجابة على جميع الأسئلة التي تنشأ في المواجهة السريرية المتوسطة.

- The 'expert' is more fallible than he/she was traditionally cracked up to be.

"الخبير" أكثر عرضة للخطأ مما كان عليه أن يكون.

- An evidence-based approach to ward rounds may turn the traditional medical hierarchy on its head when the staff nurse or junior doctor produces new evidence that challenges what the consultant taught everyone last week.

قد يقلب النهج القائم على الأدلة في جولات الجناح التسلسل الهرمي الطبي التقليدي رأساً على عقب عندما تقدم ممرضة الطاقم أو الطبيب المبتدئ أدلة جديدة تتحدى ما علمه الاستشاري للجميع الأسبوع الماضي.

✶ Before you start: formulate the problem:

- The parts of a good clinical question:

1. Define precisely whom the question is about (i.e. ask 'How would I describe a group of patients similar to this one?').

حدد بدقة من يدور السؤال (أي اسأل "كيف يمكنني وصف مجموعة من المرضى تشبه هذا؟").

2. Define which maneuver you are considering in this patient or population (e.g. a drug treatment), and, if necessary, a comparison maneuver (e.g. placebo or current standard therapy).

حدد المناورة التي تفكر فيها في هذا المريض أو المجموعة السكانية (مثل العلاج من تعاطي المخدرات) ، وإذا لزم الأمر ، مناورة مقارنة (مثل العلاج الوهمي أو العلاج القياسي الحالي).

3. Define the desired (or undesired) outcome (e.g. reduced mortality, better quality of life, (QoL) overall cost savings to the health service and so on).

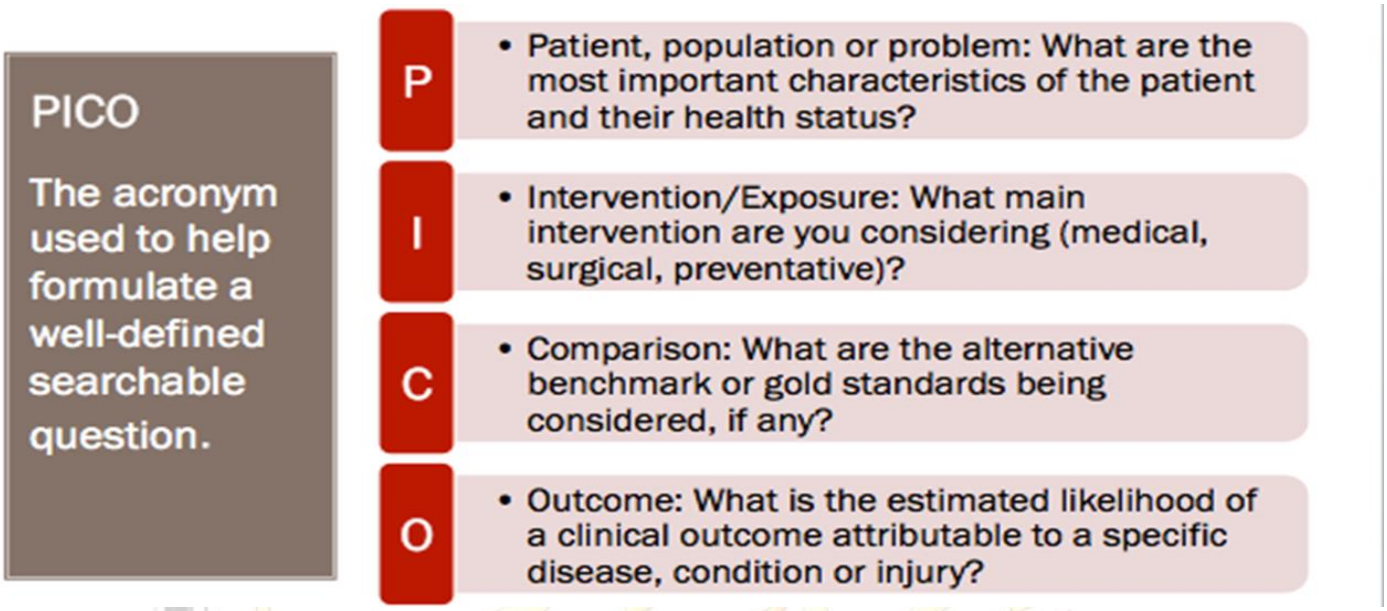
حدد النتيجة المرغوبة (أو غير المرغوب فيها)) على سبيل المثال ، انخفاض معدل الوفيات ، وتحسين نوعية الحياة ، وتوفير التكلفة الإجمالية للخدمة الصحية (QoL) وما إلى ذلك.(

✶ Formulating the Clinical Question – "PICO"

- The "PICO" format is used to construct the clinical question specifically.

يتم استخدام شكل "PICO" لبناء السؤال السريري على وجه التحديد.

- Using PICO format helps you find a needle in a haystack of research information.
- The PICO process (or framework) is a mnemonic used in evidence-based practice (and specifically Evidence Based Medicine) to frame and answer a clinical or health care related question.
- The PICO framework is also used to develop literature search strategies, for instance in systematic reviews.



➢ Ex:

1. George wants to discuss the possibility of a vasectomy. He says he has heard something about vasectomy causing an increase in testicular cancer later in life. You know that the risk of this is low but want to give him a more precise answer.

1. **Population**: Adult males.
2. **Intervention:** Vasectomy.
3. **Comparison:** None.
4. **Outcomes**: Testicular cancer.

Question: In men, does having a vasectomy increase the risk of getting testicular cancer in the future?

2. A doctor contacts the pharmacy department. She is considering whether to give her patient with chronic renal failure a regimen of acetylcysteine prior to use of contrast dye for imaging to prevent renal toxicity. She mentions that this is in addition to just adequate hydration.

1. **Population**: Patients with chronic renal failure.
2. **Intervention**: Regimen of acetylcysteine.
3. **Comparison**: Adequate hydration.
4. **Outcomes**: Renal protection.

Question: In patients with chronic renal failure requiring use of contrast for imaging, does the administration of acetylcysteine compared to just adequate hydration, produce renal protection?

3. Patients presenting to their GP with a sore throat should not automatically be prescribed antibiotics as many sore throats are non-bacterial in origin. The gold standard for diagnosing bacterial sore throat is a throat swab and culture but this is expensive and time-consuming. GPs need a quick, easy diagnostic tool (e.g. a checklist or scorecard) to help them to decide whether a sore throat is bacterial or non-bacterial in origin.

1. **Population**: Patients with sore throat.
2. **Intervention:** Checklist or scorecard.
3. **Comparison**: Throat swab (gold standard diagnostic test for sore throat).
4. **Outcomes**: Accurate diagnosis.

Question: Does a sore throat checklist or scorecard help GPs differentiate between bacterial (requiring antibiotics) and non-bacterial infection in patients presenting with a sore throat?