

Evidence-Based Medicine Information for Librarians

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According to the Centre for Evidence-Based
Medicine,

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

EBM developed in the 1970s at the Mc Master University in
Canada

by a group of clinical epidemiologists

This was followed by the establishment of the
Cochrane Collaboration

EBM is the
integration of best research evidence
with clinical expertise
and patient values

Clinical expertise derived from the
proficiency and judgment that individual
clinicians acquire through
clinical experience
and clinical practice

Why is EBM important?

- **For information needs**

Studies of information seeking habits of physicians show that when asked, physicians reported that their practice generated about two questions per 3 patients. Only 30% of their information needs were met during the patient's visit. Reasons for not using printed resources included that office textbook collections are too old, lack knowledge of appropriate resources and lack of time to find the needed information.

- When actually observed, it was found that physicians had about 5 questions for each patient 52% of these questions were answered by medical records or hospital information system while 25% could have been answered by published information resources such as textbooks or MEDLINE.
- However studies also show that when clinicians have access to information, it changes their patient care management decisions.

- There are new types of evidence being generated that have the potential to change health care. A shift from case studies to RCT's or meta analyses.
- *Randomized Controlled Trial* is a [controlled clinical trial](#) in which the study groups are created through [randomization](#)
- *Meta analysis is a systematic review or overview which uses quantitative methods to summarize the results.*

- Information on new evidence relevant to daily practice is not received by clinicians.
- Failure in obtaining the new evidence results in deterioration of knowledge and consequently clinical performance overtime.

With the proliferation of medical publications and
research

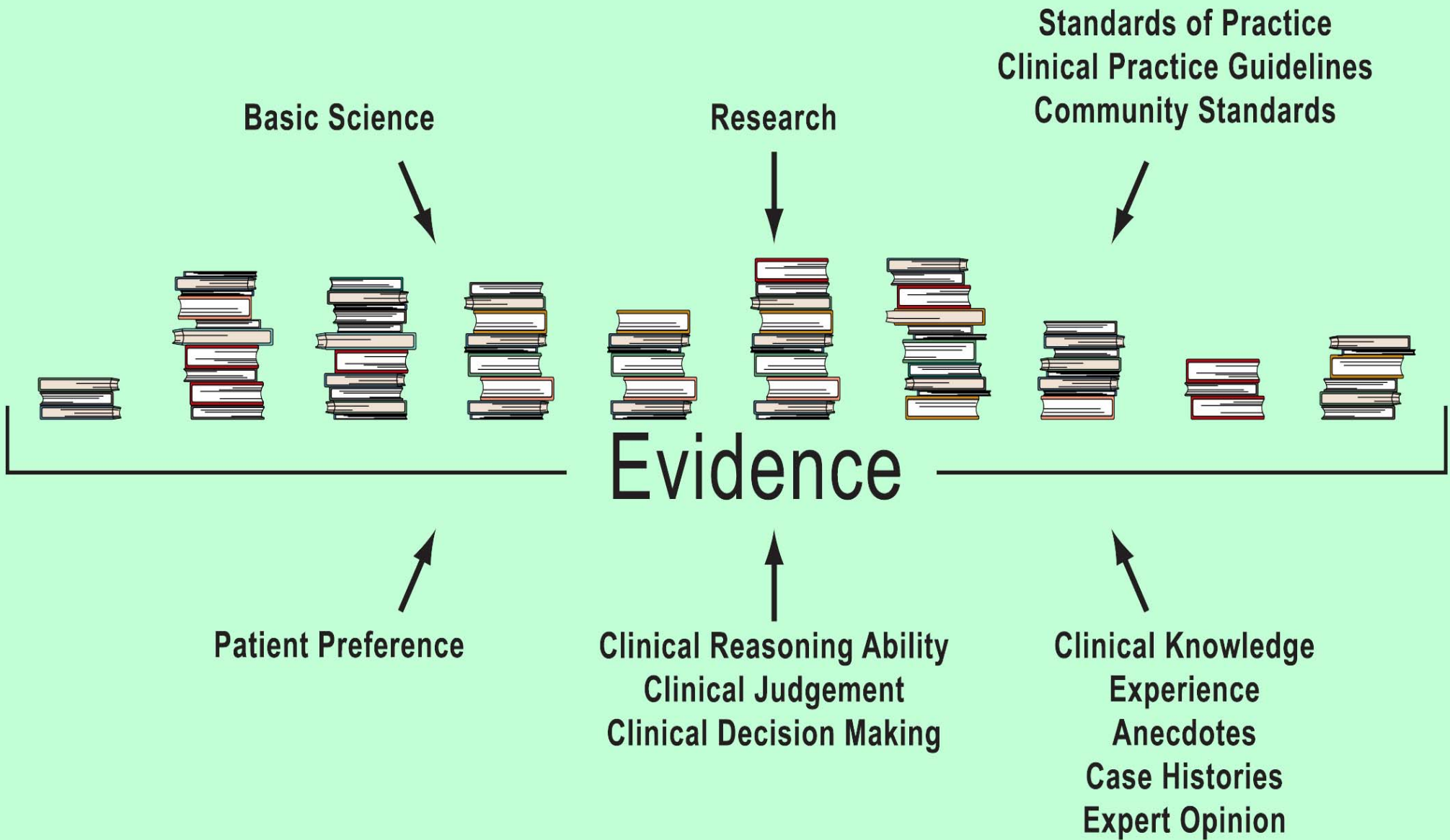
coupled with greater access to
information

and the development of ICT

EBM have caused a paradigm shift

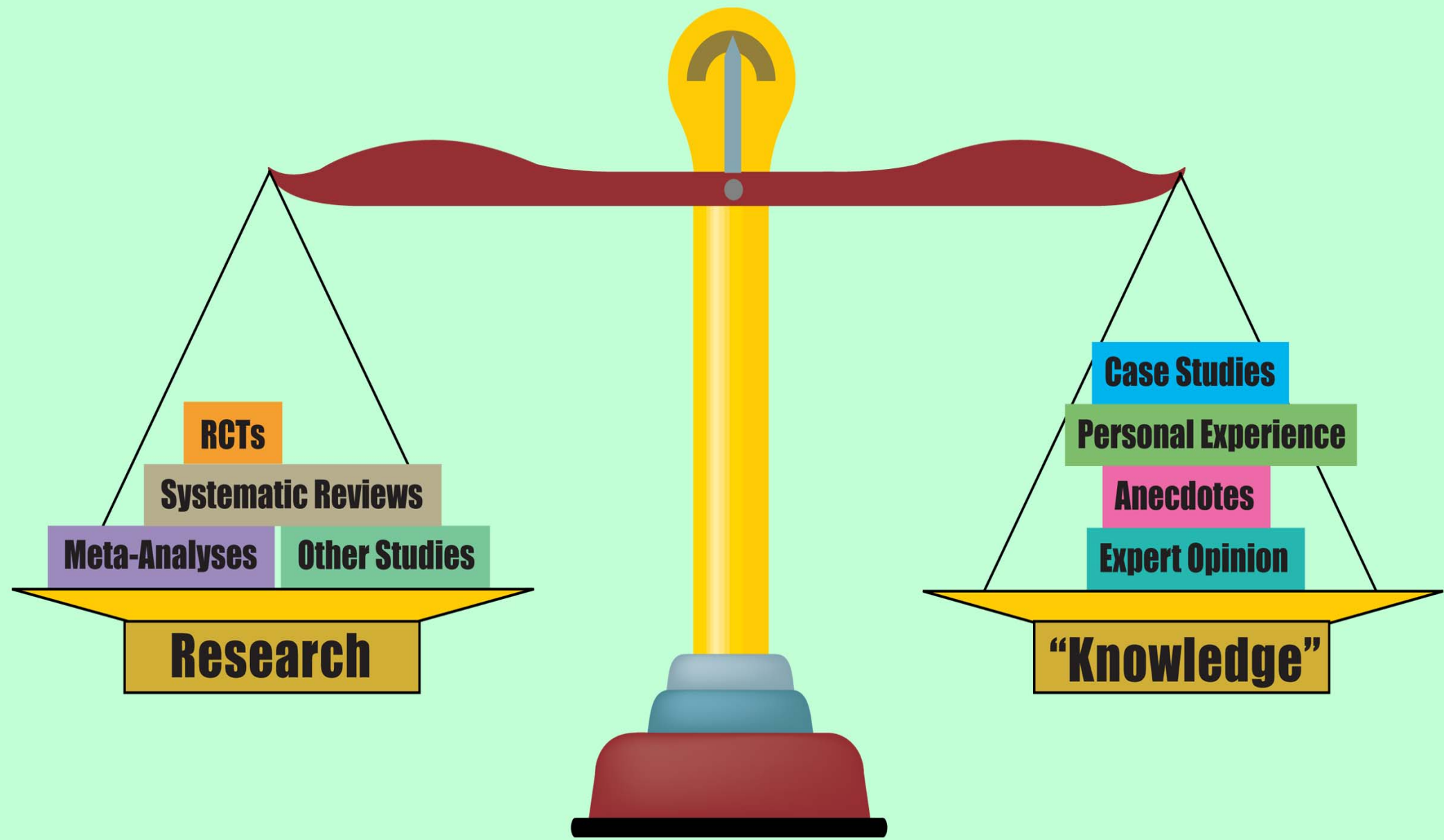
This major change in the new paradigm relates to the need to be able to understand the rules of interpreting data

and to be able to independently appraise the literature



EBM practice

- requires new information skills of the clinicians which are efficient literature searching and
- application of formal rules of evidence in evaluating the clinical literature



EBM process

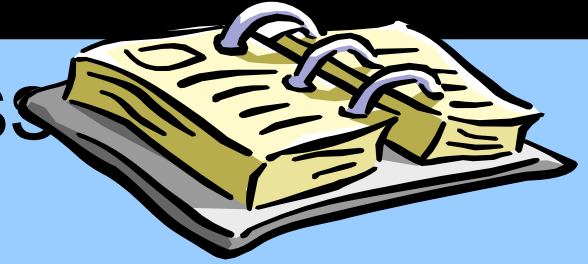
- convert the need for information into a precise, structured question**
- find the best evidence to answer the question**
- critically evaluate the evidence for its validity, impact and applicability**

Integrate the critical appraisal with clinical expertise

and with the patient's unique biology, values and circumstances

Evaluate the process and seek ways to improve the effectiveness and efficiency next time

Steps in EBM process



1. Formulate an answerable question

Turn the information requested into an answerable question using PICO

2. Track down the best evidence

Locate the information on databases such as Cochrane or from primary literature, Medline

3. Critically appraise the evidence

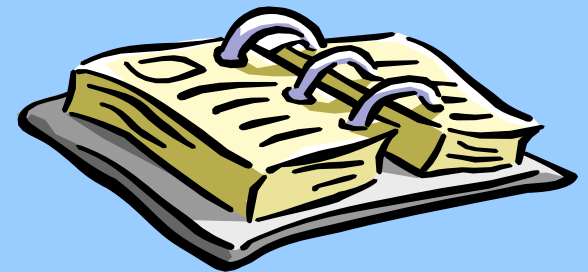
Evaluate the evidence for its validity, impact and applicability.

4. Integrate with clinical expertise and patient values

Integrate the critical appraisal with one's clinical experience and with the patient's unique biology, values and circumstances

PICO model of evidence based searching

» This method allows individual clinicians to turn the requested information into an answerable question.



P I C O

- **P**atient population
- **I**ntervention
- **C**omparison
- **O**utcome

Patient – Describe the patient as a member of a population in terms of age, sex, ethnic group. Describe the clinical problem in terms of the patient's disease or general health condition

Intervention may be any of the following:

- ❖ Clinical examination
- ❖ Prevention
- ❖ Prognosis
- ❖ Etiology
- ❖ Differential diagnosis
- ❖ Diagnosis tests



Comparison (if any)

none or placebo

placebo is a medicine or preparation which has no inherent pertinent pharmacologic activity but which is effective only by virtue of the factor of suggestion attendant upon its administration. The substance may be ingested, injected, inserted, inhaled or applied.

Also known as “sugar pill” meaning no useful medicinal content.

Outcome

For the expected outcome, ask the following questions:

- What the clinician hopes to accomplish?
- Have all clinically relevant options been considered?
- What could the intervention really affect?

Educational Prescriptions

CEBM at Oxford had recommended an educational prescription to guide the clinicians in preparing for evaluation of their patients.

One of the most important aspects of EBM process is asking focused clinical questions.

Once formulated an important question, clinicians will use educational prescriptions for keeping track.

The use of educational prescriptions (Rx) helps in five ways:

- it specifies the clinical problem that generated the question;
- it states the question, in all of its key elements;
- it specifies who is responsible for answering it;
- it reminds everyone of the deadline for answering (taking into account the urgency of the clinical problem that generated it);
- it reminds everyone of the steps of searching, critically appraising, and ultimately relating the answer back to the patient



Educational Prescription

Patient's Name:

Learner:

3-part Clinical Question

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.

- As noted earlier, forming questions is the essential initial step in learning how to practice EBM. As such, it ought to be central to the everyday care of patients.
- The educational prescription will help to better understand the patient's condition (pathophysiology, clinical findings, differential diagnosis, diagnosis, prognosis, therapy, prevention, or other issue).

Find the best evidence

- To find the best evidence, follow these steps :
- Translate the clinical question into a usable search strategy
- Select an appropriate database resource
- Enter search strategy according to the rules of the database selected
- Browse the records located to identify those that are best



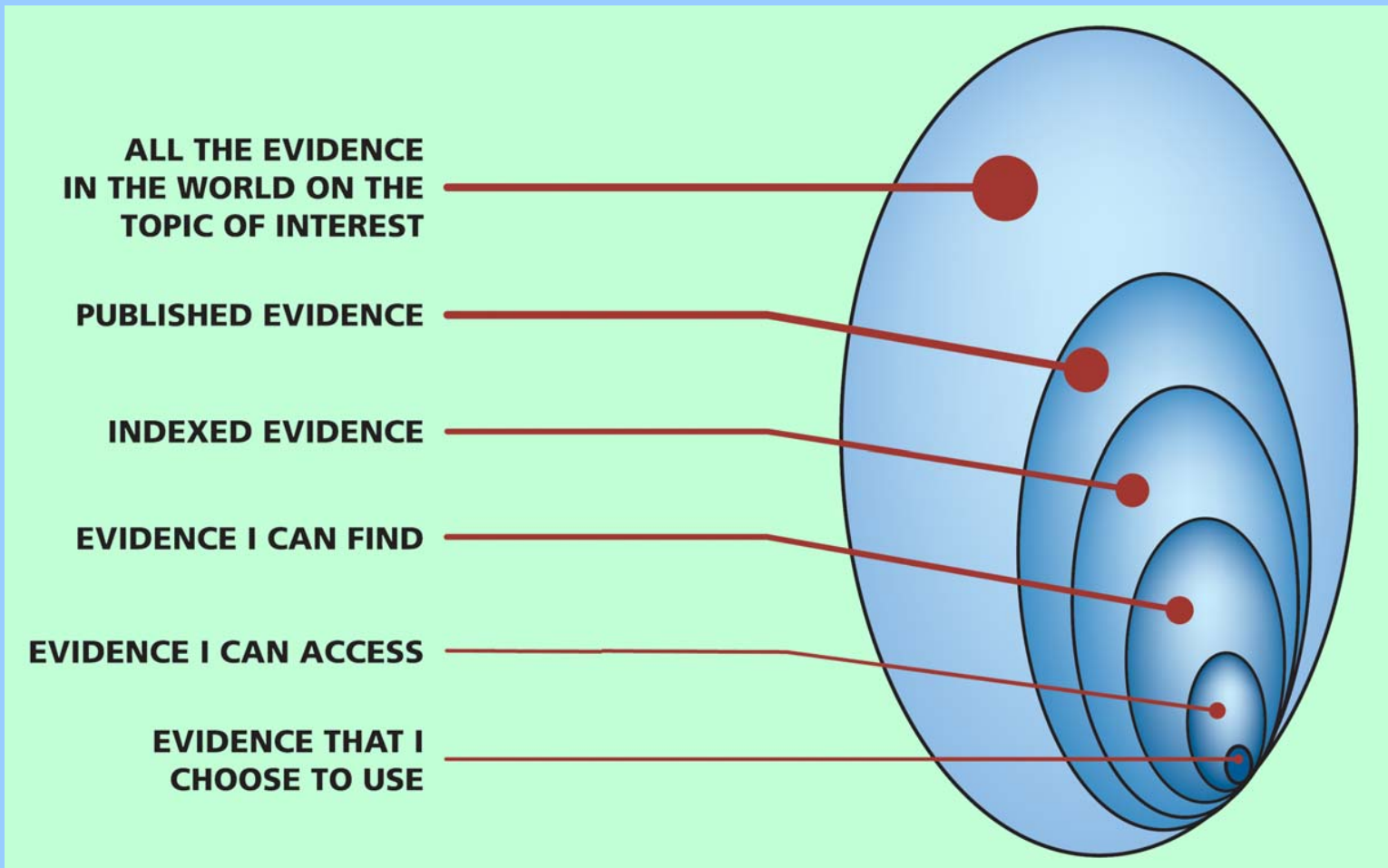
Which is the best
evidence ?

Critique the evidence

the evidence literature located:

- Is this evidence important?
- Is this evidence valid?
- Is it true, accurate, correct?

- The strategies to determine validity and importance vary according to the intervention that is being considered.
(*i = diagnosis, etiology, treatment, prevention, prognosis, or continuing education*)



Evidence-Based Medicine

- **Is not a recipe or cookbook**
- **Does not eliminate clinical judgment/reasoning**
- **Does not ignore patient preferences**
- **Is not rigid, unchangeable**
- **Is not focused only on randomized controlled trials (RCTs)**

<p>EBM is "old hat". Clinicians have been using the literature to guide their decisions for a long time. The label is new.</p>	<p><i>The new focus on EBM "formalizes" that "old hat" process and filters the literature so that decisions are made based on "strong" evidence.</i></p>
<p>EBM is "cook book medicine". It suggests that decisions are based solely on the evidence, down playing sound clinical judgment.</p>	<p><i>EBM should be one part of the process. Decisions must be blended with individual clinical expertise, patient preferences and when available good evidence.</i></p>
<p>EBM is the mindless application of population studies to the treatment of the individual. It takes the results of studies of large groups and tries to apply them to individuals who may have unique circumstances or characteristics, not found in the study groups.</p>	<p><i>The last step in the EBM process is to decide whether or not the information and results are applicable to your patient and to discuss the results with the patient.</i></p>
<p>Often there is no randomized controlled trial or "gold standard" in the literature to address the clinical question.</p>	<p><i>Clinicians might consider the "evidence pyramid" and look for the next best level of evidence. Clinicians need to understand that there may be no good evidence to support clinical judgment.</i></p>
<p>There is often great difficulty in getting access to the evidence and in conducting effective searches to identify the best evidence.</p>	<p><i>Librarians can help identify the best resources and teach clinicians effective searching skills.</i></p>

Form of databases that offer synthesized and evaluated evidence

- **Systematic reviews**
- **Meta-analyses**
- **Guidelines**
- **Critically appraised topics**

Evidence Based Medicine Links

- Users' Guide to the Medical Literature

A series from JAMA on how to use research articles in caring for patients. Includes Letters, Clinical Scenario descriptions and links to the working documents of the Users' Guide to Evidence Based Practice

www.cche.net/usersguides/main.asp

www.usersguides.org

Users' Guides Interactive

An online tool to guide clinicians in the appraisal and application of evidence into their everyday practice

In order to meet the needs of students, practitioners, and teachers, the *Users' Guides* collaborators have created three levels of *Users' Guides Interactive* (UGI). Offered as separate Internet-based subscription services, it contains all content, markup, and technology embedded in the *Users' Guides* CD-ROM, but are optimized for use on the Internet. Each level of UGI contains additional content and technology not included in the textbook or CD-ROM

www.usersguides.org

EBM Glossary

From the Medical University of South Carolina. A glossary of terms related to EBM, statistics, epidemiology, and clinical trials

www.musc.edu/dc/icrebm/glossary.html

The EBM Toolbox

Specific tools and data include: pre-test probabilities, SnPins and SnNouts, Likelihood Ratios, Numbers Needed to Treat, and Prognosis from the Oxford Centre for Evidence Based Medicine.

- emergencymedicine.iusm.iu.edu/EBM/ebm_toolbox.htm
- www.cebm.utoronto.ca

The EBM Tool Kit

This is a collection of tools from the University of Alberta for identifying assessing, and applying relevant evidence for better health care decisions. Includes clinical epidemiology definitions, a MEDLINE glossary, synopses of the EBM Users' Guides, EBM search strategies, and worksheets to provide a structural approach to critical analysis

www.med.ualberta.ca/ebm/ebm.htm

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Evidence Based Health Care for Consumers

This site will assist health consumers in understanding the process behind Evidence Base Medicine and aid in making evidence-based decisions.

denison.uchsc.edu/education/evidence_based.html

HealthWeb Evidence Based Health Care

A page of links maintained by the Healthweb collaboration.

healthweb.org/ebhc

FINDING THE BEST CLINICAL LITERATURE

This guide is designed to assist health care professionals and students become effective and efficient users of the medical literature

(University of Illinois at Chicago Library of the Health Sciences-Peoria)

www.uic.edu/depts/lib/lhsp/resources/ebm.shtml

How to Read a Paper

This site contains summaries from a BMJ series of articles giving EBM tips for evaluating the findings of published papers.

bmj.bmjournals.com/collections/read.htm

Master Lists of Evidence Based Resources

A page of links maintained by the Miner Library,
University of Rochester Medical Center.

A comprehensive list by A. Booth

www.urmc.rochester.edu/hslt/miner/digital_library/evidence_based_resources.cfm

Introduction to Clinical Reasoning Home Page

Includes EBM concepts such as odds ratios, confidence intervals, threshold decision making; glossary of EBM terms and clinical reasoning scenarios.

(Medical University of South Carolina)

www.musc.edu/dc/icrebm

Due to its comprehensiveness and up to date maintenance

For use of EBM in treatment and rehabilitation,
MEDLINE is the most sensitive source for evidence

For best pre appraised evidence source
use Cochrane Library and
Best Evidence

MEDLINE

MEDLINE is a major source of the primary literature (the original reports of research) in medicine.

However, the process of searching, synthesizing, and evaluating the reports of original research can be daunting and time intensive.

More Databases for Finding Filtered/Synthesized/Evaluated Evidence

COCHRANE LIBRARY

The Cochrane Library is a regularly updated electronic library designed to provide the evidence needed for healthcare decision making.

<http://www.cochrane.org/>

The Cochrane Library contains the following databases

- The Cochrane Database of Systematic Reviews
- The York Database of Abstracts of Reviews of Effectiveness (DARE)
- The Cochrane Controlled Trials Register
- The Cochrane Review Methodology Database

Database of Abstracts of Reviews of Effectiveness (DARE)

Provides structured abstracts of previously published good quality systematic reviews from around the world, filtered by reviewers at the NHS Centre for Reviews

ACP Journal Club

ACP Journal Club consists of the full text of *ACP Journal Club* (1991-) and *Evidence Based Medicine* . Editors screen the top clinical journals identify studies that are both methodologically sound and clinically relevant to review. The reviews include an expanded abstract and commentary by the reviewers

Center for Reviews and Dissemination (CRD)

The Centre for Reviews and Dissemination (CRD) established in January 1994 to provide research-based information about the effects of interventions used in health and social care.

It promotes the use of research-based knowledge, by offering rigorous and systematic reviews of research on selected topics and scoping reviews which map the research literature

- Databases: DARE, NHS EED and the HTA database

NHS Economic Evaluation Database

NHS EED Research is designed to serve the needs of NHS decision-makers, it can also be used as a powerful research tool because it contains a pool of readily accessible critically appraised information.

www.nhs.uk/

NHS Economic Evaluation Database (NHS EED)

NHSEED contains over 6000 abstracts of quality assessed economic evaluations.

The database aims to assist decision-makers by systematically identifying and describing economic evaluations, appraising their quality and highlighting their relative strengths and weaknesses.

- *Economic evaluations involves identification, measurement and valuation and then compare inputs (costs) and outcomes (benefits) of two or more treatments or activities.*

Clinical Evidence

- Clinical Evidence is a frequently updated compendium of evidence on the effects of common clinical interventions. It provides a concise account of the current state of knowledge, ignorance, and uncertainty about the prevention and treatment of a wide range of clinical conditions based on thorough searches of the literature.
- It is not a textbook of medicine nor a book of guidelines.
- It summarizes the best available evidence and where there is no good evidence, it says so.
- Published by the BMJ Publishing Group
- For print subscription information see <http://www.clinicalevidence.com/>

First Consult

First Consult offers tools for differential diagnosis, evaluation, and management of medical conditions, patient education and procedure skill review.

First Consult can be used on the desktop or on a PDA.
Resources.

For subscription information see
<http://www.firstconsult.com/>

Health Services Technology Assessment Texts (HSTAT)

Health Services Technology Assessment Texts (HSTAT) is a free, electronic resource that provides access to the full-text of documents useful in health care decision making.

[http:// text.nlm.nih.gov/](http://text.nlm.nih.gov/)

HSTAT includes:

- clinical practice guidelines, quick-reference guides for clinicians,
- consumer brochures, and evidence reports sponsored by the Agency for Health Care Research and Quality (AHRQ), formerly AHCRP; AHRQ technology assessment reports;
- National Institutes of Health (NIH) consensus development conference and research protocols;
- the Preventive Services Task Force Guide to Clinical Preventive Services; and other guidelines.
- It also provides a link to the Centers for Disease Control and Prevention (CDC) Prevention Guidelines Database

InfoPOEMS

InfoPOEMS (Patient Oriented Evidence that Matters) is a database designed to help keep physicians current and to answer clinical medicine questions at the point-of-care. It includes an option that sends a daily POEM to the user via e-mail. InfoPOEMS is part of a larger clinical awareness system that includes the 5-Minute Clinical Consult, diagnostic tools, practice guidelines, and Cochrane Database abstracts. A PDA version is also available.

Subscription information is available at

<http://www.infopoems.com/>

MedlinePlus

Produced by the National Library of Medicine, MedlinePlus provides health professionals and consumers information that is authoritative and up to date. The database includes extensive information from the National Institutes of Health and other trusted sources on over 500 diseases and conditions. It also includes a drug database and links to clinical trials.

<http://www.medlineplus.gov/>

Physicians' Information and Education Resources (PIER)

PIER is an American College of Physician product that summarizes and evaluates current evidence for patient care. It also grades clinical recommendations based on the strength of the evidence available. STAT!Ref® online is a cross-searchable, healthcare reference that integrates core titles with evidence-based resources and innovative tools. It offers the ability to access different types of resources from one site. Doctors, nurses, librarians, medical students, insurance processors, and researchers, use this tool to obtain the most current medical and drug information.

<http://www.statref.com/>

TRIP

- The TRIP database searches over 55 sites of high-quality medical information and gives direct links to evidence-based material on the web as well as articles from online journals such as BMJ, JAMA, and NEJM.
- The database allows health professionals to easily find high quality material available on the web to help support evidence based practice.
- The TRIP Database is produced by TRIP Database Ltd .
<http://www.tripdatabase.com/>

EXCERPTA MEDICA

Excerpta Medica is a strategic medical communications agency which seeks to partner with its clients in the pharmaceutical and biotech industries to educate the global health care community and enable them to make well-informed decisions regarding treatment options.
<http://www.excerptamedica.com>

EMBASE (Excerpta Medica)

EMBASE (Excerpta Medica) is a comprehensive bibliographic database that covers the worldwide literature on biomedical and pharmaceutical fields. It is produced by Elsevier B.V., the world's largest publisher of scientific information.

It also contains an online thesaurus.

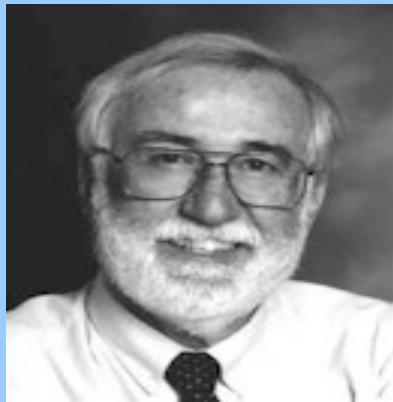
<http://www.cas.org/ONLINE/DBSS/embasess.html>

EVIDENCE-BASED MEDICINE

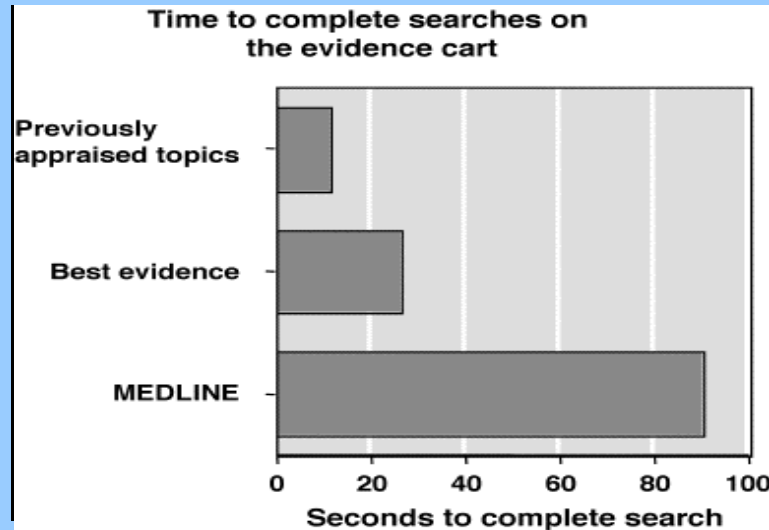
Evidence-Based Medicine surveys a wide range of international medical journals applying strict criteria for the quality and validity of research. Practising clinicians assess the clinical relevance of the best studies. Published bi-monthly, Evidence-Based Medicine offers comprehensive coverage of primary care medicine.

ebm.bmj.com/

- Shift focus to current patient problems to stay relevant to your practice
- Learn to obtain best current answers



Dave Sackett



Questions?