

Effective Teacher Series 2007-2008

Teaching Evidence-Based Medicine

(= Your Normal Clinical Practice)

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6 November 2007

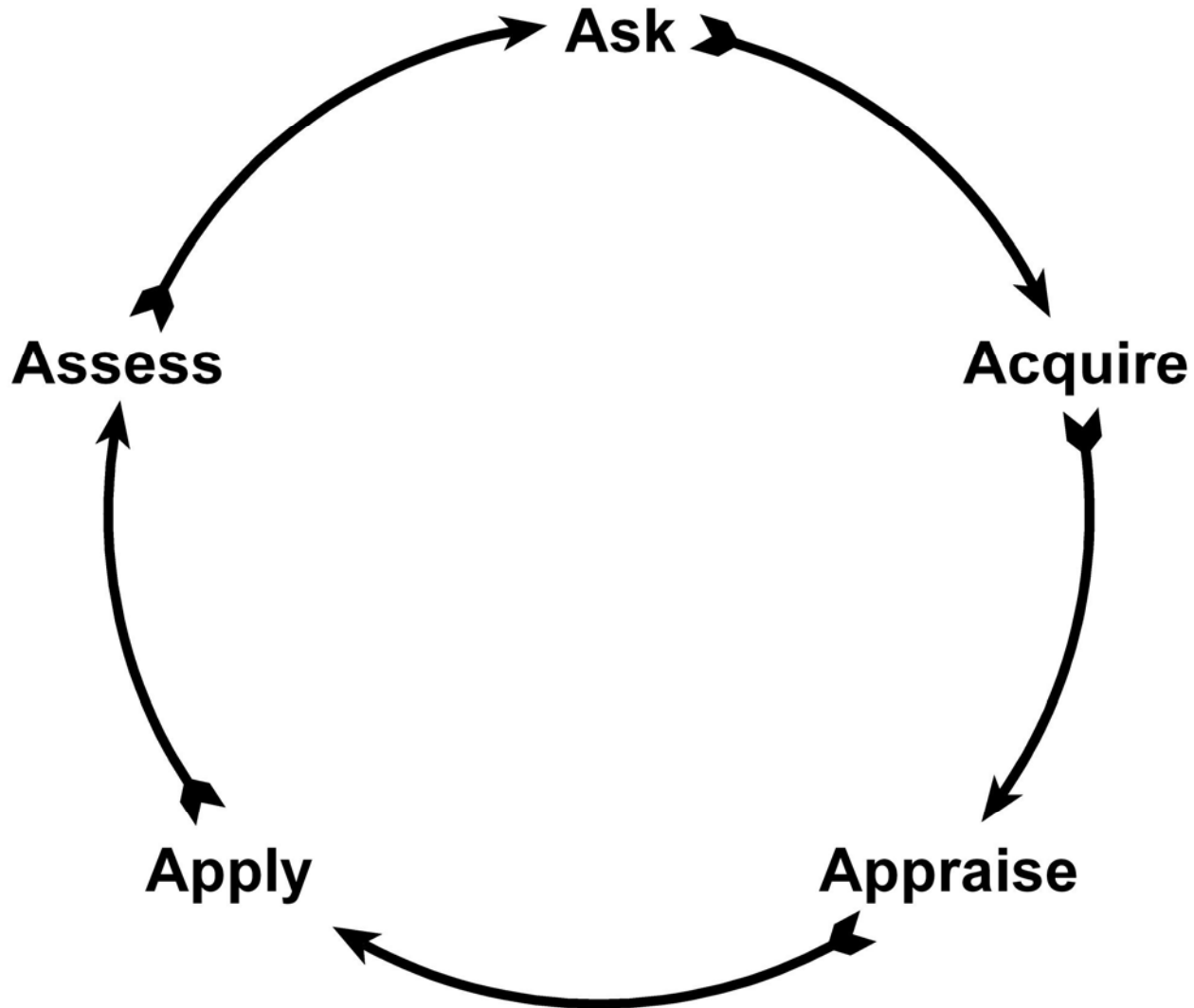
Goals & Objectives

- **Goals = Mine**
 - Show you how you already use “EBM” every day
- **Objectives = Yours**
 - Identify the 5 elements of the evidence cycle
 - Use them in the process of making a diagnosis
 - Use them to frame a clinical question
 - List local evidence-based resources
 - List resources for critical appraisal

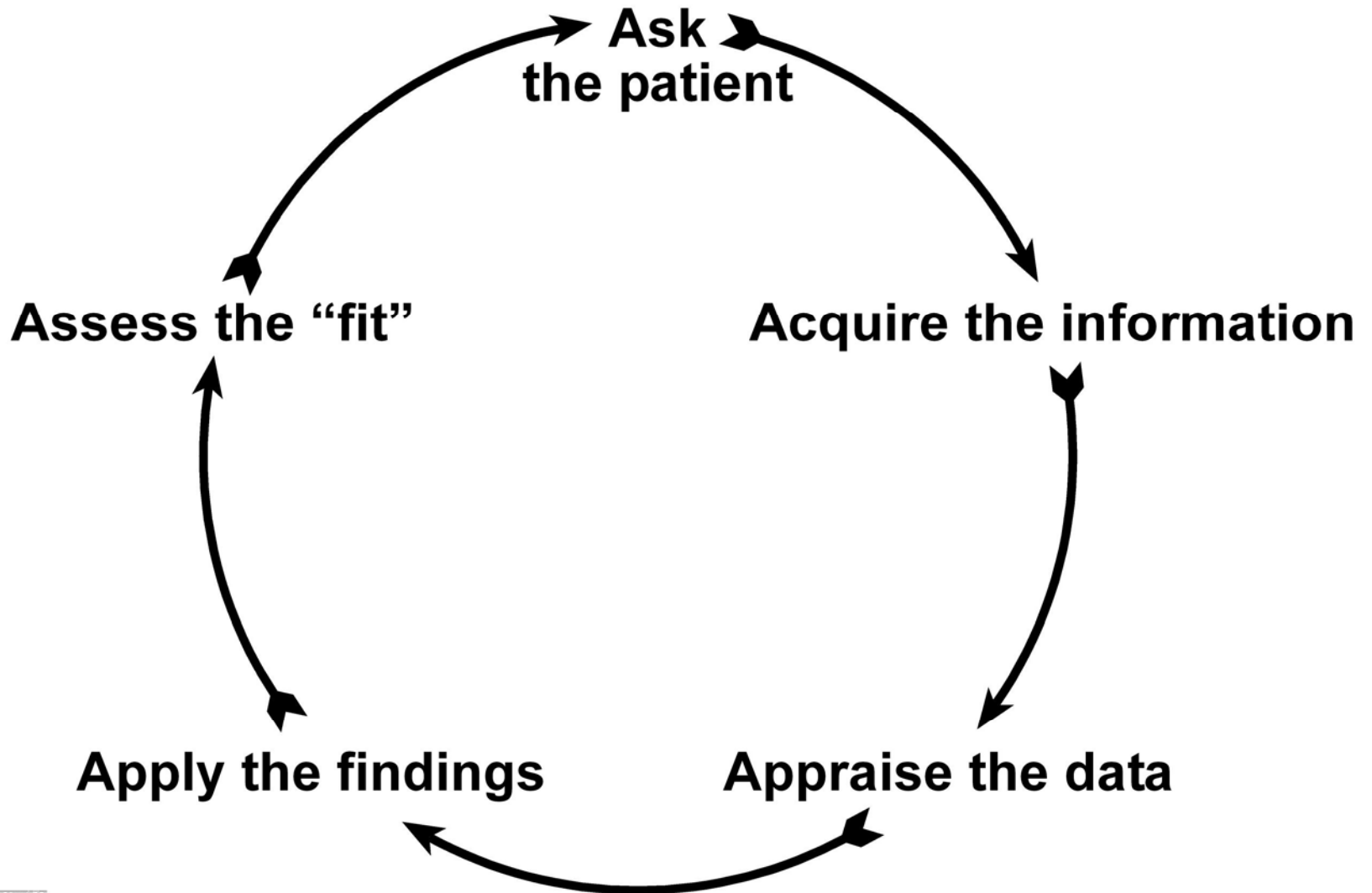
The Elements of the Evidence Cycle

- **Ask**
 - ASK a question
- **Acquire**
 - ACQUIRE the information to answer the question
- **Appraise**
 - APPRAISE the data
- **Apply**
 - APPLY the results of your appraisal
- **Assess**
 - **ASSESS** the effects of your application

The Evidence “Cycle” Elements



The Diagnosis Cycle



The Elements of the Diagnosis Cycle

- **Ask**
 - **ASK** the patient questions = take a history
- **Acquire**
 - **ACQUIRE** information = physical examination & standard tests
- **Appraise**
 - **APPRAISE** data = make a working diagnosis
- **Apply**
 - **APPLY** findings = diagnose, Rx, differential
- **Assess**
 - **ASSESS** fit = what isn't explained, what doesn't get better

Ask a question

- Ask a clinical question = What is the diagnosis?
- **Example:**
 - A febrile patient with suspected alcoholic cirrhosis has ascites
 - Lymphocytic predominance in ascitic fluid analysis
 - Is this tuberculous peritonitis?
- Ask a clinical question = What is the **treatment**?
- **Example:**
 - A patient with altered mentation from hepatic encephalopathy
 - Is lactulose the preferred therapy?

PICOT

- What is PICOT?
- What it isn't
 - PICOT isn't picot, thread-like loops on lace
 - PICOT isn't pico de gallo, an edible treat
 - PICOT isn't pico-, one trillionth e.g. picomoles, 10^{-12}
- **What it is = How to ask an “EBM answerable” question**
 - P = Patient or population
 - I = Intervention (diagnostic test)
 - C = Comparison (gold standard)
 - O = Outcome
 - T = Type of evidence (study design)

PICOT Practice – Diagnosis

- **P = Patient or population**
 - Patients with ascites
- **I = Intervention or diagnostic test**
 - Lymphocyte predominance in ascitic fluid
- **C = Comparison or gold standard**
 - Peritoneal biopsy
- **O = Outcome i.e. how good is the diagnostic test**
 - Likelihood of tuberculosis
- **T = Type of evidence**
 - Systematic review, case series (this instance)
 - Prospective blind comparison

Clinical Question – Diagnosis

- In a patient with ascites, when should the finding of lymphocyte predominance in the ascitic fluid lead to peritoneal bx for possible tuberculous peritonitis?
- Population = Patients with ascites
- Intervention or test = Lymphocyte predominance in ascitic fluid
- Comparison = Peritoneal biopsy
- Outcome = Likelihood of tuberculous peritonitis
- **Type of evidence = Systematic review or case series**

Acquiring or Accessing the Evidence

- “Evidence may be published in a wide variety of sources including original journal articles, reviews and synopses of primary studies, practice guidelines, and traditional and innovative medical textbooks.”
From: User’s Guide to the Medical Literature
- **Finding sources of evidence:**
 - Search = WWW in 2007
 - Useful filters e.g. PubMed Clinical Queries
 - Expert searchers = Librarians at UT Southwestern
- **“Useless” filters**
 - Opinion with incomplete or inaccurate references
 - Textbook references without annotation

User's Guide: A Book!

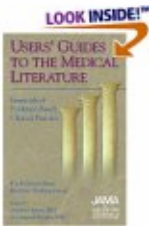
Books > "User's guide to the medical literature"

Showing 1 - 12 of 292 Results

< Previous | Page: 1 2 3 ... | Next >

Sort by

Relevance

1.  **User's Guide to the Medical Literature: Essentials of Evidence-Based Clinical Practice** by Gordon Guyatt and Drummond Rennie (**Paperback** - Aug 2001)

[4 Used & new](#) from **\$30.00**

2.  **Users' Guide to The Medical Literature: A Manual for Evidence-Based Clinical Practice (Users' Guides to the Medical Literature: a Manual for Evidence-Based Clinical Practice)** by Gordon H. Guyatt and Drummond Rennie (**Paperback** - 2002)

[Buy new:](#) ~~\$62.95~~ **\$50.36** [23 Used & new](#) from **\$41.00**

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User's Guide to the Medical Literature
A Manual for Evidence-Based Clinical Practice
Edited by Gordon Guyatt, MD and Drummond Rennie, MD
2002 (6th printing March 2007)

PubMed Clinical Queries

The screenshot shows a web browser window titled "PubMed Clinical Queries - Microsoft Internet Explorer". The address bar shows the URL "http://www.ncbi.nlm.nih.gov/entrez/query/static/clinical.shtml". The page content includes the NCBI logo, a navigation menu with options like "All Databases", "PubMed", "Nucleotide", "Protein", "Genome", "Structure", "OMIM", "PMC", "Journals", and "Books". A sidebar on the left lists various services and resources. The main content area is titled "PubMed Clinical Queries" and contains the following text:

This page provides the following specialized PubMed searches for clinicians:

- [Search by Clinical Study Category](#)
- [Find Systematic Reviews](#)
- [Medical Genetics Searches](#)

After running one of these searches, you may further refine your results using PubMed's [Limits](#) feature.

Results of searches on these pages are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

Search by Clinical Study Category

This search finds citations that correspond to a specific clinical study category. The search may be either broad and sensitive or narrow and specific. The search filters are based on the work of [Haynes RB et al.](#) See the [filter table](#) for details.

Search

Category	Scope
<input type="radio"/> etiology	<input checked="" type="radio"/> narrow, specific search
<input type="radio"/> diagnosis	<input type="radio"/> broad, sensitive search
<input checked="" type="radio"/> therapy	
<input type="radio"/> prognosis	
<input type="radio"/> clinical prediction guides	

Find Systematic Reviews

For your topic(s) of interest, this search finds citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine,

UT Southwestern Library

The screenshot shows the UT Southwestern Library website. At the top is a banner with the logo and the text "Library information that makes a difference". Below the banner is a navigation bar with options for "Change Color" (Blue/Color), "Change Font Size", "Print Page", and "Email Page". The main content area is divided into several sections:

- Need help? Ask a Librarian**: A section with a search box and a "SEARCH" button.
- Quick Links**: A dropdown menu for selecting quick links.
- Looking for...**: A dropdown menu for selecting search criteria.
- Get Help/Ask Us**: A list of links including "Ask a Librarian", "Classes", "Forms", "Individualized Training", "Tell Us What You Think Blog", and "Tutorials/Support".
- Thieme ElectronicBook Library**: A section with a "TRIAL ACCESS THROUGH NOVEMBER 30TH" banner and a "Play | Stop" button.
- Highlights**: A list of featured resources: "Thieme ElectronicBook Library (through 11/30) Trial", "EXAM MASTER OnLine", and "NCBI Bookshelf".
- Find a Book/Journal**: A section with links to "Electronic Books", "Electronic Journals (A-Z list)", "Library Catalog", "WorldCat (Other Library Catalogs)", and "More...".
- Biomedical/General Resources**: A section with links to "Blogs", "Media", "Podcasts", "Wikis", "Clinical Reference Guide", "Databases Guide", "General Reference", and "Science Reference".
- Resources by Subject**: A section with links to "Evidence Based Medicine", "Family Practice Guide", "Grants", "Practice Guidelines Guide", "Residency Guide", and "More...".
- Publication Support**: A section with links to "Citation Verification", "Electronic Dissertations", "EndNote/Reference Manager", "Instructions To Authors", "JCR (Impact Factors)", "Journal Abbreviations", and "More...".

Resources by Subject:
Evidence-Based Medicine

UT Southwestern's Web Resources – A & B

UT SOUTHWESTERN MEDICAL CENTER
Library information that makes a difference

Change Color: [Blue / Color](#) | Change Font Size: [🔍](#) [🔍](#) | [Print Page](#) | [Email Page](#)

[Home](#)

Search the Library Results
for **Evidence Based Medicine**

Web Resources

- [ACP Journal Club](#)
- [ACP PIER & AHFS DI Essentials \(STATiRef\) - Electronic Book](#)
- [Agency for Healthcare Research and Quality](#)
- [Agency for Healthcare Research and Quality \(AHRQ\) Clinical Practice Guidelines](#)
- [Basic & Clinical Biostatistics, 4th ed., 2004 \(AccessMedicine\) - Electronic Book](#)
[Location of print copies](#)

Need help?
Ask a Librarian

Search
- Enter Query Here -
Library Site

Quick Links
(e.g. [Ejournals](#), [PubMed](#), [Ovid](#))
- Select Quick Link -

Looking for...
(e.g. [journal articles](#), [print item](#))
- More -

Get Help/Ask Us
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[Tell Us What You Think](#) [Blog](#) [New](#)
[Tutorials/Support](#)

Tip: Ask a librarian!

UT Southwestern's Web Resources – B to D

Library Services

[Interlibrary Loan \(ILLiad\)](#)

[Library Toolbar](#)

[Renew Library Materials](#)

[Request a Library Card](#)

> [More...](#)

General Information

[Directions](#) | [Hours](#)

[Job Posting](#)



















[Library News](#)

[New Items Added](#)







[Off-Campus Access](#)

[Photocopying and Printing](#)












> [More...](#)

-  [Best Practice Information Sheets \(Joanna Briggs Institute\)](#)
-  [Biohumanities Podcasts](#)
-  [CINAHL Evidence Based Care Sheets](#)
-  [Clinfowiki: The Clinical Information Wiki](#)
-  [Clinical Cases and Images](#)
-    [Clinical Evidence \(BMJ\) - Electronic Book](#)
-    [Cochrane Central Register of Controlled Trials \(Wiley\)](#)
-  [Cochrane Collaboration](#)
-    [Cochrane Database of Systematic Reviews \(Wiley\)](#)
-    [Cochrane Library \(Wiley\)](#)
-    [Cochrane Methodology Register \(Wiley\)](#)
-    [Database of Abstracts of Reviews of Effects \(Wiley\)](#)
-  [Disease Control Priorities in Developing Countries, 2nd ed., 2006 \(NCBI\) - Electronic Book](#)
-  [Duke University Medical Center Library - PDA Formatted Files](#)

UT Southwestern's Web Resources – E to N

-  [Effective Clinical Practice Primers](#)
-   [Evidence Matters](#)
-  [Evidence-Based Medicine](#)
-  [Evidence-Based Medicine - Calculator](#)
-  [Evidence-based Practice Centers](#)
-  [Evidence-based Practice Centers \(EPC\) Evidence Reports](#)
-   [FIRSTConsult](#)
-  [Health Services/Technology Assessment Text - HSTAT \(NCBI\) - Electronic Book](#)
-   [Health Technology Assessment Database \(Wiley\)](#)
-  [Introduction to Evidence-Based Medicine](#)
-   [MedCalc 3000](#)
-  [National Electronic Library for Health](#)
-  [Navigating the Maze](#)
-  [Netting the Evidence: A SCHARR Introduction to Evidence Based Practice on the Internet](#)
-   [NHS Economic Evaluation Database \(Wiley\)](#)

UT Southwestern's Web Resources – P to Z

-  [PEDro: Pysiotherapy Evidence Database](#)
-  [Practicing Evidence-based Medicine](#)
-   [Principles and Practice of Pediatric Endocrinology, 1st ed., 2005 \(STATIRef\) - Electronic Book](#)
-  [SUNY Health Sciences Evidence Based Medicine Course](#)
-  [Surgical Treatment - Evidence Based and Problem-Oriented, 2001 \(NCBI\) - Electronic Book](#)
-  [Teaching/Learning Evidence-based Medicine](#)
-   [UpToDate® Online](#)
-  [Users' Guides Interactive](#)
-  [Users' Guides to Evidence-Based Practice](#)



Top

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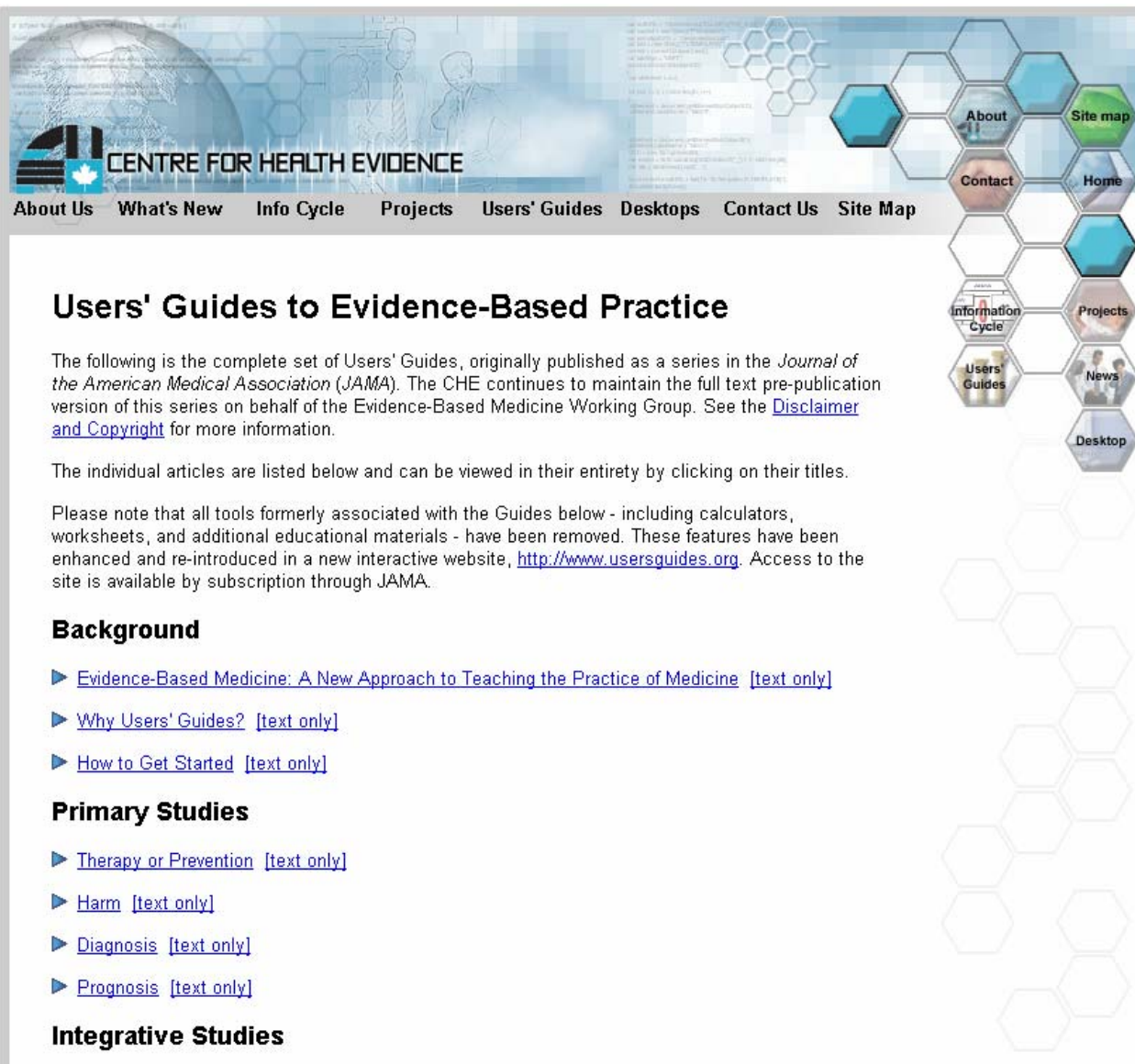
The University of Texas Southwestern Medical Center at Dallas Library

5323 Harry Hines Blvd. Dallas TX 75390. 214.648.2001

Updated on: July 21, 2006

U = UpToDate & User's Guides

User's Guides to Evidence-Based Practice



The screenshot shows the website for the Centre for Health Evidence. The header includes the logo and navigation links: About Us, What's New, Info Cycle, Projects, Users' Guides, Desktops, Contact Us, and Site Map. A vertical navigation menu on the right contains links for About, Site map, Contact, Home, Information Cycle, Projects, Users' Guides, News, and Desktop. The main content area is titled 'Users' Guides to Evidence-Based Practice' and contains the following text:

The following is the complete set of Users' Guides, originally published as a series in the *Journal of the American Medical Association (JAMA)*. The CHE continues to maintain the full text pre-publication version of this series on behalf of the Evidence-Based Medicine Working Group. See the [Disclaimer and Copyright](#) for more information.

The individual articles are listed below and can be viewed in their entirety by clicking on their titles.

Please note that all tools formerly associated with the Guides below - including calculators, worksheets, and additional educational materials - have been removed. These features have been enhanced and re-introduced in a new interactive website, <http://www.usersguides.org>. Access to the site is available by subscription through JAMA.

Background

- ▶ [Evidence-Based Medicine: A New Approach to Teaching the Practice of Medicine](#) [text only]
- ▶ [Why Users' Guides?](#) [text only]
- ▶ [How to Get Started](#) [text only]

Primary Studies

- ▶ [Therapy or Prevention](#) [text only]
- ▶ [Harm](#) [text only]
- ▶ [Diagnosis](#) [text only]
- ▶ [Prognosis](#) [text only]

Integrative Studies

Types of Evidence

- **Individuals**
 - Anecdote
 - Empiric observation
 - Case reports
 - Case series
 - N of 1 randomized controlled trial
- **Comparisons**
 - Retrospective case-control study
 - Prospective cohort study
 - Randomized controlled trial
 - Meta-analysis
 - Systematic review
- **Each can be worthwhile or not**

Validity and Bias = Critical Appraisal

- My simple guide to keep me out of trouble
- Read the abstract – Do the conclusions make sense?
- Read the methods – Can I understand them?
- Did the authors follow the “rules”?
 - Design – Randomization, blinding, controls
 - Patients – Inclusion and exclusion criteria
 - Outcomes – What was measured, in how many?
 - Statistics – Get help when I need it
- **Stop and re-consider if any answer is no**

Useful Types of Evidence

- Valid i.e. measures what it purports to measure
- Without bias i.e. no distortion of results by a neglected factor
- Relevant to your patient's diagnosis and situation
- Accessible in a complete form to permit conclusions on validity, bias and relevance
- **Findable** i.e. at your fingertips, and fast too!

Types of Evidence – Hierarchies

- **Q: What constitutes the “best evidence”?**
- **A: It depends**
- **Evidence can be minimal e.g. empiric observation of your patient, the N of 1 randomized controlled trial**
- **Evidence can be maximal e.g. derived from a systematic review of all literature in all languages**
- **Best = Valid, without bias and relevant**

Hierarchies

- **Clinical question 1 = What is the diagnosis?**
- **Clinical question 2 = What is the treatment?**

Ask a clinical question	Hierarchical approach	Answers from evidence
What is the diagnosis?	<pre>graph TD; A[Differential diagnosis] --> B[Diagnosis & prognosis];</pre>	Case(s) Controlled comparison(s) Systematic review(s)

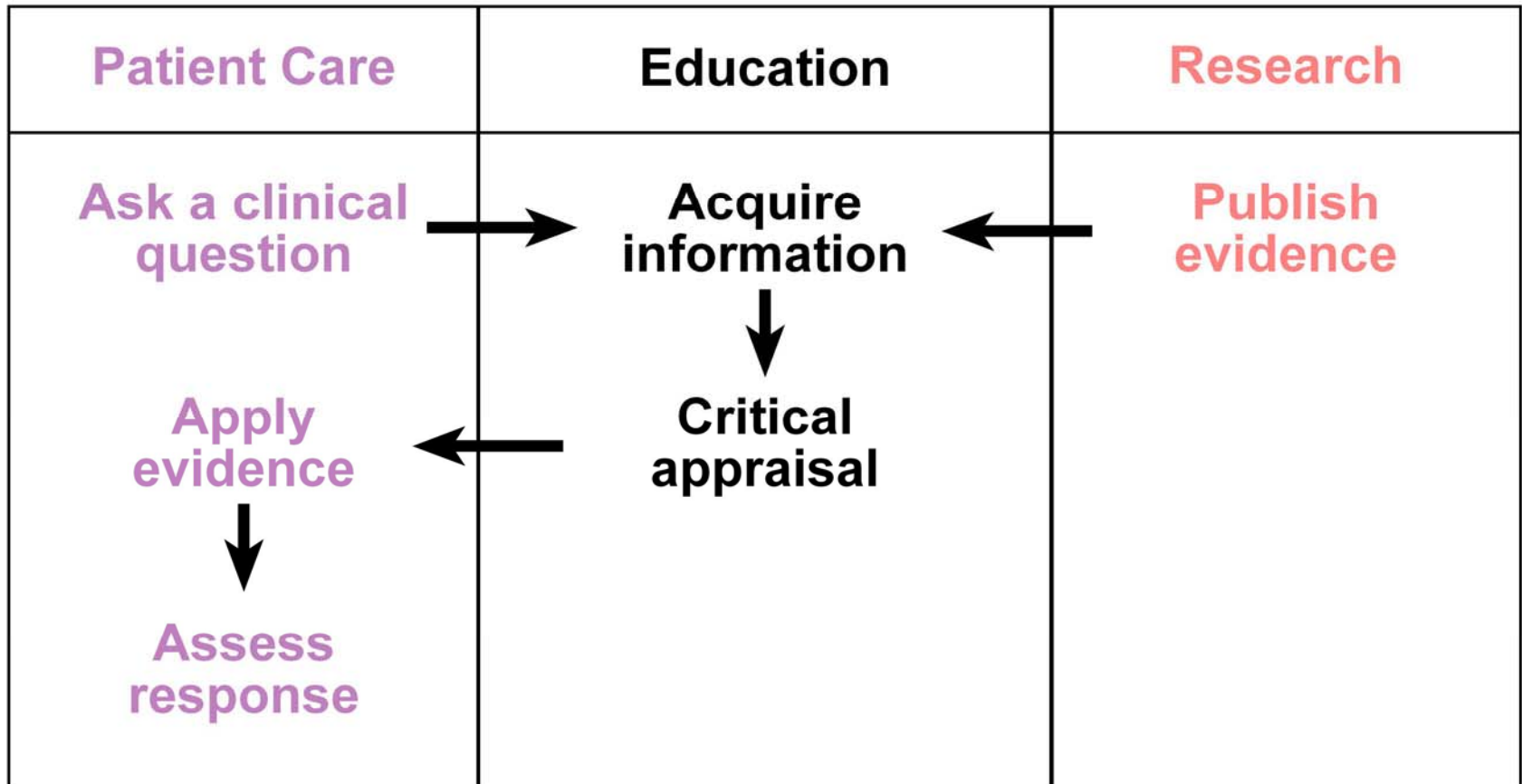
Hierarchies

- Clinical question 1 = What is the diagnosis?
- **Clinical question 2 = What is the treatment?**

Ask a clinical question	Hierarchical approach	Answers from evidence
What is the treatment?	<p>Differential diagnosis</p> <p>↓</p> <p>Diagnosis & prognosis</p> <p>↓</p> <p>Therapy & harm</p>	<p>Case(s)</p> <p>Controlled comparison(s)</p> <p>Systematic review(s)</p>

Ask a question

- **Clinical question 1 = What is the diagnosis?**
- **Clinical question 2 = What is the treatment?**



What do we need to know?

- Clinical question 1 = What is the diagnosis?
- Clinical question 2 = What is the treatment?

