



EVIDENCE BASED PRACTICE I

An Evidence Based Approach to Answering Clinical Questions

Orthopaedic Manual Physical Therapy Series
Charlottesville 2017-2018

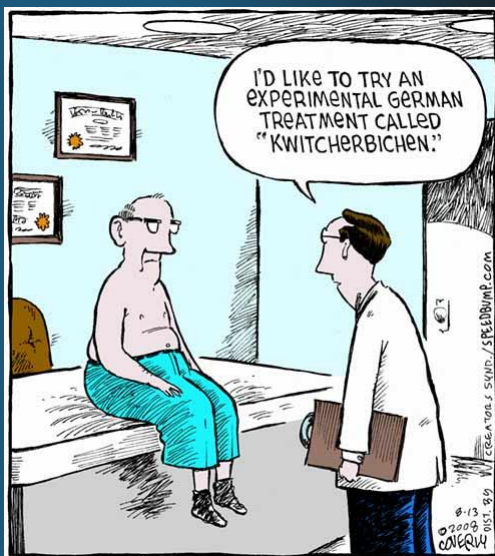
Eric Magrum DPT OCS FAAOMPT



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Evidence Based Practice

- **What is it...**
 - *What is your definition of EBP*
 - *Why we need it...*
 - *? Controversies*
 - *How to "practice" EBP with daily clinical care?*





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Evidence-based practice (EBP) is about clinical problems.

Identify 'gaps in knowledge' that arise through patient care.


Important part of a Clinical Reasoning approach to patient centered care



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Clinical Reasoning Defined

Inferential process used by practitioners to collect and evaluate data and to make judgments about the diagnosis and management of patient problems

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Clinical Reasoning Defined

Application of **cognitive and psychomotor skills** based on theory and evidence, with a **reflective thought process**, to direct individual changes in specific patient situations.

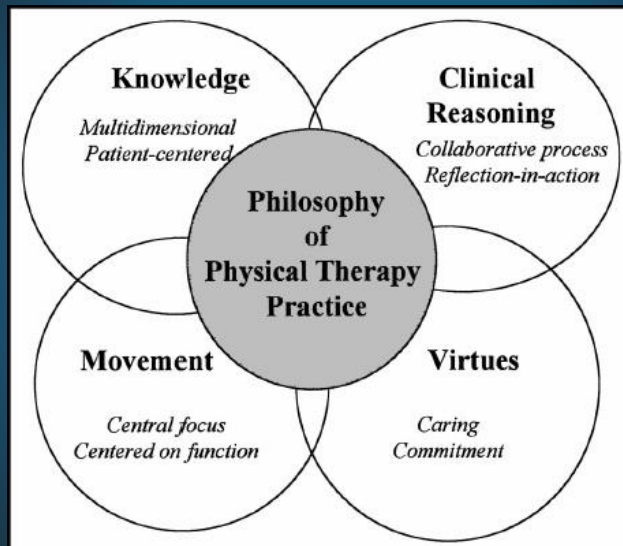


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Expert Practice in Physical Therapy

Jensen GM PT 2000



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Expert Practice in Physical Therapy

- 4 Dimensions:
 - Dynamic, multidimensional knowledge base that is **patient-centered** and evolves through **therapist reflection**
 - **Clinical reasoning process** that is embedded in a collaborative, problem-solving venture with the **patient**
 - Central **focus on** movement assessment linked to **patient** function
 - Consistent virtues seen in **caring and commitment to patients.**

Jensen GM PT 2000



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Expert Clinician



- Patient Centered Thinker
- Diagnostician
- Effective and Efficient
- Identifies personal gaps in knowledge
- Efficient strategies to search the evidence, appraise to assess clinical applicability
- Evidence Informed Decision Maker
- Reflective Practitioner



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Reflective Practitioner

- Introspective thinking
- Self directed learning
- Continual Self Assessment
- Lifelong learning process
- Inquisitive practitioner
 - Question everything you do
 - Can I do that better?
 - Why am I doing that
 - Can I have better outcomes?



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Reflective Practitioner

The PATIENT is the source of the health care practitioner's inquiry.

To maximize the benefit of self-directed learning health care practitioners will need to reflect on practice and develop a process of questioning.

It is this critical reflection on practice that forms the basis for questions that lead to locating the best current research evidence on

interventions

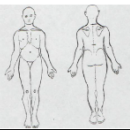


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VOMPTI_CLINICAL REASONING FORM

Student/Resident: _____
 DATE: _____ PATIENT: _____



Body Chart-Initial Hypothesis:

Outcome Tool/Measure: _____ MCID: _____
 Score: _____

SUBJECTIVE EXAM


**** Subjective Asterisks Signs/Symptoms ****
 (Aggravating/Easing Factors, Description/Location of symptoms, Behavior, Mechanism of injury)

STRUCTURE at Fault:

Joints (refer to the painful region)	Myofascial tissue (refer to the painful region)	Non Contractile tissue (refer to the painful region)	Neural tissue (refer to the painful region)	Other structures that must be examined – non MSK

Primary HYPOTHESIS after Subjective Examination: _____

Differential List: (List in ranking order to screen/clear - Rule out)



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Data obtained from patient history

Interpretation of data from patient history using evidence informed knowledge, and cognitive and metacognitive processes. Interpretation includes analysis of patient's preferences.

Planning the physical examination

↔

Interpretation of data from physical examination using evidence informed knowledge, and cognitive and metacognitive processes. Interpretation includes analysis of patient's preferences.


• Decision regarding action?

↓

Best decision regarding management

- In collaboration with the patient

Manual Therapy xxx (2013) 1-7



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The Art of Therapy

Clinical Decisions are made based on:

Evidence Based Practice

A Venn diagram with three overlapping circles. The top circle is pink and labeled 'Patient Specifics'. The bottom-left circle is light red and labeled 'Best Evidence'. The bottom-right circle is purple and labeled 'Clinical Experience'. The central area where all three circles overlap is a darker red color.

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Best Available Evidence

- Clinically Relevant Research
- Patient Centered Clinical research
- Accuracy and Precision of diagnostic tests (including the clinical examination)
- The efficacy and safety of therapeutic, rehabilitative, and preventive treatments.
- New evidence from clinical research both invalidates previously accepted diagnostic tests and treatments and replaces them with new ones that are more powerful, more accurate, more efficacious, and safer.

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Clinical Expertise

- The ability to use our **clinical skills and past experience** to rapidly identify each patient's unique health state and diagnosis, their individual risks and benefits of potential interventions, and their personal values and expectations



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- The **unique** preferences, concerns and expectations each patient brings to a clinical encounter and which must be **integrated into clinical decisions.**

Patient Values



BE UNIQUE

It makes it easier for the rest of us to identify the morons.



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EBP Fallacy

Fiction

- EBP is useless when there is no good evidence
- EBP uses algorithms that ignore clinical judgment/expertise (CPRs)
- EBP is just confusing numbers and painful stats

Fact

- EBP mean appropriately using the best available evidence to care for your patient
- Clinical reasoning must be used to decide how to use the evidence
- EBP must be individualized to specific patient



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Seven alternatives to evidence based medicine

- MDs asked colleagues what they would do to make decisions in face of clinical question with lack of evidence
- Categorized the Replies

Our deity-like status gives us the power to tell you whatever we want to, and we expect for you to believe it 100%. Don't you dare question our opinion, or you will end up in Hell!



ROTTEN CARDS USER CARD

BM/ 1999;319:1618



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Seven alternatives to evidence based medicine

- **Eminence Based Medicine**
 - Making the same mistakes with increased confidence for many years
- **Vehemence Based Medicine**
 - Yelling the evidence
- **Eloquence Based Medicine**
 - BMW, expensive suit
- **Providence Based Medicine**
- **Diffidence Based Medicine**
 - Despair = Do nothing
- **Nervousness Based Medicine**
 - Order every possible test
- **Confidence Based Medicine**
 - Separate category - Surgeons



BMJ 1999;319:1618

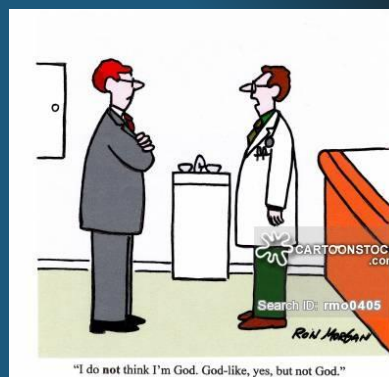


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BMJ 1999;319:1618



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5 Steps involved in the practice of EBP

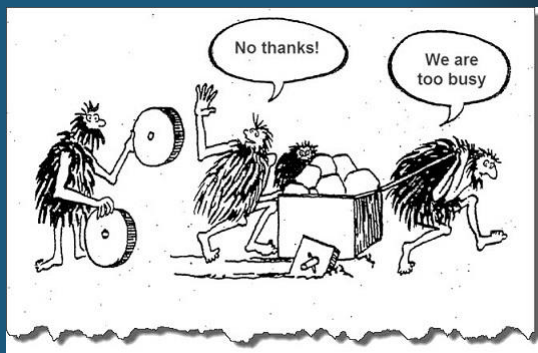
1. Convert “knowledge gap into answerable questions - **PICO**
2. **Track** down the best evidence
3. Critically **appraise** the evidence
4. **Integrate** this appraisal with clinical expertise and patient values
5. **Evaluate** performance



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? Barriers to EBP ?



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Evidence-Based Practice: Beliefs, Attitudes, Knowledge, and Behaviors of Physical Therapists

- Survey sent to 1000 APTA members
- Self report questionnaire
 - Attitudes and beliefs regarding EBM
 - Educational background/knowledge and skills assess/interpret literature
 - Level of attention to/use of literature
 - Access/availability of literature
 - Perceived barriers to using evidence in clinical practice



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EBP Barriers for PT to Overcome

- Lack of time and skills to locate, critically analyze literature
- Limited access to computers and databases
- Difficulty reading scientific literature
- Volume of literature
- Lack of administrative support
- Apprehension-“EBP will replace my clinical judgment”
- Threat to comfortable way of patient management
- Applying EBP findings to ‘real’ patient



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ELSEVIER

Physiotherapy 100 (2014) 208–219

Physiotherapy

Systematic review

Evidence-Based Practice in physiotherapy: a systematic review of barriers, enablers and interventions

Laura Scurlock-Evans^{a,*}, Penney Upton^b, Dominic Upton^c

^a Psychological Sciences, Institute of Health and Society, University of Worcester, Henwick Grove, Worcester WR2 6AJ, UK
^b Institute of Health and Society, University of Worcester, Henwick Grove, Worcester WR2 6AJ, UK
^c Faculty of Health, University of Canberra, University Dr. Bruce ACT 2617, Australia

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Evidence-Based Practice in physiotherapy: a systematic review of barriers, enablers and interventions

- **PTs better than other providers**
- **Only 26% critical review research**
- **Professional membership facilitated EBP**
- **EBP difficult to integrate into Clinical applications**
- **Previous Research experience enhanced EBP use**
- **Greater use of EBP**
 - **Journal Clubs**
 - **“Knowledge Broker”**
 - **Local EBP presentations**

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Why do PT's need EBP?

- Over 90% of PT's choice of treatment is based on:
 - What was taught during PT education
 - Information gained at continuing education courses
 - Patient experience, and....
- **Lastly on research literature**

Turner P Physio Res Internat 1997



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How do we make clinical decisions?

1. Tradition

"I've always done it this way...."

2. Authority

"Because 'x' said so...." (the guru (Aaron) told me in the continuing ed. course....)

3. Intuition

"It just seemed like the right thing to do."

4. Trial & Error/Personal experience

"If it works, I'll use it."



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The Prognosis of Ignorance is Poor

IMPROVING PATIENT CARE

Systematic Review: The Relationship between Clinical Experience and Quality of Health Care

Niteesh K. Choudhry, MD; Robert H. Fletcher, MD, MSc; and Stephen B. Soumerai, ScD

Background: Physicians with more experience are generally believed to have accumulated knowledge and skills during years in practice and therefore to deliver high-quality care. However, evidence suggests that there is an inverse relationship between the number of years that a physician has been in practice and the quality of care that the physician provides.

Purpose: To systematically review studies relating medical knowledge and health care quality to years in practice and physician age.

Data Sources: English-language articles in MEDLINE from 1966 to June 2004 and reference lists of retrieved articles.

Study Selection: Studies that provided empirical results about knowledge or a quality-of-care outcome and included years since graduation or physician age as explanatory variables.

Data Extraction: We categorized studies on the basis of the nature of the association between years in practice or age and performance.

Data Synthesis: Overall, 32 of the 62 (52%) evaluations reported decreasing performance with increasing years in practice

for all outcomes assessed; 13 (21%) reported decreasing performance with increasing experience for some outcomes but no association for others; 2 (3%) reported that performance initially increased with increasing experience, peaked, and then decreased (concave relationship); 13 (21%) reported no association; 1 (2%) reported increasing performance with increasing years in practice for some outcomes but no association for others; and 1 (2%) reported increasing performance with increasing years in practice for all outcomes. Results did not change substantially when the analysis was restricted to studies that used the most objective outcome measures.

Limitations: Because of the lack of reliable search terms for physician experience, reports that provided relevant data may have been missed.

Conclusions: Physicians who have been in practice longer may be at risk for providing lower-quality care. Therefore, this subgroup of physicians may need quality improvement interventions.

Ann Intern Med. 2005;142:260-273.
For author affiliations, see end of text.

www.annals.org

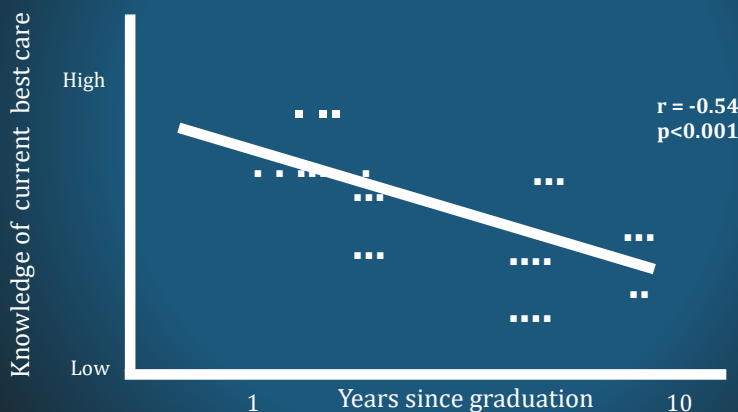


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Knowledge of what is the current best care falls off every year after graduation...

DL Sackett



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Conclusions

- **Physicians who have been in practice longer may be at risk for providing lower quality healthcare.**
- **Therefore this subgroup of physicians may need quality improvement interventions**



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Stay "Current"



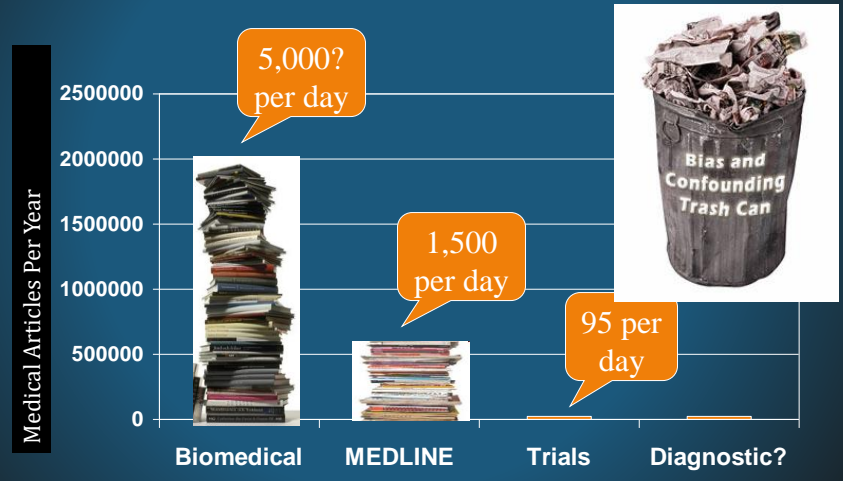
1. Too much information
2. Too much information
3. Too much information



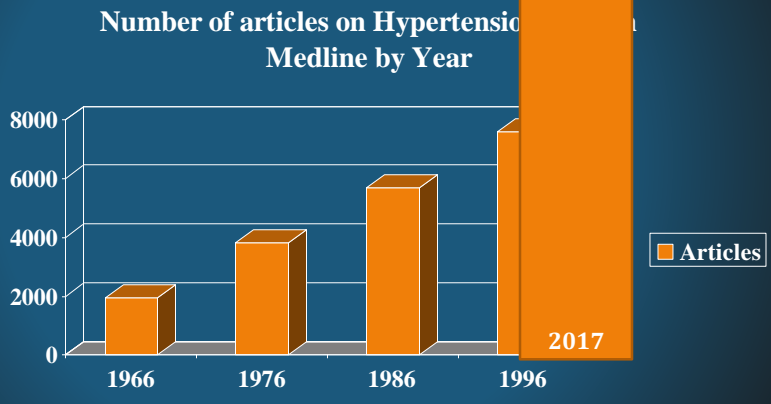
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Rule 31 – Review the World Literature Fortnightly*



Increasing Knowledge



JASPA (Journal associated score of personal angst)

J: Are you ambivalent about renewing your **JOURNAL** subscriptions?

A: Do you feel **ANGER** towards prolific authors?

S: Do you ever use journals to help you **SLEEP**?

P: Are you surrounded by **PILES** of **PERIODICALS**?

A: Do you feel **ANXIOUS** when journals arrive?

0 : Liar

1-3 : Normal range

>3 : Sick; at risk for fibromyalgia and related conditions

BMJ 1995;311:1666-1668



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Integration of Evidence into Clinical Practice

Is bed rest ever helpful?

Allen Lancet 1999

A systematic review of trials

- 10 trials of bed rest after spinal puncture
 - no change in headache with bed rest
 - Increase in back pain
- Protocols in UK neurology units - 80% still recommend bed rest after LP

Serpell M, BMJ 1998

- ...evidence of harm available for 17 years preceding...



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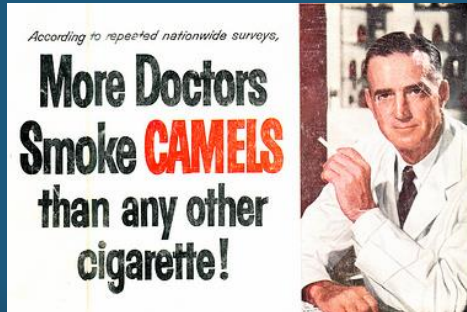
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Practice-Based Research—"Blue Highways"
on the NIH Roadmap



JAMA, January 24/31, 2007—Vol 297, No. 4

- It takes an estimated average of 17 years for only 14% of new scientific discoveries to enter day-to-day clinical practice

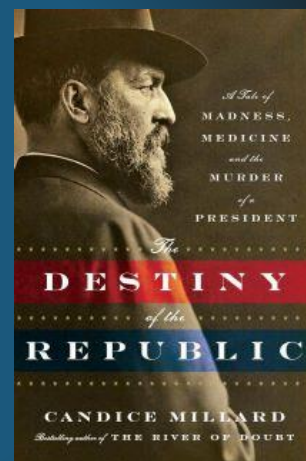


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- British surgeon Joseph Lister stands before America's elite doctors and surgeons lecturing on antiseptis, his groundbreaking theory of killing germs to prevent post-operative infection and death in patients.

Germs?

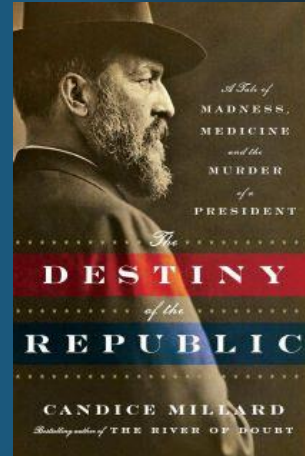


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- Though Lister's methods had already **dramatically reduced death rates in operating rooms across Europe**, in the United States he faced a **skeptical audience wary of sterilizing instruments or even washing lab coats before surgery.**

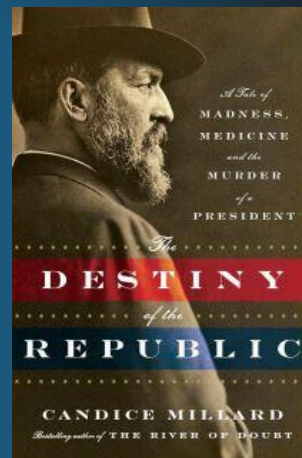
Germs?



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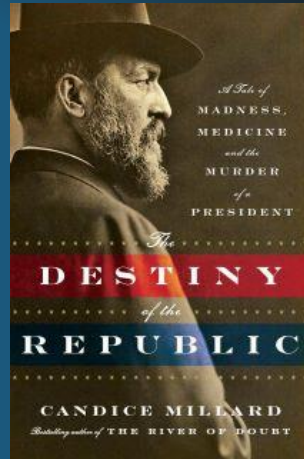
- **Arrogant** in their refusal to believe in the existence of germs, American doctors **rejected evidence that antiseptic surgical conditions increase a patient's chance of survival.**



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- **The dirty finger and unwashed probes inserted into Garfield's wound in search of a bullet sealed the president's fate, infecting an injury that Garfield would likely have survived if left untreated.**



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Is keeping up to date Mission Impossible?



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Finding and Applying Evidence During Clinical Rounds

The “Evidence Cart”

JAMA, October 21, 1998—Vol 280, No. 15

David L. Sackett, MD; Sharon E. Straus, MD; for Firm A of the Nuffield Department of Medicine

- Determine feasibility to find and apply evidence during clinical rounds, using and “Evidence Cart” containing sources of evidence
- “What’s the evidence for that diagnosis/treatment?”
- “Is there any other diagnosis/treatment that we should be considering for this patient?”



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- Consulted 98 times
- Most searches completed 10 – 25 secs
- 81% sought info that could affect diagnostic/treatment decisions
- 90% searches considered successful
- 52% confirmed management plan
- 25% led to new management decision
- 23% corrected previous management decision

Evidence Cart



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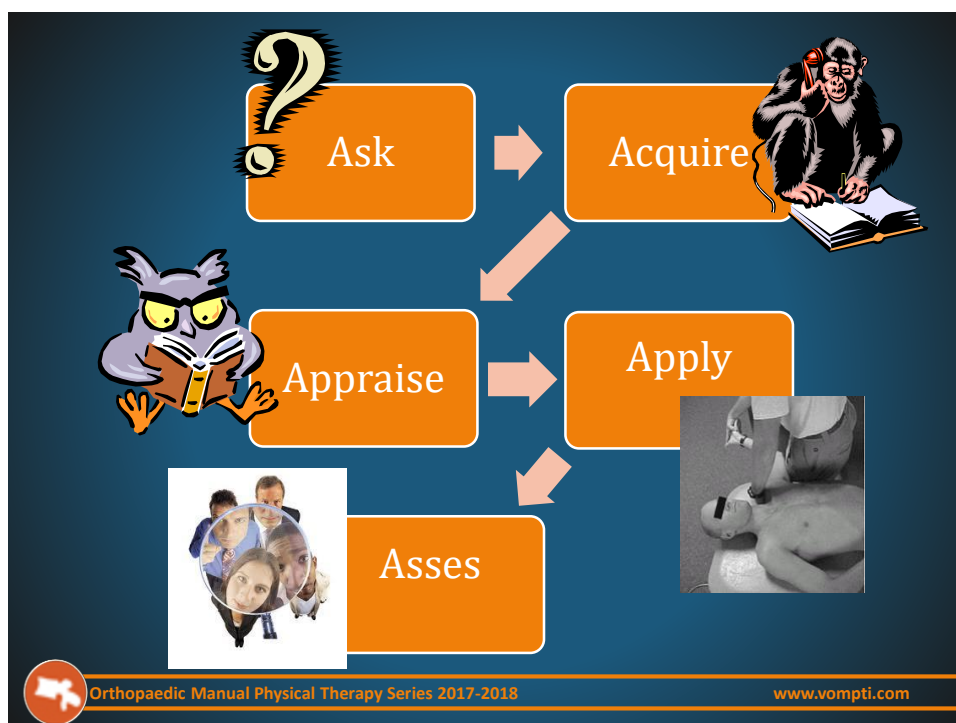
Steps involved in practice of EBP

1. Convert information needed into answerable questions - PICO
2. Track down the best evidence
3. Critically appraise the evidence
4. Integrate this appraisal with clinical expertise and patient values
5. Evaluate performance



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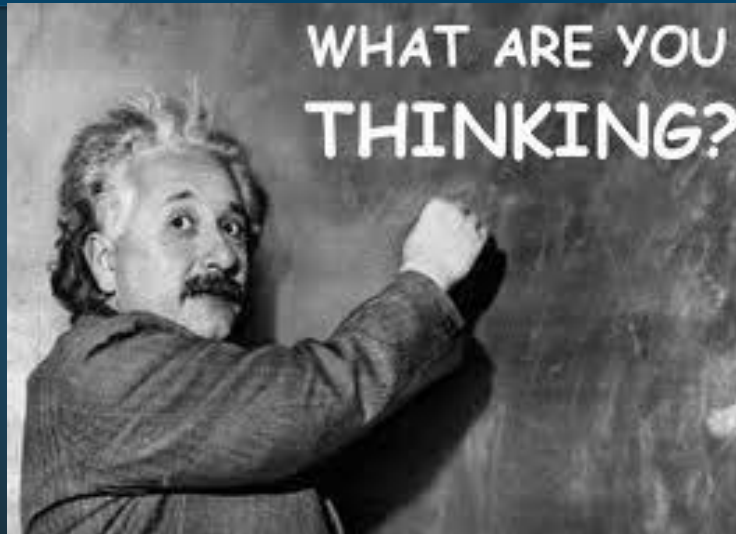
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The Clinical Question



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Recognize and Formulate Clinical Questions in Patient Care

- Pay careful attention to the “**knowledge gaps**” - questions throughout the course of care.
- Question what you do and what could be done better
 - **What is the most specific test to diagnosis a SLAP tear?**
 - **What is the best way to treat acute low back pain? HVT versus modalities?**
 - **What is the expected time for a frozen shoulder to resolve?**



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What makes a well built clinical question?

- The question should be phrased to facilitate searching for precise answer
- The question must be focused and well articulated for all 4 parts of its 'anatomy'
- The Patient or problem being addressed
- The Intervention or exposure being considered
- The Comparison intervention or exposure, when relevant
- The clinical Outcomes of interest



Framing a Clinical Question

P Patient
I Intervention
C Comparison
O Outcome



P = Patient or problem

- How would you **describe** a group of patients similar to yours?
- What are the most important **characteristics** of the patient?
- This may include the **primary problem**, disease, or co-existing conditions.
- Sometimes the gender, age or race of a patient might be relevant to the diagnosis or treatment of a disease.



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I = Intervention, prognostic factor

- Which main **intervention, prognostic factor**, or exposure are you considering?
- What do you **want to do** for the patient?
- Recommend **additional testing** a test?
- Surgical Recommendation?
- What **factor** may influence the prognosis of the patient?
- Age?
- Co-existing problems?



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C = Comparison

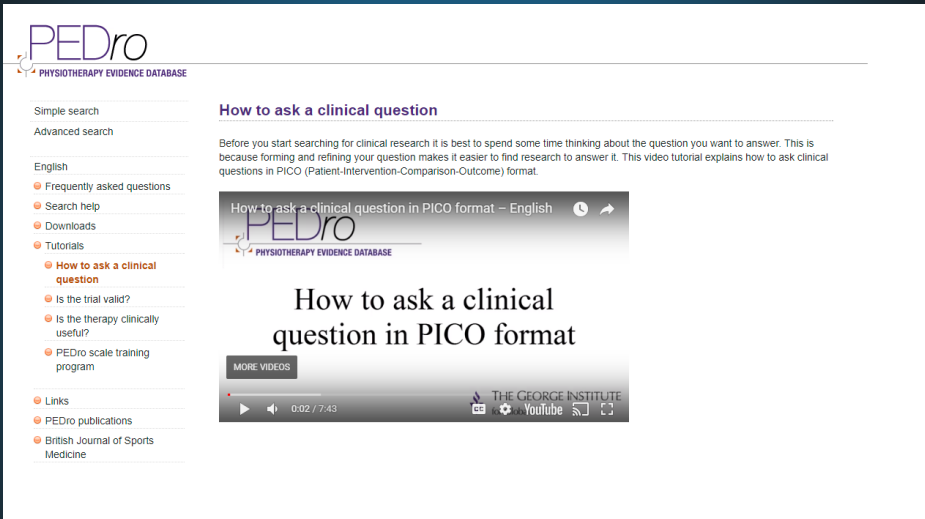
- What is the main **alternative** to compare with the intervention?
- Are you trying to **decide** between two treatment interventions, or two diagnostic tests?
- Your clinical question does not always need a specific comparison.



O = Outcomes

- What can you hope **to accomplish, measure, improve or affect?**
- What are you trying to **do for the patient?**
- Relieve or eliminate the symptoms?
- Reduce the number of adverse events?
- **Improve function** or test scores?





The screenshot shows the PEDro (Physiotherapy Evidence Database) website. The main heading is "How to ask a clinical question". Below this, there is a paragraph explaining that before searching for clinical research, it's best to spend time thinking about the question. A video player is embedded, showing a video titled "How to ask a clinical question in PICO format" with a duration of 0:02 / 7:43. The video player includes a play button, a progress bar, and a "MORE VIDEOS" button. The website's navigation menu on the left includes options like "Simple search", "Advanced search", "English", "Frequently asked questions", "Search help", "Downloads", "Tutorials", "Links", "PEDro publications", and "British Journal of Sports Medicine".



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EBP – case Example

- **34 yo female runner** with anterior knee pain; training for marathon in 3 weeks.
- Presents with lateral **retro patellar pain** aggravated with stair climbing, squats, running > 10 miles
- Gradually getting worse over past 3 weeks as training has increased.
- Pt very distressed about pain and possibility of no being able to **complete marathon**.
- Objective findings: Tender to palpation ITB insertion, lateral retinaculum. **Excessive pronation** mid to terminal stance (run>walk). Pain with step down – moderate **dynamic valgus**.



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Clinical Question

- In a **female runner** with **anterior knee pain** - Would foot **orthotics** decrease symptoms, and **increase function (run)** in the **short term**?



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	P atient or Problem	I ntervention (a cause, prognostic factor, treatment, etc.)	C omparison Intervention	O utcomes
Tips for Building	Starting with your patient, ask "How would I describe a group of patients similar to mine?" Balance precision with brevity.	Ask "Which main intervention am I considering?" Be specific.	Ask "What is the main alternative to compare with the intervention?" Again, be specific.	Ask "What can I hope to accomplish?" or "What could this exposure really affect?" Again, be specific
Example	"In female patients with anterior knee pain ..."	"... would adding orthotics to exercise..."	"... when compared with standard therapy alone ..."	"... lead to lower faster return to running ?"



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Utilize inquisitive thought process in every clinical decision on some level

Identify "gap" in knowledge.

	<u>P</u> atient or <u>P</u> roblem	<u>I</u> ntervention	<u>C</u> omparison <u>I</u> ntervention	<u>O</u> utcomes
Tips for Building	Starting with your patient, ask "How would I describe a group of patients similar to mine?" Balance precision with brevity	Ask "Which main intervention am I considering?" Be specific	Ask "What is the main alternative to compare with the intervention?" Again, be specific	Ask "What can I hope to accomplish? Or What could this exposure effect?"
Example	In patients with lateral epicondylitis....	Would adding manipulation to modalities or injection alone....	When compared to modalities or injection alone	Reduce the number of visits to return to pain free function.
Your Patient				



Clinical Question

- Think about a recent patient or group patients
- Write down a clinical question
- PICO format



EBP II

Search for the Best Available Evidence

TRIP Database searches these simultaneously

quality of evidence

Systematic Reviews

Critically-Appraised Topics [Evidence Syntheses]

Critically-Appraised Individual Articles [Article Synopses]

Randomized Controlled Trials (RCTs)

Cohort Studies

Case-Controlled Studies Case Series / Reports

Background Information / Expert Opinion

FILTERED INFORMATION

UNFILTERED INFORMATION

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EBP III

Critically Appraise the Evidence

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EBP IV

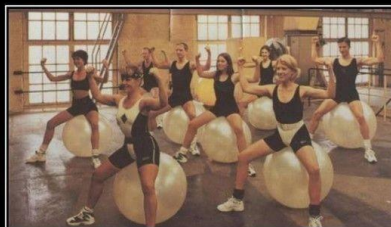
Integrating Knowledge into Practice

- Are these results appropriate for my specific patient presentation?
- Evidence Informed Decision Making



- Evaluate our performance
- Expected outcome for patient case/clinical question
- Recognize patterns for future clinical decision making
- Part of a clinical reasoning process

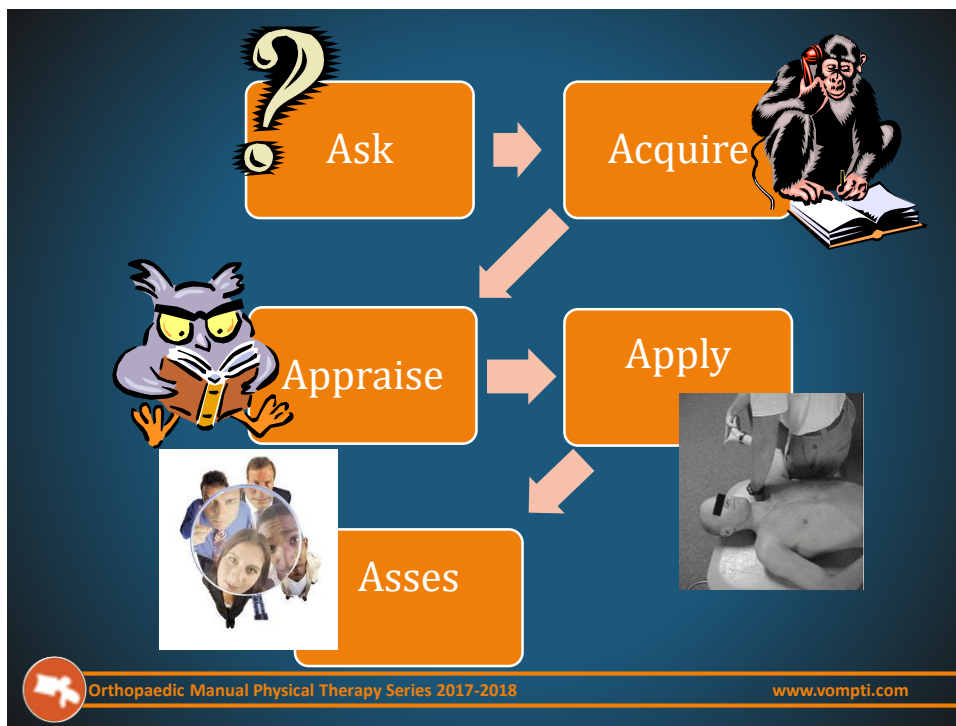
EBP V : Assess the Outcome



SWALLOWING YOUR GUM

The horrific outcome!





Researcher/Practitioner

- Every Patient is an experiment:
 - Hypothesis generation
 - Treatment
 - Re assessment
- Formulate clinical questions every day
- Write down thru out the month



INFORMATION FOR AUTHORS

Journal of Orthopaedic & Sports Physical Therapy

Case Report

A detailed description of the management of a unique clinical case. Case reports must include the following 4 sections: Background, Case Description, Outcomes, and Discussion. The description of the case includes the relevant patient characteristics, examination/evaluation, diagnosis, and a description of the interventions that were provided. Manuscripts describing the management of a small group of similar patients are also considered in this category and should be formatted accordingly.

Resident's Case Problem

A report on the process and logic associated with differential diagnosis (ie, clinical decision making). The Background section includes general clinical or research information pertinent to the case. The Diagnosis section provides patient characteristics and history. It then details the examination and evaluation process leading to the working diagnosis and the rationale for that diagnosis, including a presentation of medical imaging studies and the results of other clinical tests. Interventions used to treat the patient's condition and the outcome of treatment may also be briefly described at the end of the Diagnosis section; however, the focus of the resident's case problem should be on the diagnostic process. The Discussion section offers a scholarly, critical, and referenced analysis of how the diagnosis guided the care of the patient.



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Build a Database – Manage Resources

The screenshot displays a web-based database management system. At the top, there is a search bar and navigation tabs. Below the search bar, there are several sections:

- Using PubMed:** A section with links for PubMed, PubMed Central, and other resources.
- My Bibliography:** A section showing a list of articles. The list includes columns for 'Added', 'Status', and 'Date Added'. The articles listed are:
 - Roby DA, et al. The effect of foot orthotics on patients with chronic ankle instability. *J Am Podiatr Med Assoc* 2007; 97(1):13-20. Review. PubMed PMID: 1718922.
 - Hickbart T, Hanel J. Anterior positional fault of the tibia after sub-acute lateral ankle sprains. *Man Ther* 2008; 13(1):13-7. Epub 2008 Dec 28. PubMed PMID: 1718923.
 - Mekjavic I, Knapik G, Knapik G, Sarda E, Benincasi H, et al. Balance training improves function and postural control in people with chronic ankle instability. *Med Sci Sports Exerc* 2008; 40(4B):1410-8. PubMed PMID: 1878992.
 - Serna M, Nalacola CG, Liu TL, Meehan PD. Effect of foot orthotics on single- and double-limb dynamic balance tasks in patients with chronic ankle instability. *Foot Ankle Spec* 2008; 3(2):7. PubMed PMID: 1925775.
 - Holmes S, DeBartolo E. Treatment of chronic ankle instability with chronic ankle instability. *Sports Med* 2009; 39(3):207-24. doi: 10.2165/00007258.200939035-00003. Review. PubMed PMID: 1925676.
 - Gillette PA, Taylor BL, Okamoto J. Bracing does not improve dynamic stability in chronic ankle instability subjects. *Phys Ther Sport* 2010; 11(1):3-7. Epub 2009 Dec 5. PubMed PMID: 20120116.
- Collections:** A section showing a table with columns for 'Collection Name', 'Items', 'Privacy', and 'Type'. The table lists:
 - My Bibliography: 15 items, Private, Standard
 - Other Citations: 0 items, Private, Standard



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How we break the trend

PTs are:

- Effective and Efficient
- Musculoskeletal Specialists
- Expert diagnosticians
- Students of the most up-to-date therapy & evidence
- Able to identify personal gaps in knowledge and seek out avenues of improvement



Expert Clinician

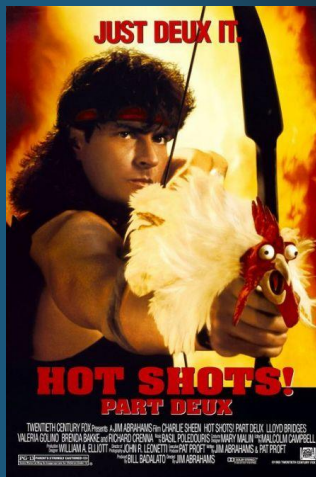


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Next Month: Part Deux

- How to efficiently Search the literature to answer your clinical question
- Build and manage your EBP database



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