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EVIDENCE-BASED MEDICINE (EBM)

What is EBM?

The Evidence-Based Medicine Working Group at McMaster University, Canada defines it as "an approach to health care practice in which the clinician is aware of the evidence in support of her clinical practice, and the strength of that evidence."

BMJ editorial, 312:71-2, 1996 defines it as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients."

Why is this important?

Physicians are faced with the interpretation of diagnostic tests, the efficacy of preventive or therapeutic intervention, the harm associated with a specific drug, the course & prognosis of the disease in a particular patient and the costs of intervention (drug, test, procedure). Need to know whether advice in practice guidelines is sound and whether the conclusions from systematic reviews are valid. (Evidence-Based Medicine Working Group, McMaster U)

What does this mean, in real life?

EBM is the critical appraisal of medical literature and applying it to clinical care. It's changed the way physicians practice medicine. The old paradigm of practicing medicine relied on:

1. Clinical experience - the physician decided which tests to run, based on his clinical experience
2. Physiologic principles - knowledge of which is adequate basis to decide how to treat
3. Find information. In medical literature if you go looking for it
4. Ask a local 'expert'

New paradigm:

1. Clinical experience has limited value
2. Physiologic principles often lead to inaccurate predictions
3. Assessment of evidence found in literature requires knowledge of the rules of evidence
4. Challenge the experts and go back to the literature.

EBM principles

1. Define the problem & frame the question
 - o therapy
 - o diagnosis
 - o prognosis
 - o harm (cause)

2. Formulate or clarify the question (PICO)
 - Population (patient)
 - Intervention (sometimes referred to as Exposure (drug/procedure/diagnostic test))
 - Comparison/gold standard/reference standard
 - Outcome
3. Select the resource(s) to be searched
4. Search the literature
5. Choose the article(s)
6. Appraise the literature using guidelines of validity, results & applicability to particular patient in question.

Resources

1. JAMA Users' Guides to the Medical Literature
 - are the results valid?
 - Primary guides - was the clinical question clearly defined?
 - Secondary guides - appraisal of the results: methodology (blinding, RCTs, follow-up), reproducibility, similar results from study to study
 - what are the results?
 - will the results help in caring for my patients?
2. Cochrane Collaboration Systematic Reviews
3. ACP Journal Club
4. Evidence-Based Medicine Journal
5. Clinical Practice Guidelines
6. MEDLINE; hedges, publication types
7. [New York Academy of Medicine](#)
8. [McMaster University Health Information Research Unit \(HIRU\)](#)
9. [Oregon Health Sciences University](#)
10. [Edward G. Miner Library, University of Rochester School of Medicine and Dentistry](#)
11. Sackett, David L., et al. Clinical epidemiology: a basic science for clinical medicine. 2nd ed. Boston: Little, Brown and Co., 1991. (Closed Reserve WA 105 C641 1991)
Excellent. From the Preface: how to use research done by others to reach correct diagnosis, select management that does more good than harm, & keep up to date with advances in medicine. Includes good definitions and practical strategies to assess validity of information.
12. EBM for Medical Students from [Medscape](#). Scroll down to Journal Room. Registration required.
13. Skilled medical research librarian!

Summary

Shift from practicing medicine using information acquired **from**

- personal experience
- textbooks (out-of-date)
- experts
- cme
- pharmaceutical rep
- academic or 'throw-away' reviews
- original research

to

- use of rules of logic and science
- to appraise and apply evidence from research
- to the care of individual patients

Key EBM skills

1. Frame/formulate/focus clinical Question
2. Search the literature efficiently
3. Critically appraise and choose article(s)
4. Use - apply to clinical setting & incorporate into patient care