EBM for the Practicing Physician

Paul A. McLeod, M.D.
Chief Medical Executive
MED3OOO

Disclosure

Some of the content for this presentation taken from the work of Nancy Clark, M.eD., and Dan VanDurme, M.D., at the Florida State University College of Medicine, Tallahassee, FL

Objectives

After attending this session, the learner will:

- Understand the need for EBM in clinical practice
- Understand the definition of EBM
- Identify and select from the many online evidence-based medicine resources and clinical guides
- Understand how to integrate EBM into clinical practice

Acronyms To Avoid

- “Experience-Based Medicine”:

  Doing the wrong thing with increasing confidence for an impressive number of years.

  A bad idea done by a LOT of people for a LONG time... is still a bad idea.

Acronyms To Avoid

- "Eminence-Based Medicine":

  The higher the "rank," the more we believe them.

Intern	<	Senior Resi-dent	<	Junior Attend-ing	<	Senior Attend-ing	<	Depart-ment Chief	<	Out-of-Town "Expert"

The Case For EBM

- Patient Safety
- Staying Current
- Saving Lives
- Improving Quality of Life
- Minimizing Variation in Treatment

Improving Patient Safety

"..little evidence exists from any source that systematic improvements in safety are widely available."

Improving Patient Safety

"..most individuals still believe that the major cause of bad care is bad physicians, and that if miscreant clinicians were removed everything would be all right."

Five Years After *To Err Is Human* ,What Have We Learned?
Lucian L. Leape, M.D.; Donald M. Berwirk, M.D.
JAMA. 2005;293:2384-2390.

Staying Current

Clinical Question

- Should women do periodic breast exams?

Staying Current

Clinical Question:

- Should we use eye patches for corneal abrasions?

Staying Current

Clinical Question:

- Is it safe to defer surgical repair (called “watchful waiting”) in asymptomatic or minimally symptomatic men with inguinal hernias?

Staying Current: Newer May Not Mean Better

Clinical Question:

- Is liquid-based cytology better than conventional cytology in detecting high-grade cervical disease?

EBM and Clinical Guides

- Early 1900s: Life insurance actuaries began to use 140/90 as a threshold for insurance purposes, and the term "hypertension" was born.

Refining Clinical Guides

- 2002, *The Lancet*: Study determined that the association between cardiovascular risk and blood pressure is a continuous linear relation all the way down to 115/70 mm Hg.

The Land of the Pre

- Does intervention in patients with pre-hypertension improve patient-oriented outcomes?

Julius S, Nesbitt SD, Egan BM, et al., for the Trial of Preventing Hypertension (TROPHY) Study Investigators. Feasibility of Treating Prehypertension with an Angiotensin-Receptor Blocker. N Engl J Med 2006:354:1685-1697.

Further Refining

- 2006: Treatment decisions based on assessment of global cardiovascular risk, not just BP “number.”

Choosing What We Should Do from What We Could Do

- Which preventive services can have the largest effect on reducing disease burden in the United States?

Choosing What We Should Do from What We Could Do

1. Discussing aspirin use with high-risk individuals
2. Immunizing children
3. Tobacco screening and brief intervention

Advance Publications issue of the *American Journal of Preventive Medicine, May 2006*

Saving Lives

Thrombolytics for acute MI

- CLEAR evidence of benefit in the 1970's
- Not widely recommended until 1988 – almost 13 yrs later
- How many thousands of people died unnecessarily in the years in between?

Use of aspirin following acute MI's

- Deaths reduced by > 20%
  (*Circulation* 1995;92:2841-7)

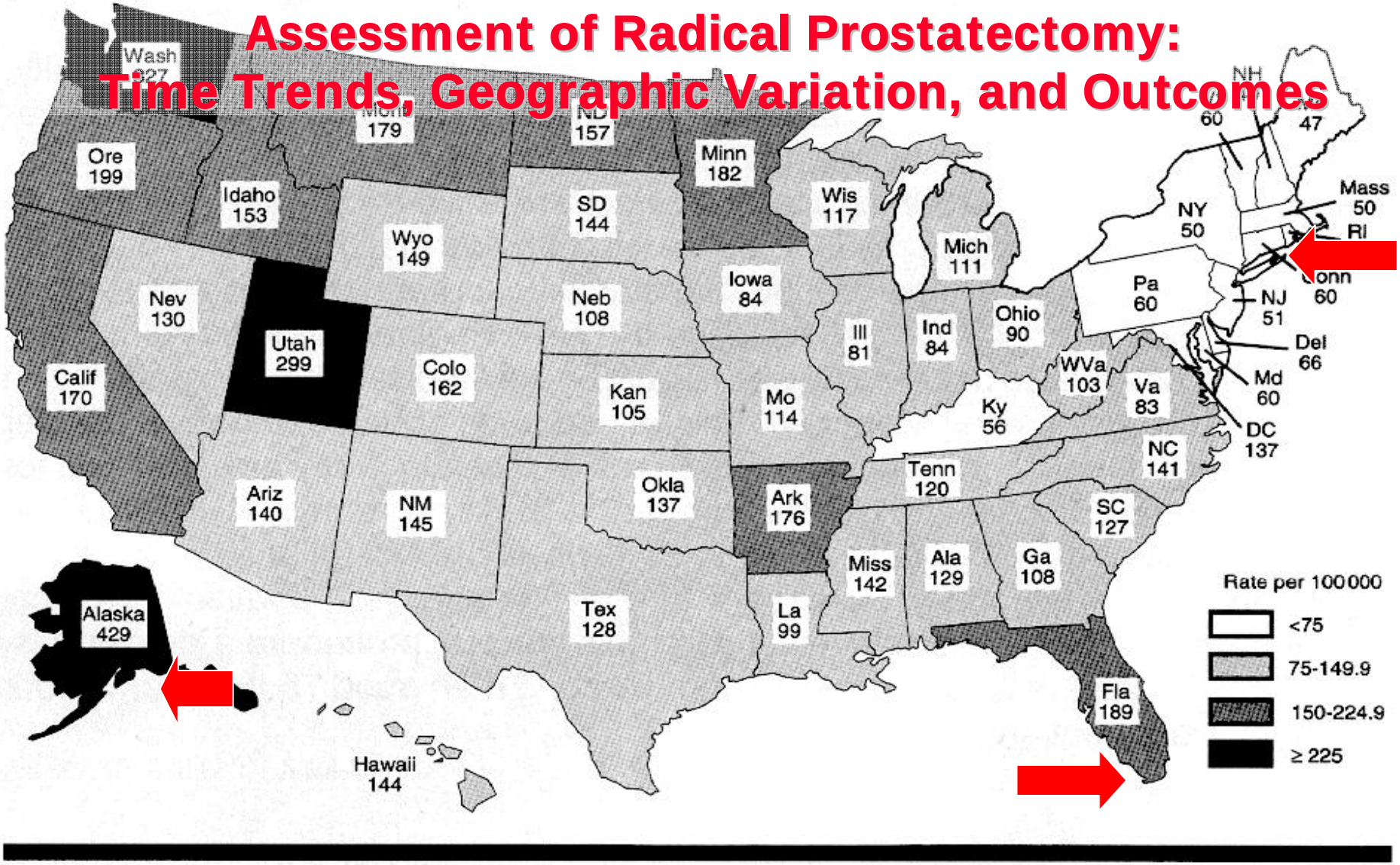
Improve Quality of Life

- Failure to use clear evidence-based guidelines for indications for carotid surgery
  - peri-operative stroke and deaths increased (*Stroke* 1997;28:891-8)

Minimize Practice Variations that do not Make Sense . . .

- Not to doctors
- Not to patients
- Not to payors
- Not to policy makers

Assessment of Radical Prostatectomy: Time Trends, Geographic Variation, and Outcomes



Lu-Yao: JAMA, Volume 269(20). May 26, 1993.

Incidence of, and Treatment for, Ductal Carcinoma In Situ of the Breast

SEER Site	Percentage Treated by Mastectomy
Connecticut	28.8
San Francisco–Oakland, Calif SMSA*	39.1
Metropolitan Detroit, Mich	42.3
Seattle–Puget Sound, Wash	46.3
Utah	49.8
Hawaii	50.1
Iowa	52.4
Metropolitan Atlanta, Ga	54.6
New Mexico	57.7
All areas	43.8

Ernster: JAMA, Volume 275(12).March 27, 1996.

SEER=Surveillance, Epidemiology, and End Results Program of the NCI

Our Challenge

- Making patient care decisions at the time of service based on the best available evidence and
- Facilitating delivery of care that results in measurable improvement in outcomes

Our Dilemma

"The professionally sponsored literature for medical practitioners acts as though each practitioner in each American community were supposed to be his own scholarly and scientific institute, screening, sifting, evaluating, assessing, and translating into practical terms the output of medical research that is reported in the periodical literature…. The practitioner, of course, is quite unable to live up to this myth…."

—Herbert Menzel, 1966

Fast Forward 40 years

- As the availability of technology and pharmacological resources has increased, so has the complexity of clinical decisions.

And to Make Things Worse

- Production-based reimbursement, with flat or falling fee schedules, leaves little time with patients to look for evidence-based recommendations at the point of care.

So, What is EBM?

Original Definition: The explicit, conscientious, and judicious use of the current best evidence in making decisions about the care of individual patients (and populations).

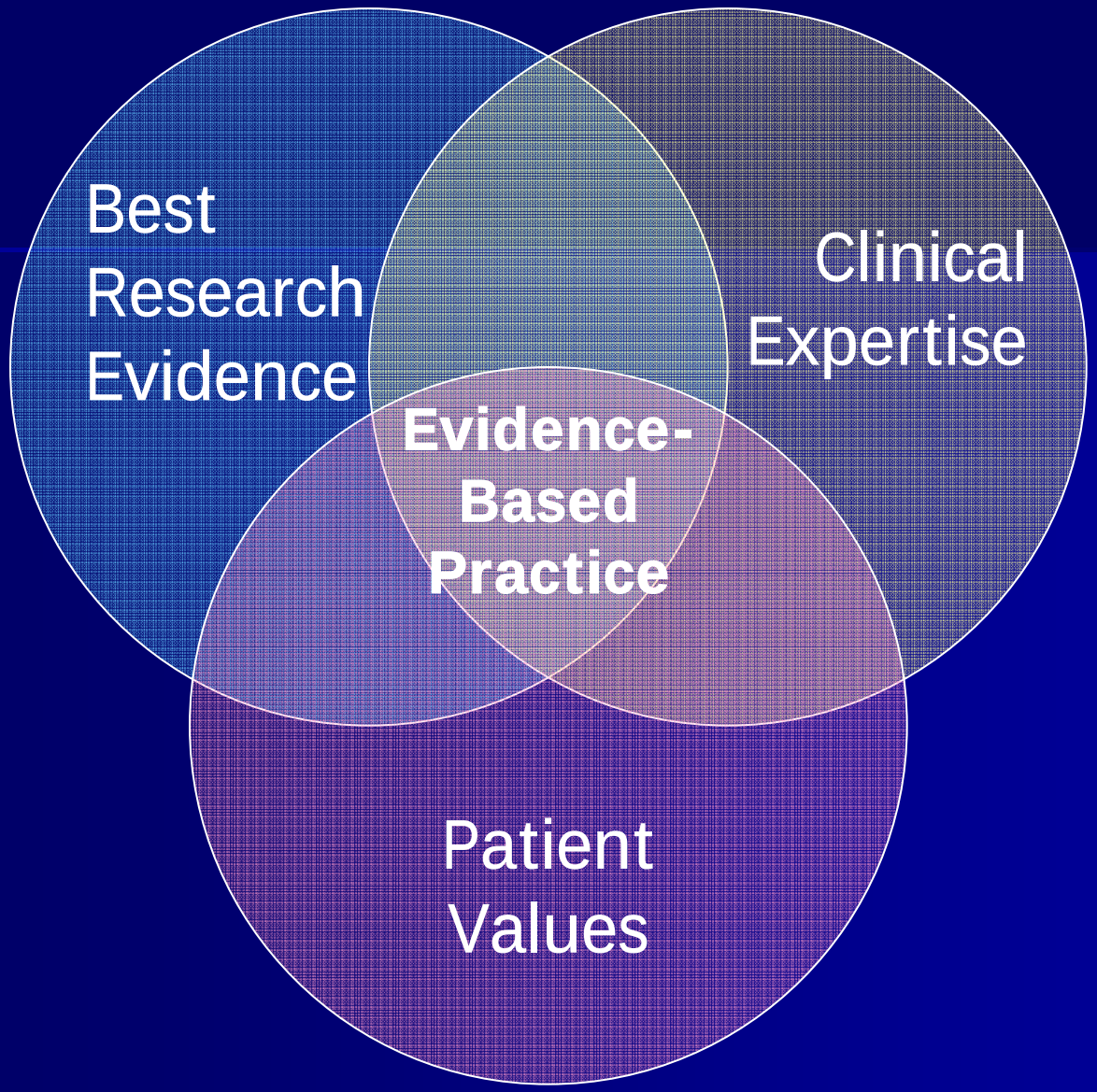
Evidence-Based Medicine Working Group

Sackett et al., circa 1996

New Definition

- The **integration** of **best research evidence** with **clinical expertise** and **patient values**

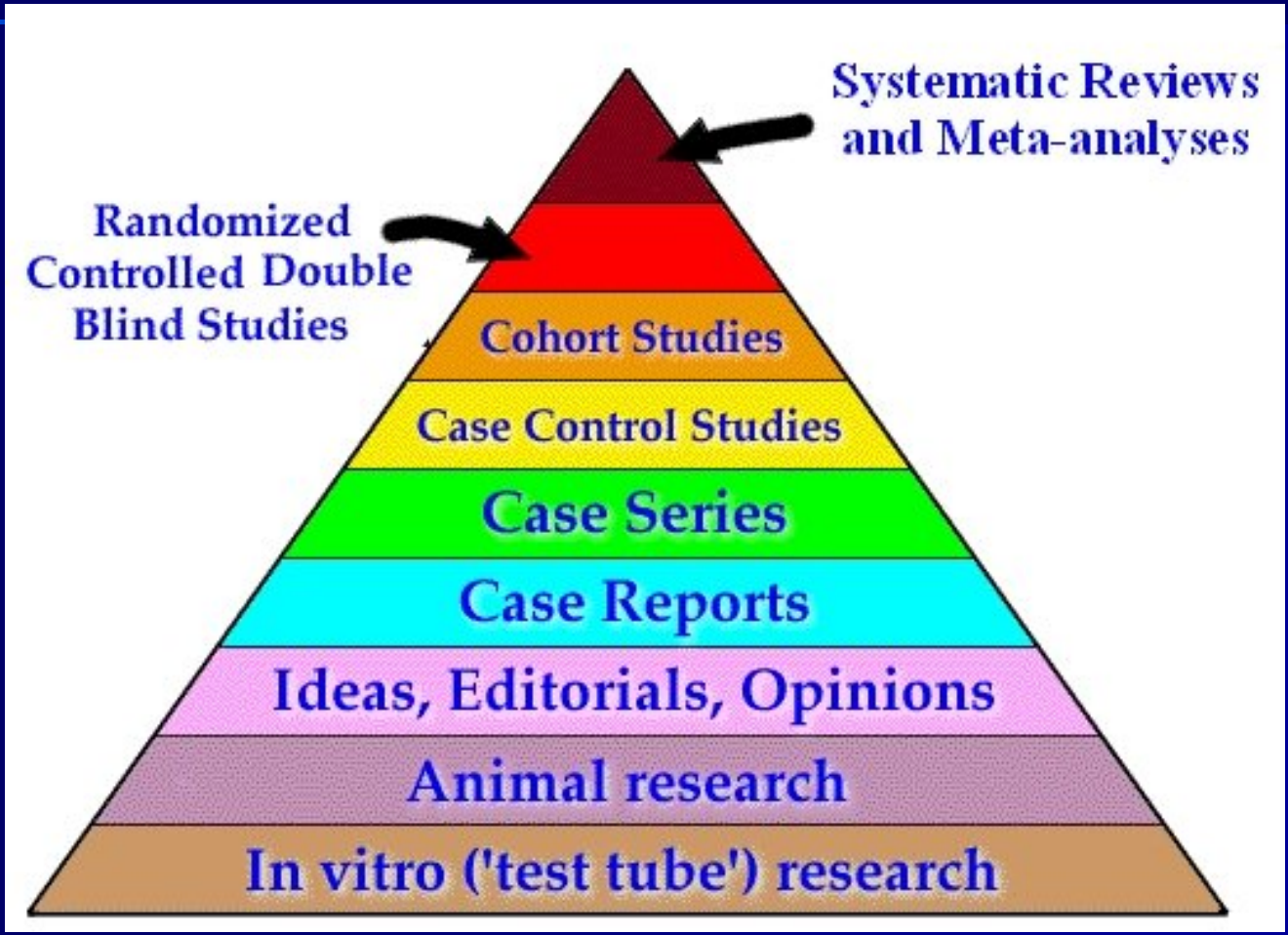
Sackett et al., 2000


Best
Research
Evidence
Clinical
Expertise
Evidence-
Based
Practice
Patient
Values

Principles

- Find the highest level of evidence you can, realizing that:
  - "Any empirical observation about the apparent relationship between events constitutes potential evidence" and
  - There is a hierarchy of possible evidence

Hierarchy of Research Studies



Research Evidence

- Clinically relevant – not just “well-done research”
- Ideally, patient-centered clinical research

Less Clinically Relevant

- Disease-oriented evidence (DOE)
  - How many irregular heartbeats per hour?

Even Less Relevant

- Basic science
  - What is the level of C-reactive protein (CRP) in the serum?

Filter with Clinical Expertise

- Consult your “internal” data base first

Add Patient Factors

- Patient Preferences
  - Cultural influences
  - Religious/spiritual influences
  - Psychosocial issues
- Patient Circumstances
  - Reimbursement or insurance status
  - Access to care
  - Societal factors
  - Other influences

Applying EBM

- How do we apply EBM to a clinical practice?

The EBM Process – The Hard Way

The Patient	1. Start with the patient – a clinical problem or question arises out of the care of the patient
The Question	2. Construct a well-built clinical question derived from the case
The Resource	3. Select the appropriate resource(s) and conduct a search
The Evaluation	4. Appraise that evidence for its validity (closeness to the truth) and applicability (usefulness in clinical practice)
The Patient	5. Return to the patient – integrate that evidence with clinical expertise, patient preferences, and apply it to practice
Self-Evaluation	6. Evaluate your performance with this patient

An Example

- 54 year old male patient was diagnosed with intermediate grade prostate cancer and wants to know whether to get a radical prostatectomy or radiation treatment. He is concerned about death from prostate CA and is also concerned about the risks of impotence and incontinence.

What Does the Evidence Show?

- Translate the clinical scenario into an answerable clinical question.

Question?

- Population:
  - For middle aged males with intermediate grade prostate cancer,
- Intervention:
  - Treated with radical prostatectomy,
- Comparison:
  - Compared to radiation treatment,
- Outcome:
  - What are the rates of incontinence, impotence and cancer-related mortality?

Developing the Question Requires:

- Some background knowledge of the disease or condition
- Understanding of the patient and what are the outcomes that matter in this patient
  - Death?
  - Disability?
  - Quality of life? – Anxiety, Impotence, etc.
  - Cost?

“Background” Questions

- What do I know about prostate cancer? Consult “internal database”
  - How common is it?
  - Is it usually aggressive and rapidly fatal?
  - How can it be treated – surgery, chemotherapy, radiation?
  - What about family history – what should I tell him about his son’s risk?

Translate Question into Effective Searches for the Best Evidence

- Requires knowledge of medical informatics
- How to search – what terms to use, what types of studies, etc.
- Where to search – utility of varied sources of information

Information Sources – Pros and Cons

- Colleague
  - – + quick and easy
  - – – biased?, dated?, accurate?

Information Sources – Pros and Cons

- Textbook
  - + quick and easy
  - – old?, biased?, potentially irrelevant?

Information Sources – Pros and Cons

- Articles – original research
  - + potentially most current, may be perfect fit
  - – – TNTC, too hard to critically appraise, may be irrelevant

Critically Appraise the Evidence

- Validity of the evidence
  - Internal – study design, blinding, randomized, sample size, appropriate statistics, etc.
- Relevance of the evidence
  - Did they measure something pts care about?
  - Is population similar (enough) to mine?
  - Is the intervention feasible?
- Importance of the evidence
  - Magnitude of effect or clinical significance?

Critically Appraise the Evidence, continued

- Requires some knowledge of basic epidemiology and biostatistics
  - Sensitivity, specificity, prevalence, likelihood ratios
  - Absolute risk reduction, relative risk reduction, odds ratios, number needed to treat
- Requires knowledge of study types
  - ASSUMING THAT IT IS A WELL DESIGNED STUDY
    - Appropriate sample size, randomization, stats, treatment allocation, etc., etc.
  - Meta-analysis of RCT's > RCT > Cohort > Case Control > Case Series > Case Report

Or You Could...

- Let someone else do the hard work for you

Quality EBM Sources

Provide information that is:

- Filtered for relevance to clinical practice,
- Critically appraised for validity using EBM techniques, and
- Presented in a style that is easily grasped by busy clinicians.

Keep in Mind….

- There may not be any “good” evidence

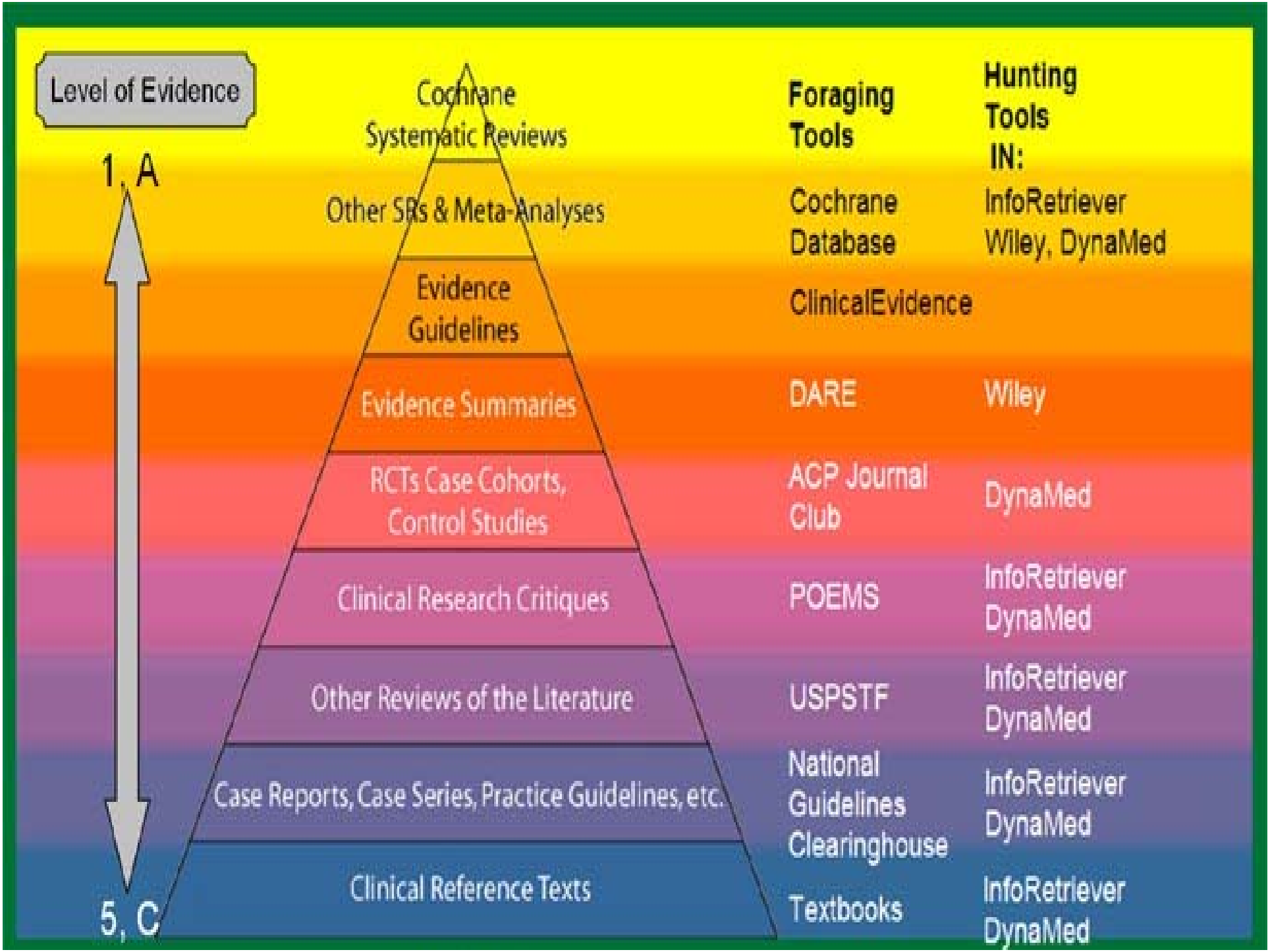
EBM Foraging Tools

- systematically surveys or reviews the literature
- filters out disease-oriented research and presents only patient-oriented research outcomes,
- demonstrates that a validity assessment has been performed
- assigns levels of evidence to individual studies,
- provides specific recommendations, when feasible, on how to apply the information, placing it into clinical context,
- comprehensively reviews the literature for a specific specialty or discipline, and
- coordinates with a high-quality hunting tool. (Slawson, et al)

EBM Hunting Tools:

These resources combine many of the foraging databases into one tool that:

- Searches multiple resources
- Organizes the results by category representing the SPECIFIC type of question you need to answer.


Level of Evidence
1, A
5, C
Cochrane Systematic Reviews
Other SRs & Meta-Analyses
Evidence Guidelines
Evidence Summaries
RCTs Case Cohorts, Control Studies
Clinical Research Critiques
Other Reviews of the Literature
Case Reports, Case Series, Practice Guidelines, etc.
Clinical Reference Texts
Foraging Tools
Hunting Tools IN:
Cochrane Database
InfoRetriever Wiley, DynaMed
ClinicalEvidence
DARE
Wiley
ACP Journal Club
DynaMed
POEMS
InfoRetriever DynaMed
USPSTF
InfoRetriever DynaMed
National Guidelines Clearinghouse
InfoRetriever DynaMed
Textbooks
InfoRetriever DynaMed

AHRQ Effective Health Care Program

- Enables physicians and patients to compare treatments for high-priority medical conditions, and see which ones have been proven to be the most effective.
- In 2005 the program released its first comparative effectiveness report on treatment alternatives for gastric reflux disease.
- In 2006 will release reports on breast cancer diagnosis, arthritis, heart disease, and Alzheimer's

ACP Journal Club

- About 100 journals systematically surveyed
- Highest-validity articles abstracted
- Structured abstracts to guide critical appraisal
- Clinical commentary

ACP Journal Club

- Limitations
  - individual article summaries may not account for the “big picture”
  - may have to read multiple items
  - No “control” over what is covered
  - $78/year ?

ACP JOURNAL CLUB

Evidence-Based Medicine for Better Patient Care

Welcome to ACP Medicine - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://www.acpmedicine.com/cgi-bin/publiccgi.pl?loginOP Go Links

Google Search New! 21 blocked Check AutoLink AutoFill Options

ACPMEDICINE
A Publication of the American College of Physicians

Main | CME | Help | Your Account | Contact us | Medscape | Log out

Prostate Cancer Search Advanced Search Search Tips

Contents Search DrugInfo

Contents
- What's New
- Clinical Essentials
- 1. Cardiovascular Medicine
- 2. Dermatology
- 3. Endocrinology
- 4. Gastroenterology
- 5. Hematology
- 6. Immunology/Allergy
- 7. Infectious Disease
- 8. Interdisciplinary Medicine
- 9. Metabolism
- 10. Nephrology
- 11. Neurology
- 12. Oncology
- 13. Psychiatry
- 14. Respiratory Medicine
- 15. Rheumatology
- 16. Womens Health
- Normal Lab Values

····›You are here: Home

MAIN | WHAT'S NEW IN ACP MEDICINE | CME

WELCOME TO ACP MEDICINE ONLINE

Weekly Curriculum

Special Announcement

- *ACP Medicine* 2006 Has Arrived!

Announcing the publication of the 2006 bound edition of ACP Medicine. Our two-volume edition is more comprehensive than ever with over 45% updated content, 3,000 pages, and 1,100 illustrations, photos, and algorithms. Special offers are available for ACP Medicine Online subscribers—click here http://www.acpmedicine.com/acp/acppromo1.htm to learn more.

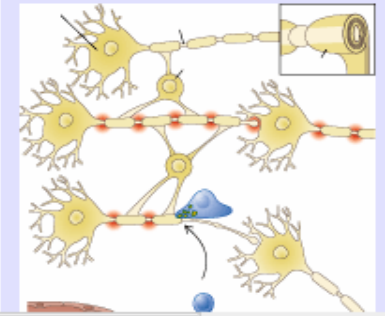
As always, please send us your comments or suggestions on how we can better serve you. You can email us at acpmedicine@webmd.net.

What's New in ACP Medicine ... October2005

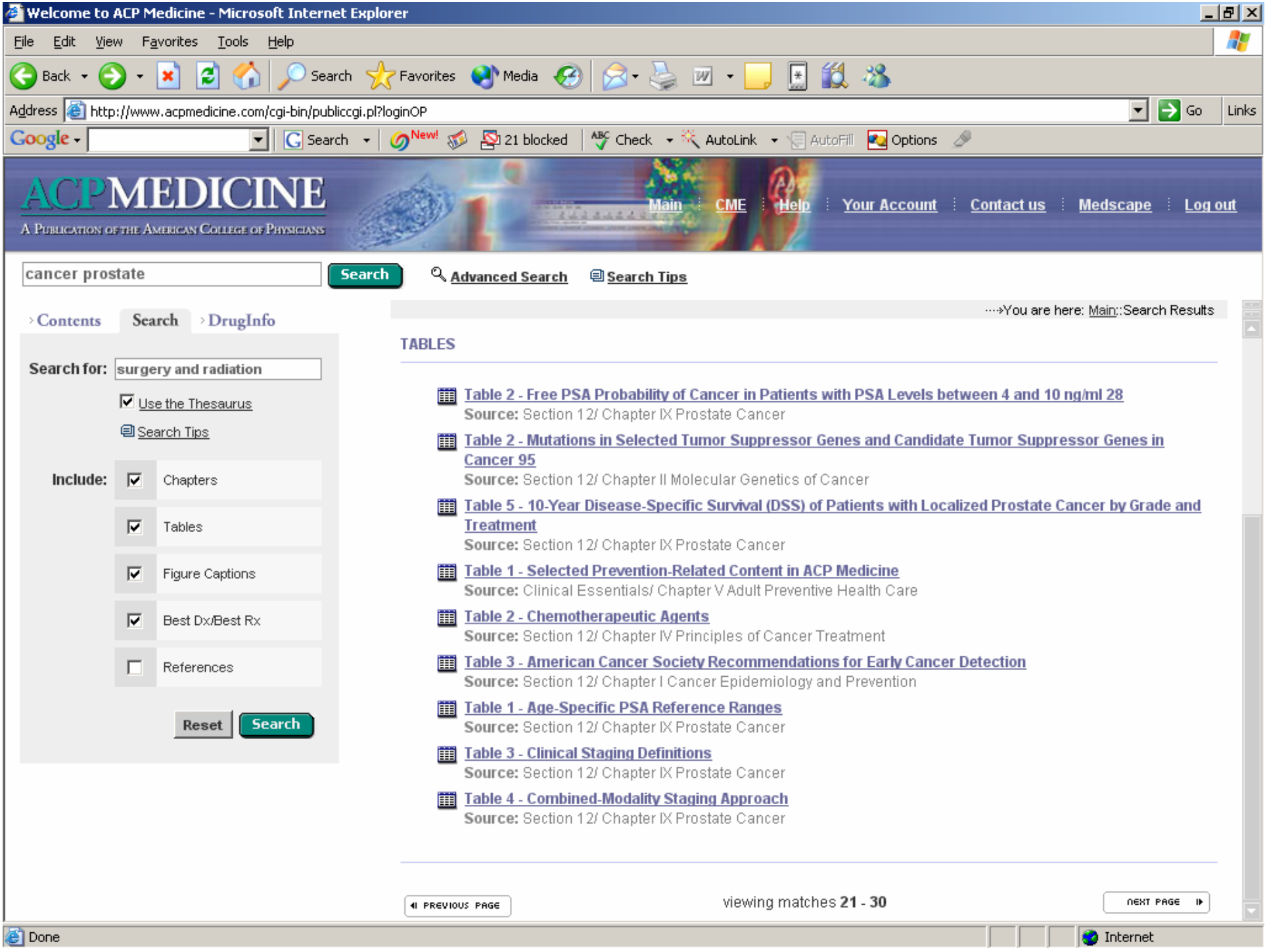
- New-Onset Seizures
- Calculating the Odds for Claudication

ACPMEDICINE
A Publication of the American College of Physicians

- EDITOR-IN-CHIEF
David C. Dale, M.D.
- FOUNDING EDITOR
Daniel D. Federman, M.D.
- ASSOCIATE EDITORS
- EDITORIAL BOARD AND CONTRIBUTORS



Done Internet


Welcome to ACP Medicine - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://www.acpmedicine.com/cgi-bin/publiccgi.pl?loginOP
Go Links
Google Search New! 21 blocked Check AutoLink AutoFill Options
ACPMEDICINE
A Publication of the American College of Physicians
Main CME Help Your Account Contact us Medscape Log out
cancer prostate
Search
Advanced Search
Search Tips
Contents Search DrugInfo
Search for: surgery and radiation
Use the Thesaurus
Search Tips
Include:
Chapters
Tables
Figure Captions
Best Dx/Best Rx
References
Reset Search
You are here: Main::Search Results
TABLES
Table 2 - Free PSA Probability of Cancer in Patients with PSA Levels between 4 and 10 ng/ml 28
Source: Section 12/ Chapter IX Prostate Cancer
Table 2 - Mutations in Selected Tumor Suppressor Genes and Candidate Tumor Suppressor Genes in Cancer 95
Source: Section 12/ Chapter II Molecular Genetics of Cancer
Table 5 - 10-Year Disease-Specific Survival (DSS) of Patients with Localized Prostate Cancer by Grade and Treatment
Source: Section 12/ Chapter IX Prostate Cancer
Table 1 - Selected Prevention-Related Content in ACP Medicine
Source: Clinical Essentials/ Chapter V Adult Preventive Health Care
Table 2 - Chemotherapeutic Agents
Source: Section 12/ Chapter IV Principles of Cancer Treatment
Table 3 - American Cancer Society Recommendations for Early Cancer Detection
Source: Section 12/ Chapter I Cancer Epidemiology and Prevention
Table 1 - Age-Specific PSA Reference Ranges
Source: Section 12/ Chapter IX Prostate Cancer
Table 3 - Clinical Staging Definitions
Source: Section 12/ Chapter IX Prostate Cancer
Table 4 - Combined-Modality Staging Approach
Source: Section 12/ Chapter IX Prostate Cancer
PREVIOUS PAGE
viewing matches 21 - 30
NEXT PAGE
Done
Internet

Section 12 / Chapter IX ***Prostate Cancer***

Table 5 - 10-Year Disease-Specific Survival (DSS) of Patients with Localized Prostate Cancer by Grade and Treatment

Grade	Prostatectomy		Radiotherapy		Conservative	
	N	% DSS (95% CI)	N	% DSS (95% CI)	N	% DSS (95% CI)
I	3,854	94 (91–95)	4,065	90 (87–92)	9,804	93 (91–94)
II	14,287	87 (85–89)	7,939	(72–79)	6,198	77 (74–80)
III	5,133	67 (62–71)	2,596	53 (47–58)	2,236	45 (40–51)

CI---confidence interval N---number of patients

Cochrane Library

- The current resource with the highest methodological standards
- For each clinical question, all of the English literature meticulously searched for randomized trials
- Large systematic reviews with valid methods + collaborative effort
- Conclusions are based on all the evidence from valid randomized trials

Cochrane Library

- Limitations
  - limited to English
  - only addresses questions amenable to randomized trials
  - most of medicine has not been studied enough to allow for conclusions
  - $235/year or abstracts only

THE COCHRANE COLLABORATION®

Medical InfoRetriever

- 104 journals surveyed for Evidence-Based Practice Newsletter
- Over 1300 article synopses
- Cochrane abstracts
- Selected evidence-based guidelines (USPSTF, CDC)
- Basic drug info
- Clinical calculators/prediction rules
- POEMS

InfoRetriever

- Comes in web, desktop and PDA versions
- Explicitly states Levels of Evidence
- Limitations
  - individual article summaries may not account for the “big picture”
  - may have to read multiple items
  - $249/year

InfoPOEM
ASA prevents stroke, not MI, in women

- **Clinical question**
  Does aspirin prevent cardiovascular disease in women?
- **Bottom line**
  Aspirin reduces the risk of stroke and transient ischemic attack in women but does not reduce the risk of myocardial infarction or cardiovascular death. The reduction in strokes over 10 years (number needed to treat = 444) must be balanced against an increase in serious gastrointestinal bleeds (number needed to treat to harm = 553). No change was seen in this large, long study regarding all-cause mortality. (LOE = 1b)
- **Reference**
  Ridker PM, Cook NR, Lee IM, et al. A randomized trial of low-dose aspirin in the primary prevention of cardiovascular disease in women. N Engl J Med 2005;352:1293-304.
- **Study design:** Randomized controlled trial (double-blinded)

Essential Principle

- Be ready to “surrender” to a higher level of evidence when it becomes available
- Do not become entrenched in what has been done for years
  - A bad idea done by a LOT of people for a LONG time, is still a bad idea

Implement Information into Practice

- Integrate information with patients values and preferences
- Patient-centered care
  - Demographics, age, socioeconomics, fear, etc.

How Does EBM REALLY Work?

- Evidence may point to surgery as better treatment but patient refuses
  - This does NOT mean EBM is out the window
  - Your job is to understand the magnitude of benefit and the level of evidence
    - Then translate into usable information for the patient

Questions?

Contact Information

Paul A. McLeod, M.D.
8880 A University Parkway
Pensacola, Florida 32514
Office: (850) 494-5939
Paul_McLeod@MED3000.com

MED3000