Working Smarter Not Harder: Using Evidence Based Medicine in Practice

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Working Smarter Not Harder: Using Evidence Based Medicine in

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Presenter Disclosure

- The presenter for this activity has been required to disclose all relationships with any proprietary entity producing health care goods or services, with the exemption of non-profit or government organizations and non-health care related companies.

- No significant financial relationships with commercial entities were disclosed by any of the speakers.

Learning Objectives

1) Describe the role and limitations of evidence based medicine in pharmacy practice

2) Identify strategies for responding to clinical questions efficiently

3) Review steps for determining the validity and relevance of resources

EVIDENCE-BASED MEDICINE, INFORMATION MASTERY, & CLINICAL DECISION MAKING

Evidence-Based Medicine

- The conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients
  - Stay up to date with the current literature
  - Communicate effectively with other healthcare practitioners
  - Make the best use of information
  - Avoid common pitfalls of clinical decision making

JAMA. 2000;284:1290-1296.

EBM & Decision Making

BMJ. 1995;310: 1122.

Information Mastery

- Leveraging information to work *smarter*, NOT *harder* when…
  - Making decisions at the *point-of-care*
  - *Keeping up to date* with practice changing information

Information Mastery

- Usefulness equation

$$\text{Usefulness} = \frac{\text{Relevance} \times \text{Validity}}{\text{Work}}$$

- Hunting tools
  - Point-of-care decision making

- Foraging tools
  - Clinical awareness system

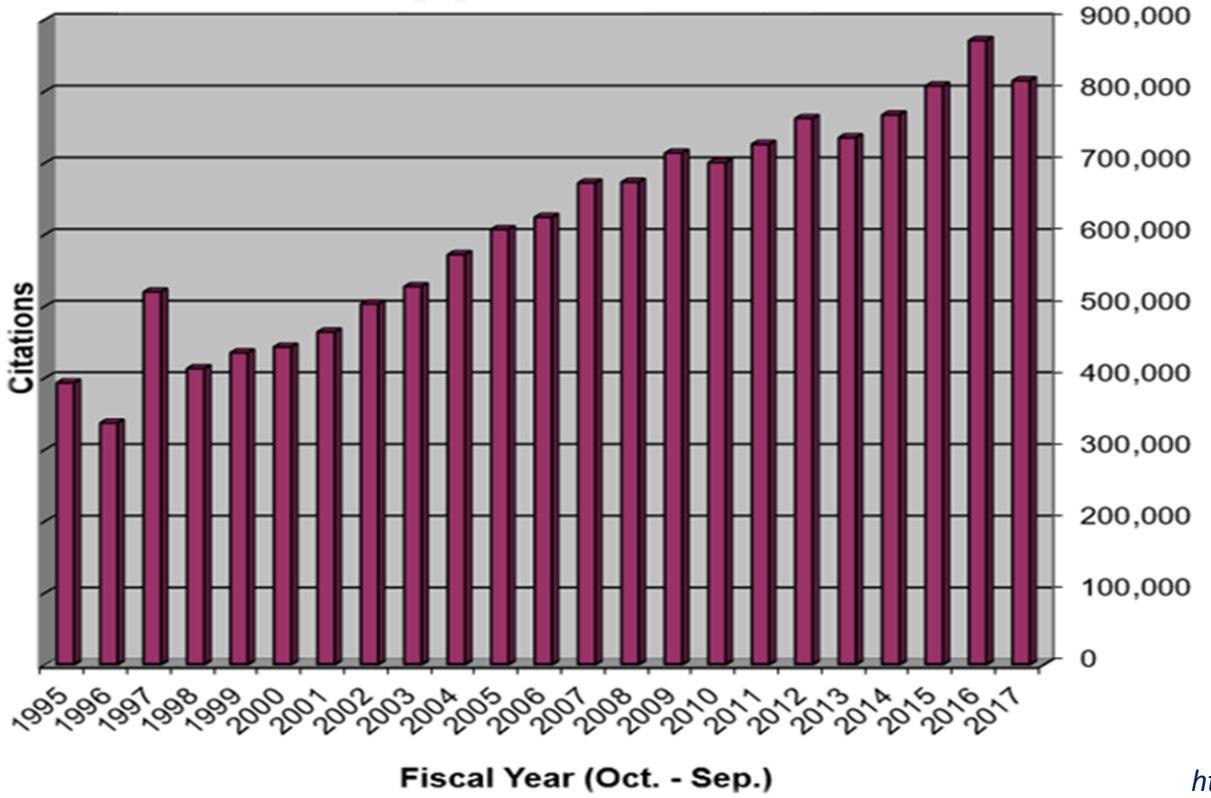
J Fam Pract .1994;39:489-99.
J Fam Pract .1994;38:505-13.

EBM & Decision Making

Tools of Information Mastery

BMJ. 1995;310: 1122.
J Fam Pract .1994;39:489-99.
J Fam Pract .1994;38:505-13.

Information Jungle



http://www.nlm.nih.gov/bsd/stats/cit_added.html

Information Overload

Hunting Tool (Pull Information)

- Healthcare practitioners generate 1 question per 2 encounters
- Most clinical questions go unanswered
  - Time
  - Doubt
  - Forgetfulness
  - Not urgent/important
- 2-3 minutes seeking answers

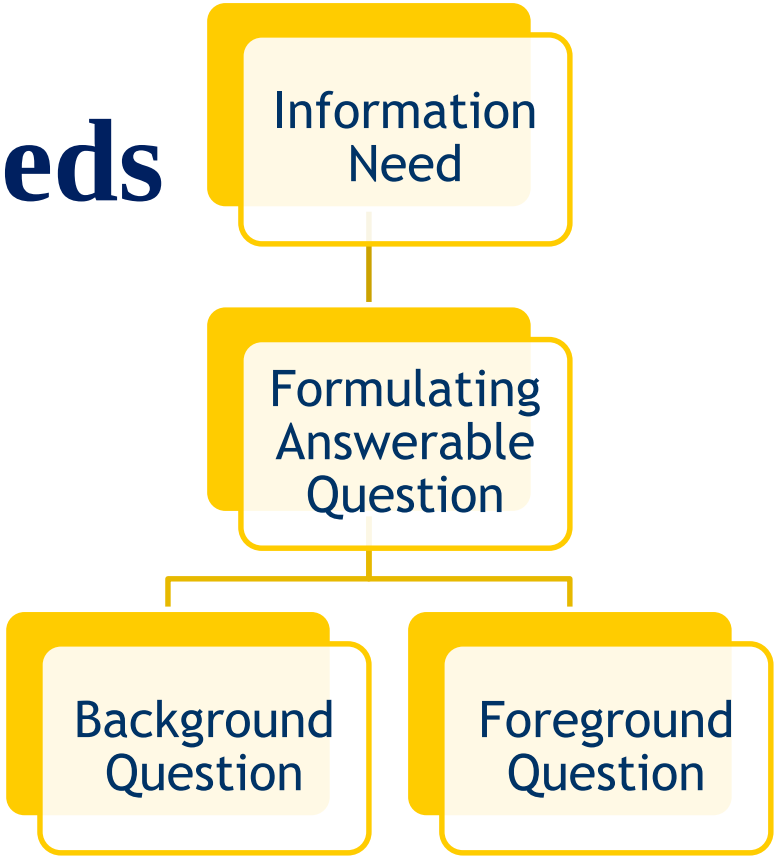
Foraging Tool (Push Information)

- Patient-oriented evidence that matters
  - Common question & feasible intervention
  - Outcomes that doctors & patients care about
  - Practice changers
- Less than 2.5% of research qualifies as POEM

JAMA Intern Med. 2014;174(5):710-718.
J Fam Pract. 2013;62(2):E1-5.

RECOGNIZE AN INFORMATION NEED

Identifying Information Needs



Fam Pract Manag .2005;12(7):37-41.

Background Questions

- Ask “who, what, when, why, where, or how” about a single drug, intervention or concept
- Examples:
  - What is the starting dose of lisinopril for the treatment of heart failure?
  - What are the common side effects of metformin?
  - What is the appropriate dose of piperacillin/tazobactam in a patient with a creatinine clearance of 25 mL/min?
  - What are risk factors for osteoporosis?
  - What is the diagnostic criteria for ADHD?

Fam Pract Manag .2005;12(7):37-41.

Answering Background Questions

- Where to look:
  - Textbooks
  - General review articles (AKA narrative reviews)
  - Drug references

Fam Pract Manag. 2005;12(7):37-41.

Foreground Questions

- Compare two things
  - Drugs or treatments
  - Diagnostic tests
  - Harms or benefits of two approaches
- PICO format
- Examples:
  - *In patients with established cardiovascular disease, does the addition of omega-3 fatty acid supplementation to standard therapy reduce the risk of cardiovascular morbidity or mortality as compared to standard therapy alone?*
  - *In patients with diabetes already taking a statin, does the addition of fenofibrate reduce the risk of cardiovascular disease compared to statin therapy alone?*

Fam Pract Manag .2005;12(7):37-41.

Answering Foreground Questions

- Hunting Tools
  - DynaMed
  - Essential Evidence Plus
  - TRIP database
  - Google Scholar
  - MEDLINE

Fam Pract Manag. 2005;12(7):37-41.

The Usefulness of Medical Information Equation

$$\text{Usefulness} = \frac{\text{Relevance X Validity}}{\text{Work}}$$

- The best source information provides *highly relevant* and *valid* information and can be obtained with *minimal effort*

J Fam Pract. 1994;39:489-99.

Relevance

Patient-oriented

- Clinical outcomes
- Myocardial infarction
- Stroke
- Fracture
- Hospitalizations
- Mortality

Disease-oriented

- Surrogate markers
- Blood pressure
- Cholesterol
- Bone mineral density
- Ejection fraction
- Pulmonary function tests

J Fam Pract. 1994;39:489-99.

Disease-oriented		Patient-oriented
	DOE-POEM agreement demonstrated	
Chlorthalidone	Chlorthalidone decreases MI and CVA risk	Chlorthalidone decreases mortality in patients with HTN
	DOE-POEM agreement unknown	
ARBs control blood pressure in DM	ARBs reduce ESRD in DM	ARBs reduce total mortality in DM
	POEMs contradicts DOE	
Alpha blockers reduce blood pressure		Alpha blockers increase adverse CV outcomes

JAMA. 2000;283(15):1967-75.
Diabet Med. 2004;21(1):18-25.

Validity

- Structured assessment for validity
  - AKA *Critical Appraisal*

- Extent the knowledge gained represents the “truth”

- Each clinician must either take responsibility or designate to an ***Information Mastery Tool***

J Fam Pract. 1994; 39:489–499

Levels of Evidence

- Ranking system used to describe the strength, or "trustworthiness," of the results measured in a clinical trial or research study
  - Design of the study
  - Methodological quality of the study
  - Endpoints measure

Study Quality1	Description of Studies about Treatment
Level 1: good-quality patient-oriented evidence	SR/meta-analysis of RCTS with consistent findings High-quality individual RCT† All-or-none study‡
Level 2: limited-quality patient-oriented evidence	SR/meta-analysis of lower-quality clinical trials or of studies with inconsistent findings Lower-quality clinical trial† Cohort study Case-control study
Level 3: other evidence	Consensus guidelines, extrapolations from bench research, usual practice, opinion, disease-oriented evidence, or cases series for studies of treatment

SR = systematic review; RCT = randomized controlled trial.
*-High-quality diagnostic cohort study: cohort design, adequate size, adequate spectrum of patients, blinding, and a consistent, well-defined reference standard.
†-High-quality RCT: allocation concealed, blinding if possible, intention-to-treat analysis, adequate statistical power, adequate follow-up (greater than 80 percent).
‡-In an all-or-none study, the treatment causes a dramatic change in outcomes, such as antibiotics for meningitis or surgery for appendicitis, which precludes study in a controlled trial.

Am Fam Physician. 2004;548-56.

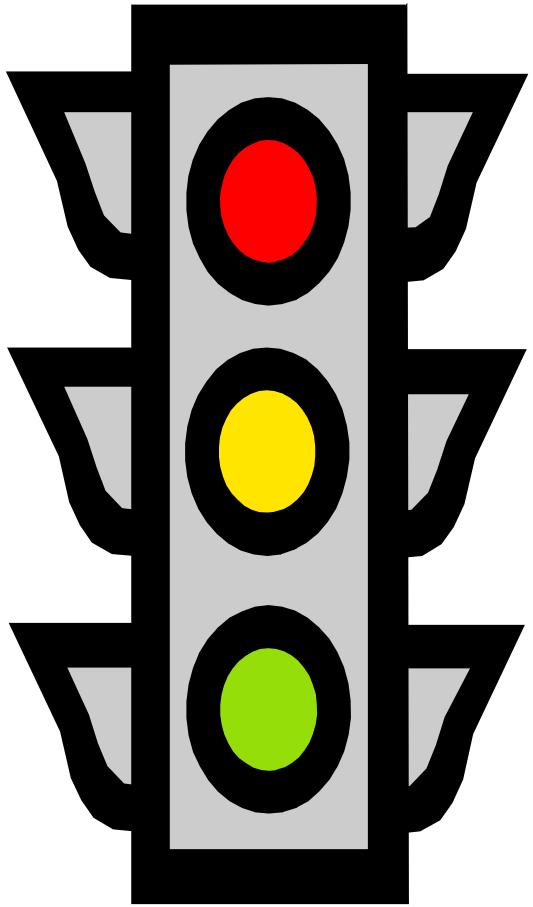
http://medicine.tufts.edu/~/media/TUSM/PDF/Family%20Medicine/Evaluating%20Review%20articles%20comprehensive.ppt

Context

Level 3:
Other evidence

Level 2:
Limited-quality patient-oriented evidence

Level 1:
Good-quality patient-oriented evidence



Red: Don't for most people most of the time

Yellow: Benefit/harm uncertain

Green: Most of the time for most people

Cochrane Database Syst Rev 2015 Mar 12;(3):CD000024
Am Fam Physician. 2004;548-56.

Work

- Personal “investment”
- Working too hard to establish relevance and validity may decrease overall usefulness
- A low work-factor source may also have low validity or relevance, or both

J Fam Pract. 1994; 39:489–499

Hunting & Foraging Tools

Hunting Tools

- Pharmacists should have access to “just in time” information at the point-of-care
  - Prefiltered for relevance
  - Pre-appraised for validity
  - Reduce work by making information more accessible and easier to use
- All pharmacists should have a tool shed

Acad Med. 2005;80:685-89.

High-Quality Hunting Tools

- Specific, transparent, and explicit method for comprehensively searching the literature to find relevant and valid information
- Provides key recommendations supported by patient-oriented outcomes when possible
- Assigns levels of evidence or strength of recommendation to key recommendations using defined criteria
- Coordinates with a reliable foraging tool

Acad Med .2005;80:685-89.

Foraging Tools

- Pharmacists should have access to “clinical awareness systems”
  - Prefiltered for relevance
  - Pre-appraised for validity
  - Reduce work by making information more accessible and easier to use
- All pharmacists should have an alert system in place

Acad Med. 2005;80:685-89.

High-Quality Foraging Tools

- Comprehensively reviews the literature for a specific specialty or discipline
- Filters out disease-oriented research and presents only patient-oriented outcomes
- Demonstrates a validity assessment has been performed
- Assigns a level of evidence, based on appropriate validity criteria, to individual studies
- Provides specific recommendations on how to apply the information, placing into clinical context
- Coordinates with a high-quality hunting tool

Acad Med .2005;80:685-89.

Foraging Tools

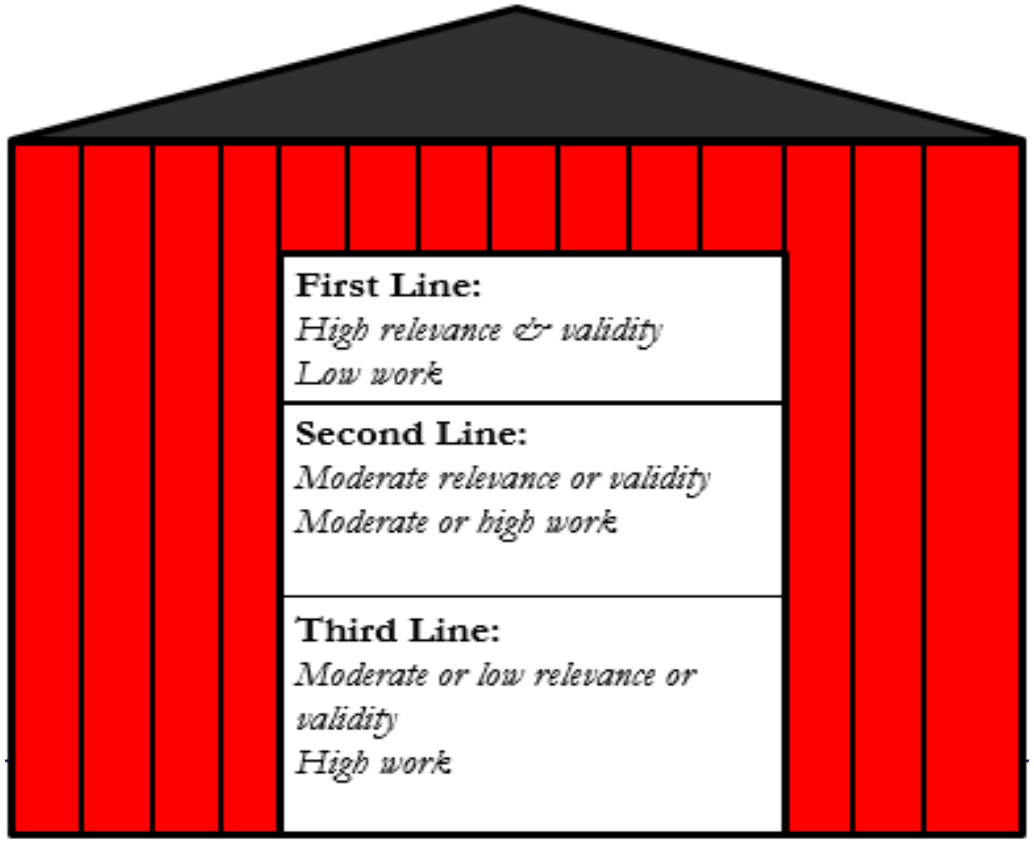
- Pharmacist's Letter
- ACP Journal Club
- American Family Physician
- DARE Database
- Essential Evidence Plus

Hunting Tools

- Essential Evidence Plus
- DynaMed
- TRIP Database
- Clinical Evidence
- UpToDate

Pharmacy Today. April 2008;42-43.

Building a Shed



90%

95%

97.5%

Information Mastery Tool Worksheets

Comparison Table for Hunting Tools

Hunting Tool	_____	_____	_____	_____
Relevance Criteria				
Are key recommendations supported by patient-oriented outcomes when possible , and when not, specified as preliminary when supported by disease-oriented outcomes	YES NO	YES NO	YES NO	YES NO
Validity Criteria (found in the "about" section)				
Is there an explanation of how validity is assessed?*	YES NO	YES NO	YES NO	YES NO
Is there a specific method for searching the literature? If YES, what is it?	YES NO	YES NO	YES NO	YES NO
Do the search methods include at least one evidence-based resource If YES, what method(s)	YES NO	YES NO	YES NO	YES NO
Are key recommendations supported by strength of recommendation (SOR) levels of evidence (LOE) using acceptable criteria?				
How often is the information updated? Is it systematic and timely?				
Other Information (including work)				
Is the funding source identifiable? If YES, what is it?	YES NO	YES NO	YES NO	YES NO
What is the cost?	$	$	$	$
What platforms are available for access to the information	Smartphone Web-based Desktop Other	Smartphone Web-based Desktop Other	Smartphone Web-based Desktop Other	Smartphone Web-based Desktop Other
Is it coordinated with a high quality foraging tool?	YES NO	YES NO	YES NO	YES NO

Comparison Table for Foraging Tools

Foraging Tool	_____	_____	_____	_____
Evaluating a sample of the tool				
Is the scope of information limited to your specialty? (i.e. relevant)?	YES NO	YES NO	YES NO	YES NO
Does is seem that the service emphasizes new research findings that focuses on patient vs. disease-oriented (i.e. POEMs vs. DOEs?)?	YES NO	YES NO	YES NO	YES NO
Are key recommendations supported by strength of recommendation (SOR) or levels of evidence (LOE) using acceptable criteria?	YES NO	YES NO	YES NO	YES NO
Does the service explain how validity is assessed?*	YES NO	YES NO	YES NO	YES NO
Evaluating the system used by the service to evaluate for relevance and validity				
Most of this information will need to be obtained from the web site or supporting documentation				
Does the service have specific criteria for designating what types of sources of research are used?	YES NO	YES NO	YES NO	YES NO
If YES, does the service have specific criteria for distinguishing between patient and disease-oriented outcomes?	YES NO	YES NO	YES NO	YES NO
Does the service have specific criteria for evaluating research and including research of a certain quality?	YES NO	YES NO	YES NO	YES NO
Other information				
What is the cost?	$_____	$_____	$_____	$_____
How does the service deliver the information	Paper E-mail Web	Paper E-mail Web	Paper E-mail Web	Paper E-mail Web
How often is the information updated?				
Is it coordinated with a high quality hunting tool?				

http://medicine.tufts.edu/~/media/TUSM/PDF/Family%20Medicine/Hunting%20Tool%20Worksheet.pdf

http://medicine.tufts.edu/~/media/TUSM/PDF/Family%20Medicine/foraging%20tool%20worksheet.pdf

Resources

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