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Tips for Teaching EBM in the Busy Clinical Setting

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Tips for teaching EBM in the busy clinical setting

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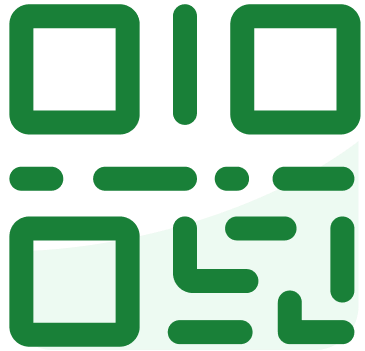
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College of Osteopathic Medicine

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What is your current work role?



① Start presenting to display the poll results on this slide.

What will we discuss today...



What is Evidence-based medicine?



What are the steps of Evidence-based medicine?



Why is it important to teach Evidence-based medicine?



How to teach Evidence-based medicine in the busy clinical setting?

What is Evidence-Based Medicine (EBM)?

Term coined by Dr. Gordon Guyatt in 1991

Editorial | March 1, 1991

Evidence-based medicine

Gordon H. Guyatt, MD, MSc

[Author, Article, and Disclosure Information](#)

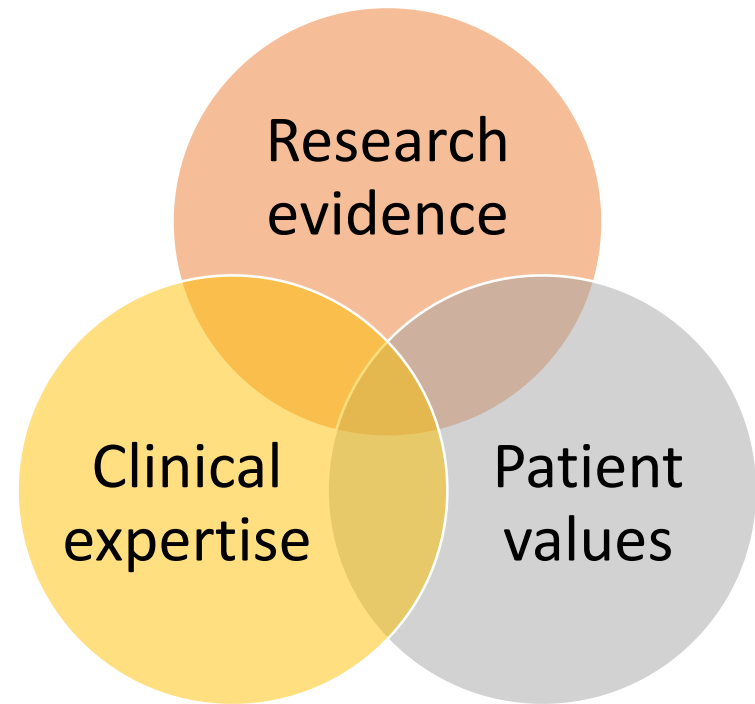
<https://doi.org/10.7326/ACPJC-1991-114-2-A16>

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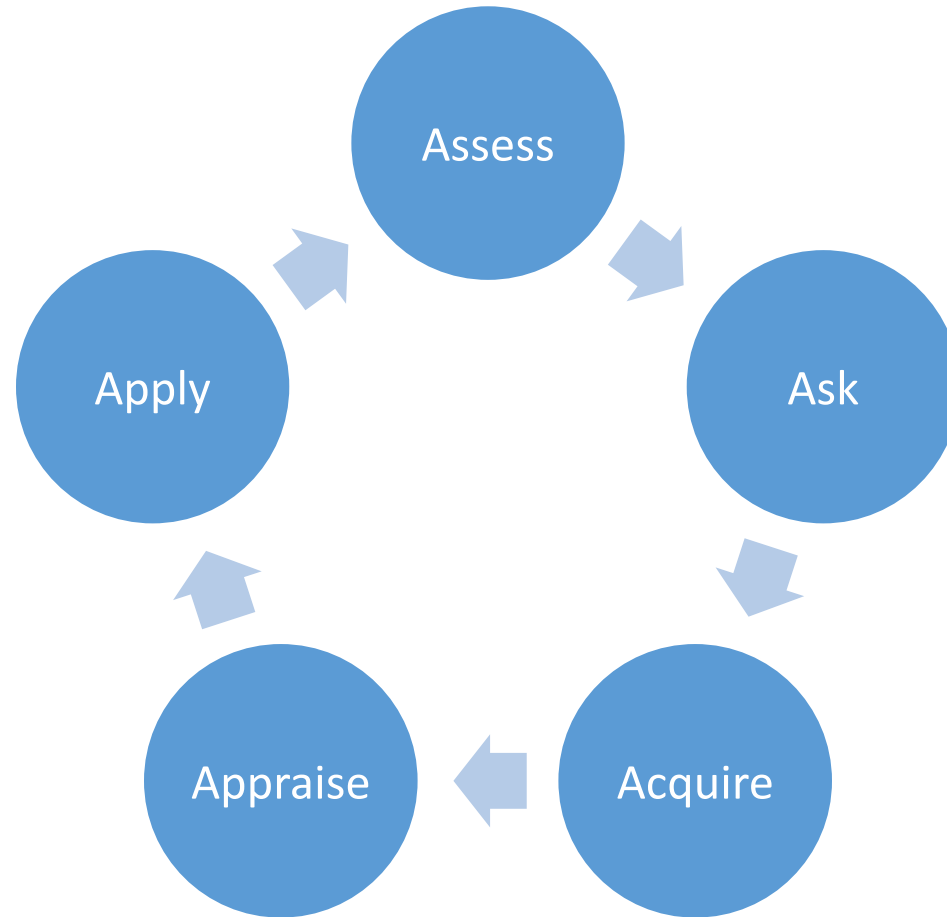


What is Evidence-Based Medicine (EBM)?

- EBM is the **conscientious, explicit, and judicious** use of current best evidence in everyday practice.
- It integrates **best research evidence** with **clinical expertise** and **patient values**.



Five Steps of EBM Practice Model



Why is it important to teach EBM?

- Clinicians have 5 - 8 questions per daily shift.
- There is an increase in the volume and speed of published new research.
- Finding valid evidence efficiently is challenging.
- It is essential to navigate through existing EBM resources, assess trustworthiness, and maximize chances of quickly finding answers based on current best evidence.



Prompt

Share, listen, and explore successful methods of learning/teaching EBM in the following settings:

- Office
- Wards/Inpatient

Best Practices

- Use principles of **adult learning** to teach EBM.
- **Clinically integrated teaching** better than standalone teaching improved knowledge, skills, attitudes, and behavior.
- Focus on interpreting **results** and understanding **guidelines** (quality for evidence, strength of recommendations), and emphasizing on **shared decision making**.

Objective: To provide a touchstone to plan and evaluate each teaching session

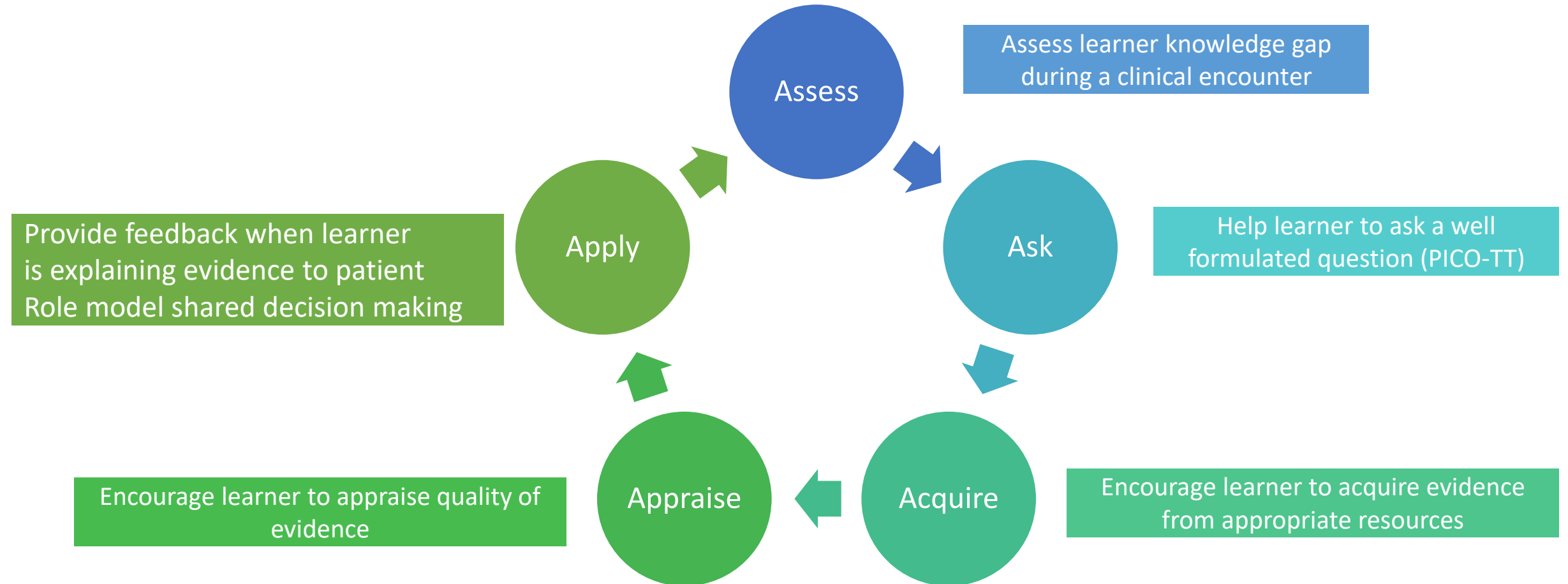
Teaching Utility:

- 1) Provides tips to help plan teaching sessions (but is not exhaustive)
- 2) Provides framework for session evaluation (if they get too detailed)
- 3) Symbolizes group culture (can add logos for fun)
- 4) Can be modified (this used to be 4Ts in June 2005)

The 6 T 's	Observations and Suggestions
T ime management (before & during)	
T eamwork (ensure engagement)	
T ools (use them)	
T riage (decide what you can't cover)	
T one (respectful, safe)	
T ake home message(s) (obligatory!)	
Other T hings...	

General Principles of teaching EBM in the clinical setting: The 6Ts

Teaching EBM in the Clinical Setting



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How often do you teach evidence-based medicine (EBM) in your clinical setting?

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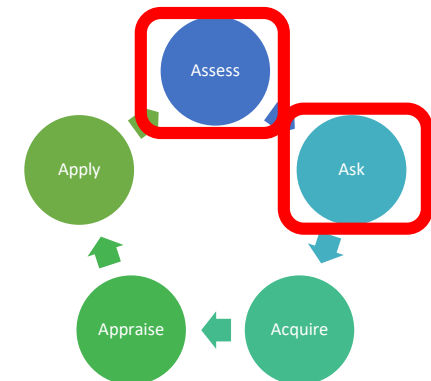


Toolkit for Clinicians

PICO-TT Tool

You are seeing a 62-year-old male with cancer who presents with recent venous thromboembolism with your medical student. The student is familiar about the data for DOAC use in patients without cancer but is less conversant when it comes to cancer patients.

PICO-TT tool	
Patient/Problem	
Intervention	
Comparison	
Outcome	
Type of question	
Type of Study	



Educational Prescription

Co-created by faculty-learner

PICO – TT

Who is responsible

Timeframe



EDUCATIONAL PRESCRIPTION

Patient's Initials/MRN: _____ Learner: _____

4-part Clinical Question

Patient or Problem:

Intervention:

Comparison:

Outcome(s):

Type of question:

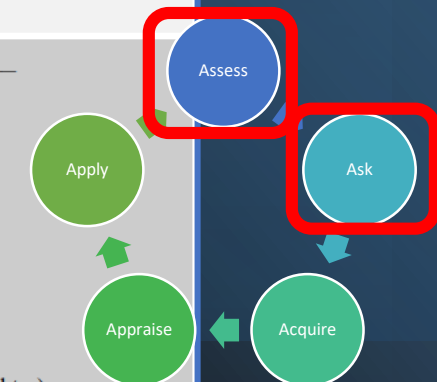
Study type:

Date and place to present findings: _____

Presentation will cover:

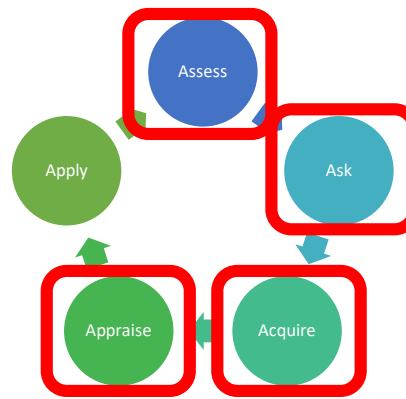
1. search strategy
2. search results
3. appraisal of the validity of the evidence
4. appraisal of the importance of the results
5. application to the patient/problem
6. your self-evaluation of this process

(Modified from <http://www.cebm.utoronto.ca/practise/formulate/eduprescript.htm>)





Teach Cards



MENINGITIS

Background Questions:

- ✓ Explain the history, exam, and lab findings of bacterial and aseptic meningitis.
- ✓ List the common pathogens and empiric treatment for adult patients with meningitis.
- ✓ Discuss the recommendations for immunizations and chemoprophylaxis for meningitis.

Foreground Questions:

- ✓ In adult patients with meningitis, do steroids improve morbidity and mortality?
- ✓ Write your own PICO question, and try to find the answer.

Teaching Pearl:

How do you discuss lumbar puncture with your patient or their family members?

What are the two groups of questions and where can I find answers?

Background Question	Foreground Question
This is a more basic question that answers who, what, where, when, why, and how.	This is a specific clinical query: PICO question . Patient population/Problem Intervention/exposure Comparison (if applicable) Outcome
Resources: American Family Physician BMJ Clinical Evidence DynaMed Plus Essential Evidence Plus UpToDate	Resources: Cochrane Database DynaMed Plus Essential Evidence Plus PubMed TRIP Database

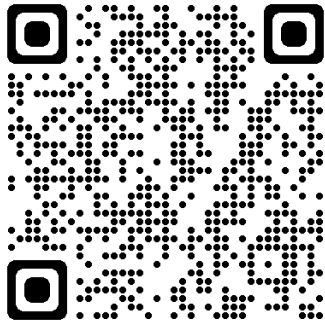
What are some uses for the cards?

- To initiate discussion among team members
- To guide independent study
- To practice evidence-based medicine
- To create a mini presentation

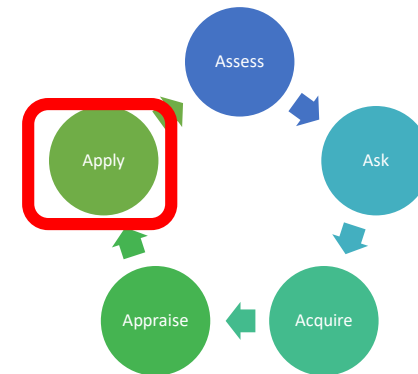
Answers are intentionally not provided.



Shared Decision Making



- [Tools – care that fits](#)
- Mayo Clinic Shared Decision-Making tools:
 - Statin use
 - Smoking Cessation Around the Time of Surgery
 - Osteoporosis medication choice
 - Diabetes medication choice
 - Depression medication choice
 - Rheumatoid arthritis medication choice
 - AND many more...



Current Risk

Intervention

Issues

Notes

Document

Benefits vs Downsides according to my personal health information



Current Risk of having a fracture

Risk for 100 people like you who **do not** medicate for bone problems.



Over 10 years

81

will not
break a bone

19

will break
a bone

Cost

Side Effects

Daily Routine

Current Risk

What is my risk of breaking a bone?

Calculate fracture risk

Enter FRAX score

Age 67

Gender M F

Population Group Caucasian

Calculation using: BMD BMI

Femoral neck BMD -2.4

Previous fracture Yes No

Parents fracture hip Yes No

Secondary osteoporosis Yes No

Glucocorticoids Yes No

Current Smoking Yes No

Alcohol 3 or more units/day Yes No

Current Risk



Future Risk of having a fracture

Risk of 100 people like you who do take Bisphosphonates.



Over 10 years

81

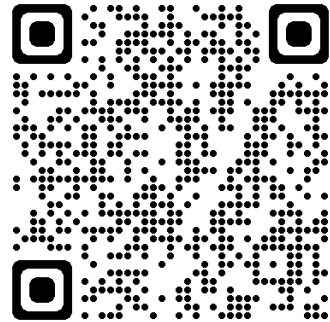
will not
break a bone

8

will avoid
breaking a bone

11

will break
a bone



Grab Bag



Number Needed to Treat

Intention-to-Treat

Absolute Risk Reduction

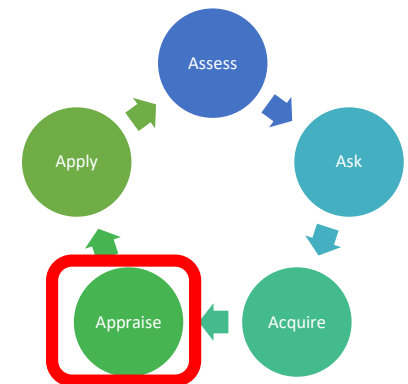
Relative Risk Reduction

Evidence Cycle

Randomization

Systematic (bias) vs. Random Error

Blinding vs. Allocation Concealment



Visual Aids

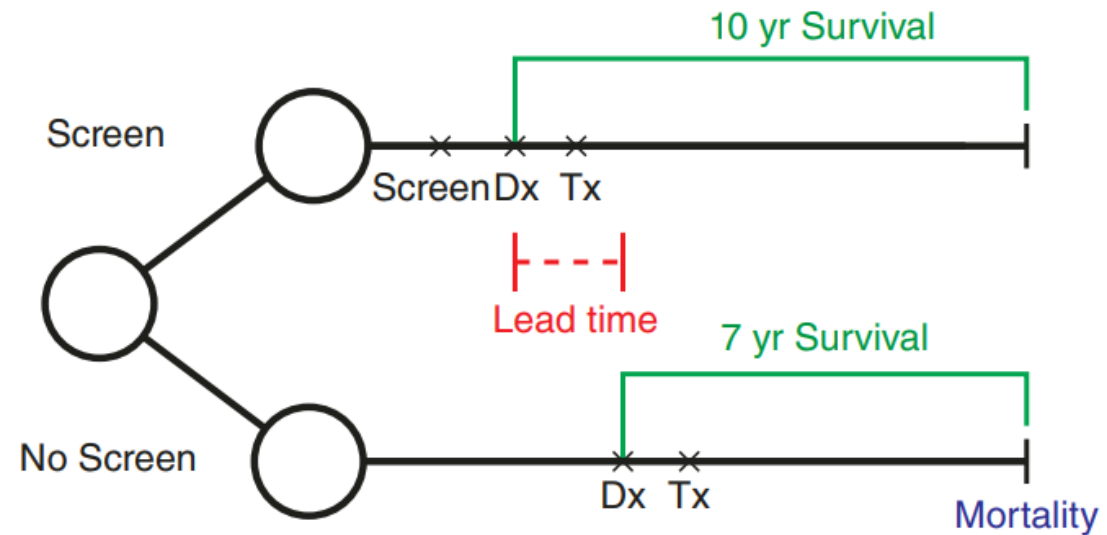
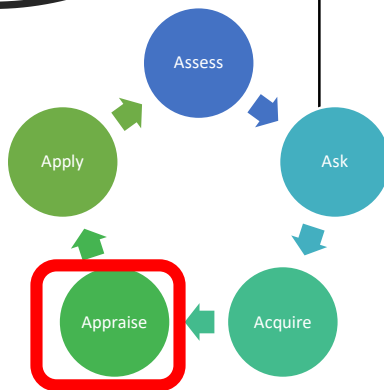
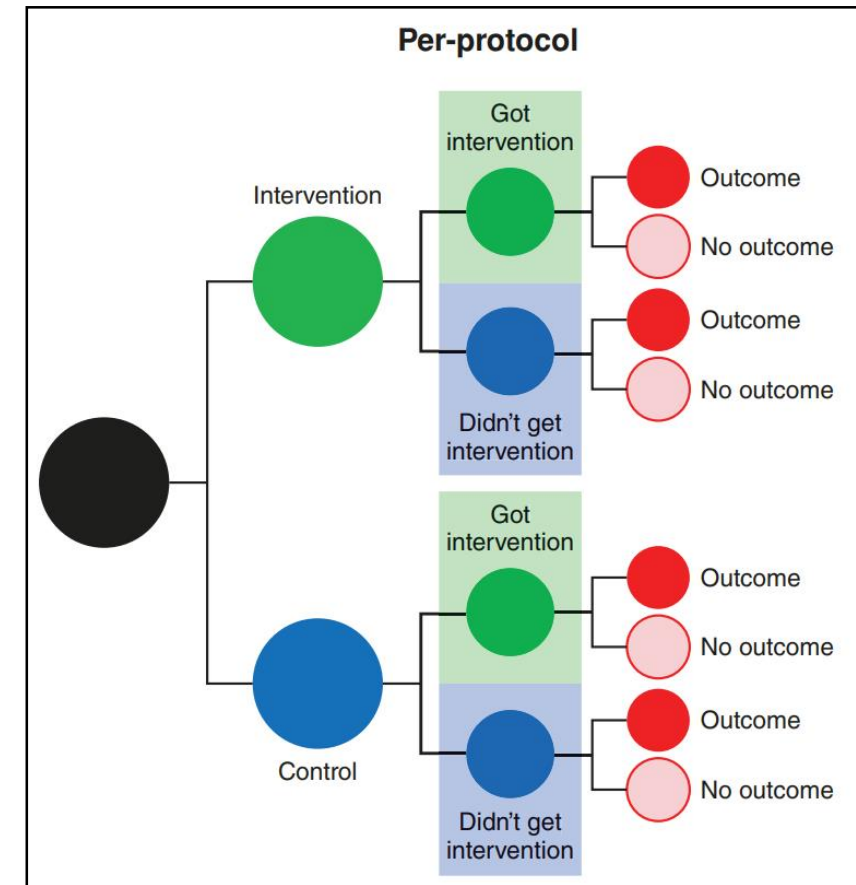
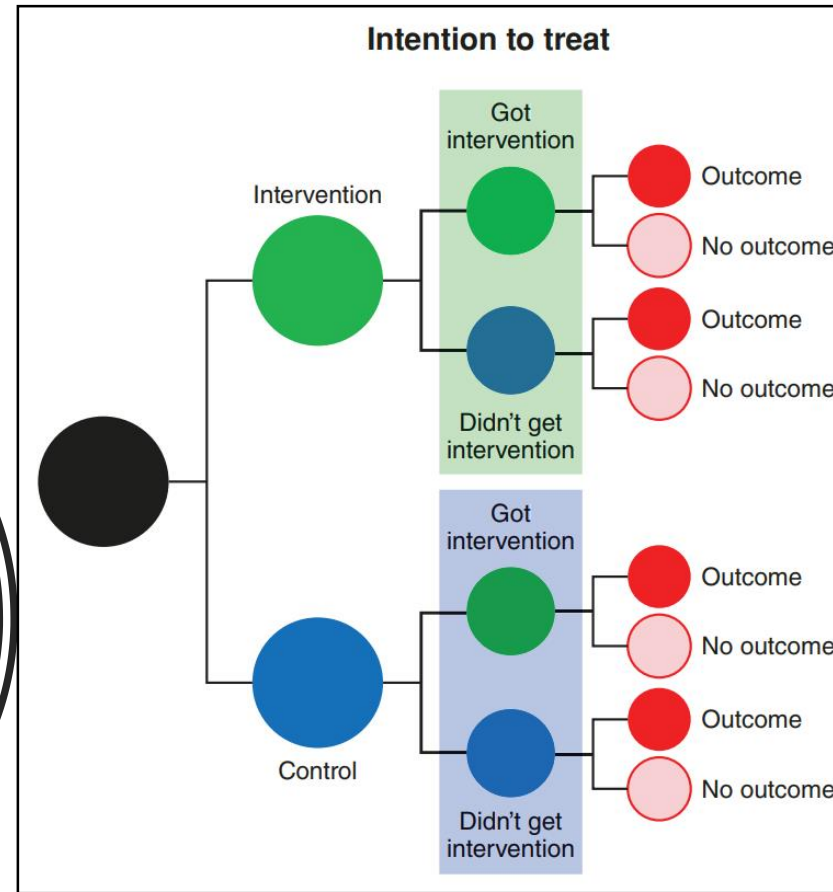
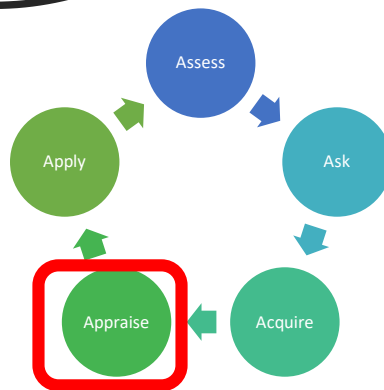


Fig. 8.2 Lead time bias, part II. If death rates are similar at the end of the study, *survival* may be longer in the screened group, but *mortality* is not improved, as demonstrated in this graphic. *Lead time* represents the additional time that the screened group was aware of the diagnosis, without a benefit in mortality

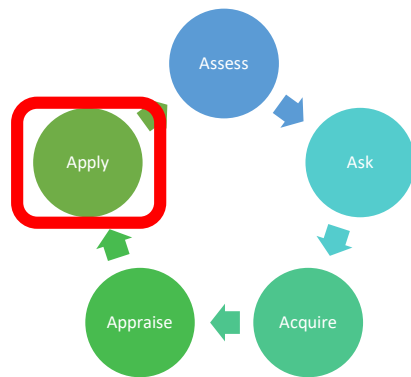


Visual Aids



Uses of Likelihood Ratios

thennt.com



LRs &
Physical
exam

This Issue

Views **57,289** | Citations **115** | Altmetric **502**

The Rational Clinical Examination

August 28, 2013

Does This Patient With Shoulder Pain Have Rotator Cuff Disease?

The Rational Clinical Examination Systematic Review

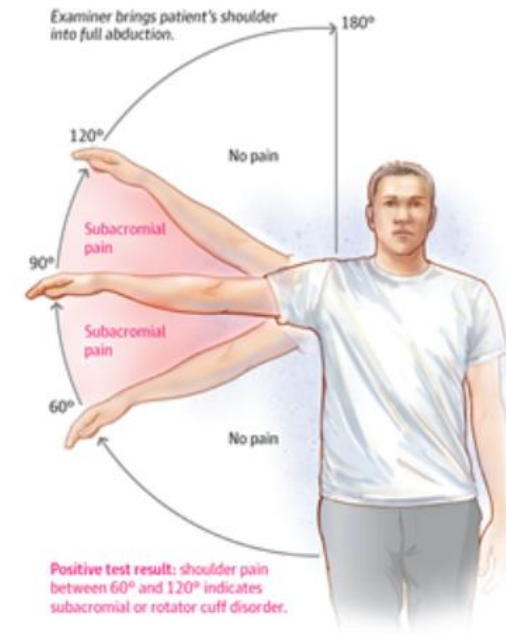
Job Hermans, MD, MSc¹; Jolanda J. Luime, PhD²; Duncan E. Meuffels, MD, PhD¹; [et al](#)

» [Author Affiliations](#)

JAMA. 2013;310(8):837-847. doi:10.1001/jama.2013.276187

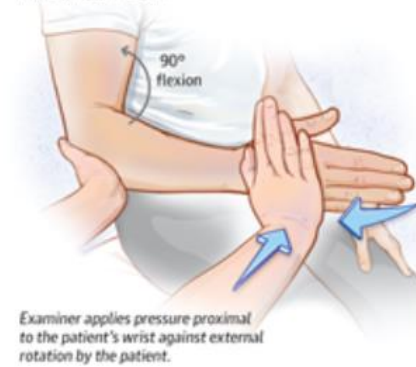
Figure 2. Recommended Clinical Tests for the Evaluation of Rotator Cuff Disease

A Pain provocation test: painful arc test



Positive test result: shoulder pain between 60° and 120° indicates subacromial or rotator cuff disorder.

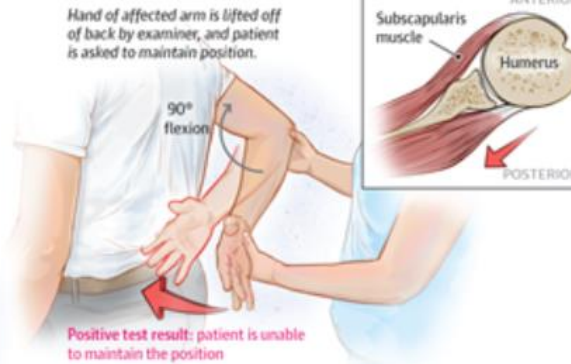
C Composite test: external rotation resistance test (infraspinatus muscle)



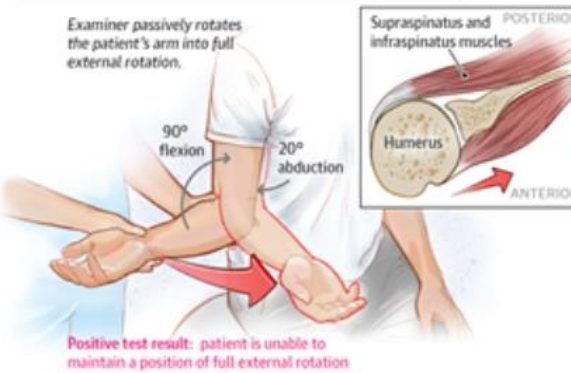
Positive test result: patient experiences either pain or weakness during the maneuver

B Strength tests

Internal rotation lag test (subscapularis muscle)



External rotation lag test (supraspinatus and infraspinatus muscles)



Drop arm test (supraspinatus muscle)



Table 3. Accuracy of Physical Examination Maneuvers for Rotator Cuff Disease or Full Rotator Cuff Tears From Quality Level 1-2 Studies ^a

Finding	Rotator Cuff Condition	Studies, No.	% (95% CI)		LR (95% CI)	
			Sensitivity	Specificity	Positive	Negative
Pain provocation tests						
Painful arc ⁴⁵	Disease	1	71 (60-83)	81 (68-93)	3.7 (1.9-7.0)	0.36 (0.23-0.54)
Cross-body adduction ⁴⁵	Disease	1	75 (64-85)	61 (46-76)	1.9 (1.3-2.9)	0.42 (0.26-0.68)
Hawkins ^{44,45,48}	Disease	3 ^b	76 (56-89)	48 (23-74)	1.5 (1.1-2.0) ^c	0.51 (0.39-0.66) ^d
Neer ^{45,48}	Disease	2 ^e	64-68	30-61	0.98-1.6	0.60-1.1
Yocum ⁴⁸	Disease	1	79 (61-97)	40 (10-70)	1.3 (0.75-2.3)	0.53 (0.17-1.7)
Passive abduction ⁴⁸	Disease	1	74 (54-93)	10 (0-29)	0.82 (0.58-1.1)	2.6 (0.35-20)
Strength tests						
External rotation lag ⁴⁷	Full tear	1	47 (21-71)	94 (85-100)	7.2 (1.7-31)	0.57 (0.35-0.92)
Internal rotation lag ⁴⁷	Full tear	1	97 (88-100)	83 (70-96)	5.6 (2.6-12)	0.04 (0.0-0.58)
Drop arm ⁴⁵	Disease	1	24 (13-34)	93 (85-100)	3.3 (1.0-11)	0.82 (0.70-0.97)
Dropping sign ⁴⁷	Full tear	1	73 (51-95)	77 (62-92)	3.2 (1.6-6.5)	0.35 (0.15-0.83)
Gerber (lift-off test) ^{44,48}	Disease	2 ^e	34-68	50-77	1.4-1.5	0.63-0.85
Composite test for pain or weakness						
External rotation resistance ^{44f}	Disease	1	63 (49-77)	75 (69-82)	2.6 (1.8-3.6)	0.49 (0.33-0.72)
Full can ⁴⁵	Disease	1	75 (64-85)	68 (54-83)	2.4 (1.5-3.8)	0.37 (0.23-0.60)
Patte ⁴⁸	Disease	1	58 (36-80)	60 (30-90)	1.4 (0.62-3.4)	0.70 (0.34-1.5)
Empty can (Jobe) ^{44,45,48}	Disease	3 ^b	71 (49-86)	49 (42-56)	1.3 (0.97-1.6) ^c	0.64 (0.33-1.3) ^g
Resisted abduction ⁴⁸	Disease	1	58 (36-80)	20 (0-45)	0.72 (0.55-8.1)	2.1 (0.55-8.1)
Combinations of findings						
Hawkins and Neer (both positive) ⁴⁶	Disease	1	78 (66-90)	50 (22-78)	1.6 (0.87-2.8)	0.43 (0.20-0.96)

Abbreviation: LR, likelihood ratio.

^a See eTable 2 in Supplement for results evaluated in 1 or more studies.

^b Random-effects univariate estimates used because there were only 3 studies.

^c $I^2 = 45\%$, $P = .16$.

^d $I^2 = 0\%$, $P = .75$.

^e Range because the test was only evaluated in 2 sets of data.

^f Described as Patte test in Salaffiet al, ⁴⁴ executed as external rotation resistance test.²⁵

^g $I^2 = 70\%$, $P = .04$.

LRs &
Demographics
/History

Original Investigation

August 17, 2020

Diagnostic Accuracy of Symptoms, Physical Signs, and Laboratory Tests for Giant Cell Arteritis

A Systematic Review and Meta-analysis

Kornelis S. M. van der Geest, MD, PhD¹; Maria Sandovici, MD, PhD¹; Elisabeth Brouwer, MD, PhD¹; [et al](#)

[□ Author Affiliations](#) | [Article Information](#)

JAMA Intern Med. 2020;180(10):1295-1304. doi:10.1001/jamainternmed.2020.3050

Table 2. Diagnostic Accuracy of Demographics and Symptoms

Finding by study	No. of patients (No. of cohorts)	Sensitivity (95% CI), %	Specificity (95% CI), %	Diagnostic OR (95% CI)	Positive LR (95% CI)	Negative LR (95% CI)
Demographics						
Age, y						
>60 ^a	261 (7)	96.6 (76.0-99.6)	22.6 (15.4-31.8)	8.39 (1.05-67.11)	1.25 (1.12-1.39)	0.15 (0.02-1.13)
>70 ^a	261 (7)	73.5 (49.5-88.7)	55.3 (39.2-70.3)	3.42 (1.68-6.96)	1.64 (1.29-2.09)	0.48 (0.27-0.86) ^x
>80 ^b	208 (6)	19.0 (10.4-32.0)	85.1 (73.4-92.1)	1.33 (0.62-2.86)	1.27 (0.67-2.40)	0.95 (0.84-1.09)
Male ^c	7798 (42)	31.7 (29.6-33.9)	64.9 (62.5-67.2)	0.86 (0.77-0.96)	0.90 (0.84-0.97)	1.05 (1.01-1.09)
Symptoms						
Cranial						
Headache ^d	6918 (36)	72.2 (68.3-75.8)	45.7 (39.1-52.4)	2.19 (1.72-2.78)	1.33 (1.19-1.48)	0.61 (0.53-0.70)
Temporal headache ^e	545 (4)	65.9 (37.4-86.2)	31.8 (14.1-57.1)	0.90 (0.56-1.46)	0.97 (0.82-1.14)	1.07 (0.78-1.47)
Scalp tenderness ^f	2951 (15)	38.9 (31.7-46.7)	78.9 (69.7-85.9)	2.39 (1.70-3.34)	1.85 (1.40-2.44)	0.77 (0.71-0.84)
Jaw claudication ^g	6867 (35)	37.5 (33.8-41.3)	92.3 (89.6-94.4)	7.24 (5.45-9.62)	4.90 (3.74-6.41) ^x	0.68 (0.64-0.71)
Visual disturbance ^h	3023 (25)	33.9 (29.6-38.4)	71.8 (66.7-76.4)	1.30 (1.06-1.60)	1.20 (1.04-1.39)	0.92 (0.86-0.98)
Loss of vision ⁱ	4585 (14)	21.7 (15.1-30.3)	85.3 (76.2-91.3)	1.61 (1.21-2.14)	1.48 (1.15-1.91)	0.92 (0.88-0.96)
Transient loss of vision ^j	1181 (9)	10.7 (7.1-16.0)	92.9 (86.6-96.4)	1.57 (0.88-2.82)	1.51 (0.88-2.60)	0.96 (0.92-1.01)
Double vision ^k	3799 (8)	6.5 (4.5-9.3)	96.2 (93.2-97.9)	1.76 (1.13-2.75)	1.72 (1.12-2.63)	0.97 (0.95-0.99)
Cerebrovascular accident ^l	1089 (5)	2.6 (1.3-5.1)	95.9 (89.0-98.5)	0.62 (0.23-1.63)	0.63 (0.25-1.59)	1.02 (0.98-1.06)
Systemic						
Constitutional symptoms ^m	1274 (8)	62.5 (35.5-83.5)	46.8 (29.1-65.2)	1.47 (0.89-2.41)	1.17 (1.00-1.38)	0.80 (0.56-1.14)
Malaise ⁿ	1267 (10)	55.5 (44.0-66.4)	51.7 (38.8-64.4)	1.33 (1.02-1.75)	1.15 (1.00-1.33)	0.86 (0.75-0.99)
Anorexia ^o	1932 (8)	40.2 (28.0-53.8)	74.5 (64.5-82.5)	1.97 (1.51-2.57)	1.58 (1.33-1.88)	0.80 (0.71-0.91)
Weight loss ^p	2882 (18)	39.3 (31.0-48.3)	76.7 (72.2-80.6)	2.13 (1.64-2.77)	1.69 (1.44-1.98)	0.79 (0.71-0.89)
Fever ^q	3091 (23)	26.7 (19.8-34.9)	78.0 (68.4-85.3)	1.29 (1.03-1.62)	1.21 (1.01-1.46)	0.94 (0.90-0.99)
Other						
Myalgia ^r	1855 (15)	39.8 (35.0-44.9)	57.5 (46.9-67.4)	0.90 (0.61-1.31)	0.94 (0.75-1.17)	1.05 (0.89-1.23)
PMR ^s	2814 (23)	33.4 (27.5-39.8)	74.3 (65.9-81.2)	1.45 (1.14-1.84)	1.30 (1.08-1.56)	0.90 (0.84-0.95)
Previous PMR ^t	519 (4)	19.1 (13.4-26.5)	90.8 (82.3-95.4)	2.32 (0.92-5.82)	2.07 (0.92-4.65)	0.89 (0.79-1.00)
Arthralgia ^u	656 (6)	25.4 (15.5-38.6)	73.3 (64.6-80.6)	0.94 (0.60-1.46)	0.95 (0.68-1.33)	1.02 (0.91-1.14)
Limb claudication ^{v,w}	405 (6)	19.6 (12.5-29.4)	96.7 (84.2-99.4)	7.23 (1.62-32.21)	6.01 (1.38-26.16) ^x	0.83 (0.76-0.91)

LRs &
discordant
results

JOURNAL ARTICLE

EDITOR'S CHOICE

Sensitivity of temporal artery biopsy in the diagnosis of giant cell arteritis: a systematic literature review and meta-analysis ^{FREE}

Emma Rubenstein, Carla Maldini, Solange Gonzalez-Chiappe, Sylvie Chevret, Alfred Mahr ✉

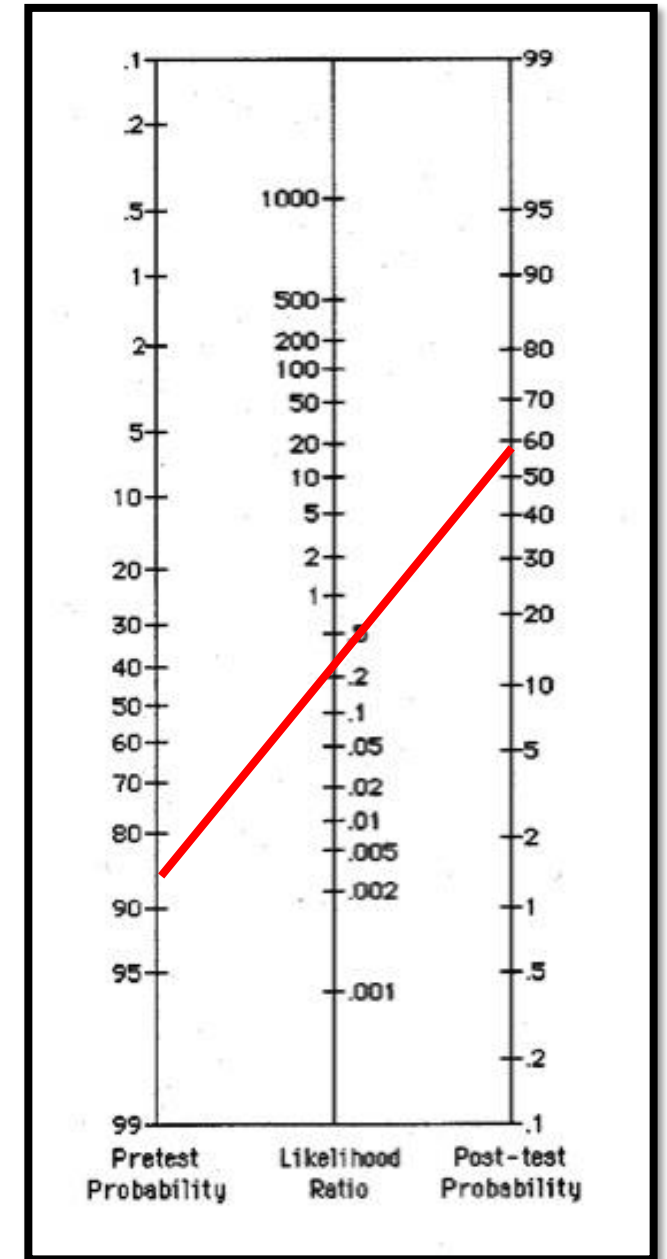
Rheumatology, Volume 59, Issue 5, May 2020, Pages 1011–1020,

<https://doi.org/10.1093/rheumatology/kez385>

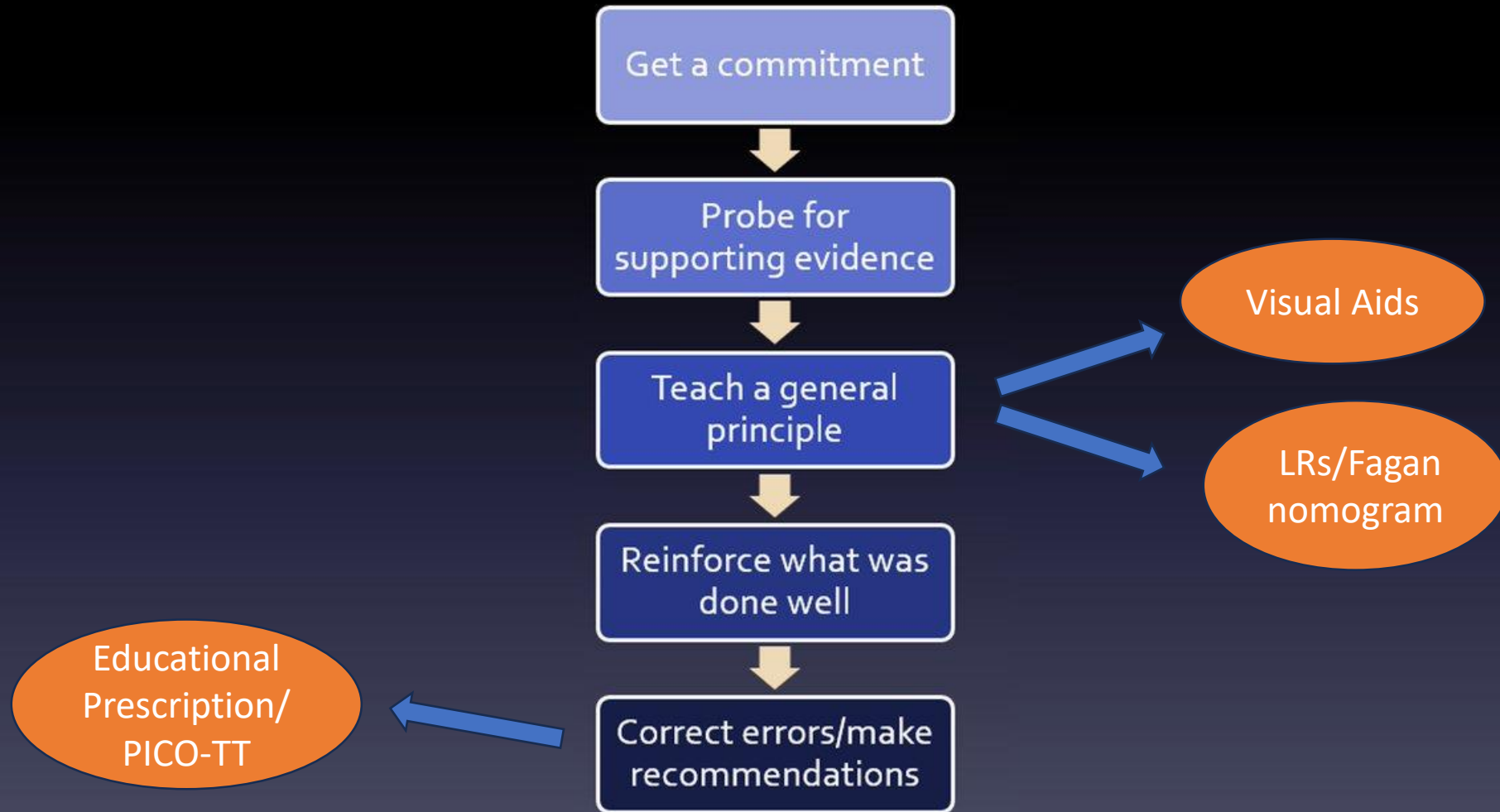
Published: 14 September 2019 **Article history** ▼

Clinical Scenario

- Classic case of Giant Cell Arteritis
- Pretest probability = 85%
- Temporal artery biopsy
NEGATIVE
- Temporal artery biopsy:
 - Sensitivity = 71.4%
 - Specificity = 93.3%
 - Positive LR = 10.66
 - Negative LR = 0.3
- Posttest probability = 60%



One-Minute Preceptor



Evidence-Based Practice: Teach EBM

[Home](#)[PICO](#)[Study Design](#)[Search](#)[Appraise](#)[Calculate Results](#)[Teach EBM](#)[EBP Workshops](#)

Core Curriculum

[JMAEvidence](#)

Online tools for understanding and applying the medical literature and making clinical diagnoses. Includes the Text of the Users' Guide to the Medical Literature, The Rational Clinical Examination, podcasts and other tools that can be customized for teaching.

[Evidence Cycle](#)

Brief overview of the evidence cycle.

[Evidence-based medicine : how to practice and teach EBM](#)

David L. Sackett. 3rd ed. Edinburgh; New York: Churchill Livingstone, 2005.
WB102 Ev32 2005

[Users' Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice](#)

3rd ed. Gordon Guyatt, Drummond Rennie, Maureen O. Meade, and Deborah J. Cook. 2015, ISBN: 978-0-07-179071-0

[Evidence based health care workbook : understanding research ; for individual and group learning.](#)

Trisha Greenhalgh and Anna Donald. London: BMJ Books, 2000.
WB 102 G83c 2000

[Evidence-based medicine workbook : findings and applying the best evidence to improve patient care.](#)

Paul Glasziou; Chris Del Mar; and Janet Salisbury. London: BMJ Books, 2003.

Teaching the Results of Studies

There are 2 versions of each article, one for learners of the EBM principle in question and one for their teachers. The learners' version appears in CMAJ and J Gen Intern Med, and the related teachers' version is published online. (Link to the teachers' version from "Online Appendix" of the learners' version.) The online teachers' version will also give readers access to a variety of extra features, including an interactive version of the teaching article.

[TIPS: Introduction to the series.](#)

CMAJ. 2004 Aug 17;171(4):347-8.

[TIPS: Relative risk reduction, absolute risk reduction and number needed to treat.](#)

CMAJ. 2004 Aug 17;171(4):353-8.

[TIPS: Measures of precision \(confidence intervals\)](#)

CMAJ Sep 2004;171: 611-15.

[TIPS: Measures of observer variability \(kappa statistic\)](#)

CMAJ Nov 2004;171(11):1369-73.

[TIPS: Assessing heterogeneity of primary studies in systematic reviews and whether to combine their results](#)

CMAJ Mar 2005;172(5):661-5.

[TIPS: The effect of spectrum of disease on the performance of diagnostic tests.](#)

CMAJ Mar 2005;173(4):385-90.

[TIPS: Making sense of diagnostic test results using likelihood ratios.](#)

J Gen Intern Med. 2008 Jan;23(1):87-92.

[TIPS: Adjusting for prognostic imbalances \(confounding variables\) in studies on therapy or harm.](#)

J Gen Intern Med. 2008 Mar;23(3):337-43.

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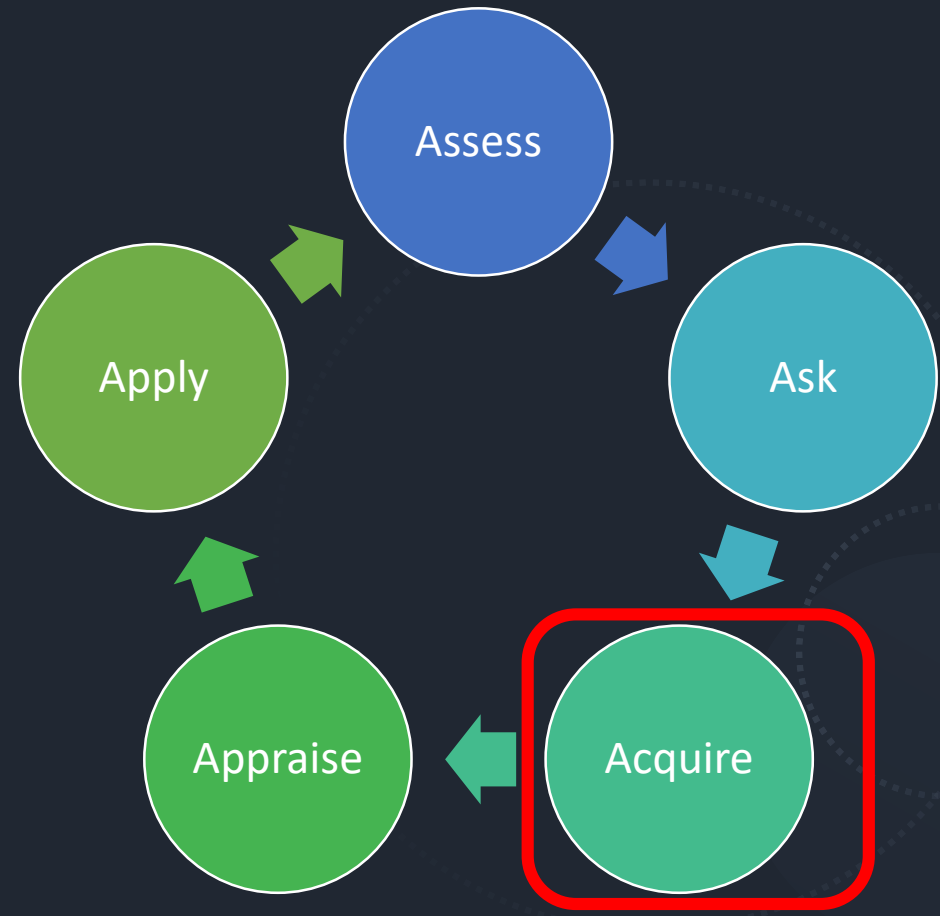
What are some challenges you encounter while teaching EBM in the clinical setting?

① Start presenting to display the poll results on this slide.

	United Kingdom (N=29)	Hungary (N=21)	The Netherlands (N=18)	Germany (N=17)	Switzerland (N=18)	Poland (N=4)
Highest median rank	Lack of time (4)	Lack of EBM requirements (6)	Lack of EBM requirements (3)	Lack of time (5)	Lack of EBM requirements (6)	Lack of EBM requirements (6)
	Perceived lack of improvement by peers (3)	Lack of time (5)	Lack of time (3)	Lack of EBM requirements (4)	Lack of time (5)	Trainees level understanding English articles (6)
	Lack of knowledge and skills trainers (3)	Lack of knowledge and skills trainers (4)	Perceived lack improvement by peers (3)	Trainees time required reading English articles (4)	Lack of knowledge and skills trainers (4)	Trainees time required reading English articles (6)
	Lack of EBM requirements (3)	Perceived lack of improvement by peers (4)	Lack of knowledge and skills trainers (3)	Trainees level understanding English articles (4)	Trainees level understanding English articles (3)	Lack of time (5)
		Lack of assistance in finding evidence (4)		Lack of knowledge and skills trainers (4)	Perceived lack of improvement by peers (3)	Lack of assistance in finding evidence (5)
		Lack of hard evidence in discipline (4)		Perceived lack of improvement by peers (3)	Lack of assistance in finding evidence (3)	Teachers level of understanding articles written in English (5)
		Trainees level understanding articles written in English (4)		Lack of assistance in finding evidence (3)	Perceived lack of improvement perceived by trainees (3)	Lack of knowledge and skills trainers (3)
		Perceived lack of improvement by head department/ dean (4)		Lack of hard evidence in discipline (3)		Perceived lack of improvement by peers (3)
		Lack of evidence summaries (3)		Perceived lack of improvement by head department/ dean (3)		Perceived lack of improvement perceived by trainees (3)
		Negative attitude trainees towards EBM (3)		Negative attitude trainees towards EBM (3)		Lack of hard evidence in discipline (3)
		Low availability and access to relevant databases (3)		Perceived lack of improvement perceived by trainees (3)		Lack of evidence summaries (3)
Lowest median rank						Perceived lack of improvement by head department/ dean (3)
						Lack of access to internet in outpatient department (3)
						Lack of access to relevant databases (3)

Figure 2. Ranking of the main barriers (with a median ≥ 3) for the United Kingdom, Hungary, the Netherlands, Switzerland, and Poland.

Resources



Summary Resources



**Uptodate
Dynamed**

Advantages:

- Consolidation.
- Overview.

Disadvantages:

- Risk of over-reliance.
- Critical appraisal skills lost.
- Lag time



Key Journal Subscriptions



The NEW ENGLAND
JOURNAL of MEDICINE

NEJM.ORG



BMJ



Advantages:

Curated, High-quality articles.

Early access.

Established credibility.

THE LANCET

Disadvantages:

Lag time from research to publication.

Narrow focus.

Cost barriers.

Search Databases



PubMed, EBSCO, TRIP database:



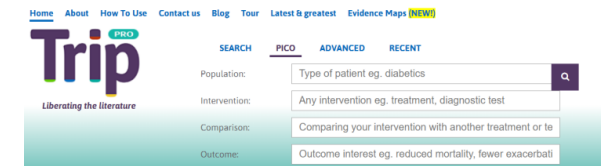
Advantages:

Comprehensive search.
Refined results



Disadvantages:

Overwhelming.
No critical appraisal
Search skills.



Medical Calculators/Risk Tools:

Advantages:

- Automates complex equations.
- Consistent application.
- Allows risk stratification.

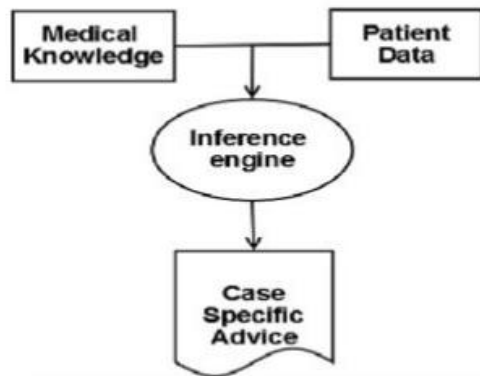
Disadvantages:

- Potential for over-reliance.
- Risk of incorrect data entry.
- May not apply to all populations.





Clinical Decision Support



Clinical Decision Support Tools

- **Advantages:**
 - Integrated guidance at point of care.
 - Alerts and prompts can catch errors.
- **Disadvantages:**
 - Alert Fatigue.
 - Requires ongoing customization

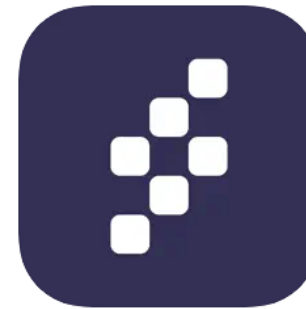
Apps for EBM

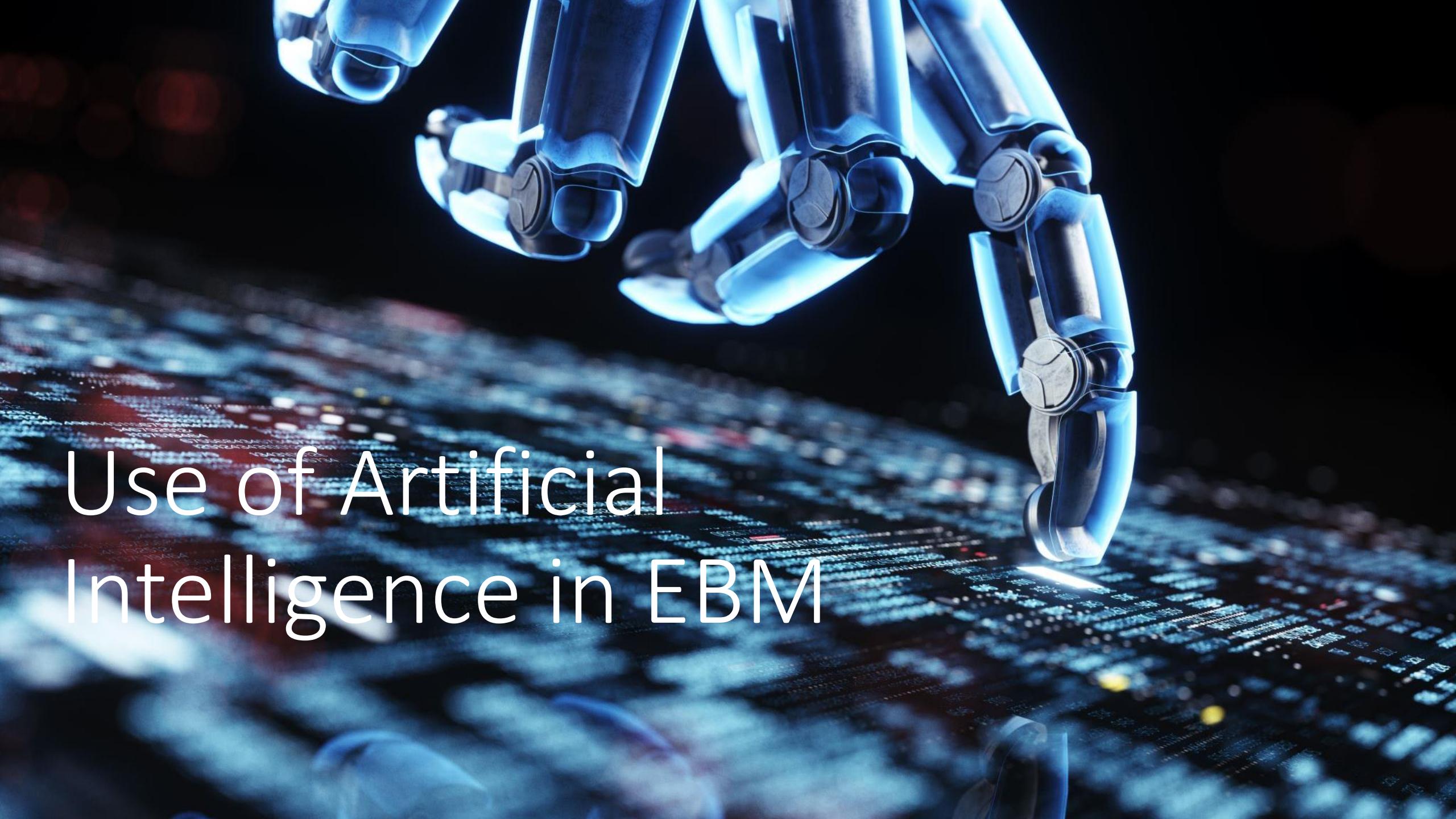
Advantages:

- Consolidates tools in one place.
- Portable for point-of-care use.
- Engaging format.

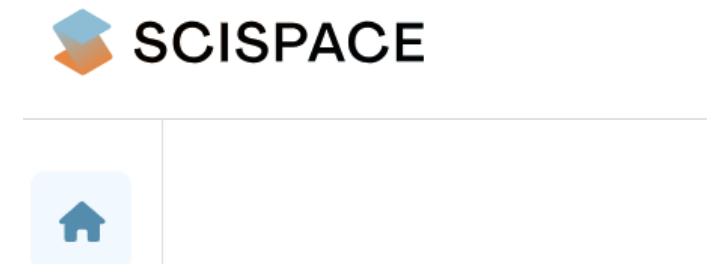
Disadvantages:

- Questionable quality control.
- Data privacy issues.
- May lack rigor.





Use of Artificial Intelligence in EBM



Advantages

- Fast
- Summarize
- Targeted
- Interactive
- Personalized





Challenges

Nuance &
Context Loss

Over-
reliance

Biases

Reliability
Issues

Cultural
shift



Ideal Scenario

Human-AI Hybrid





Getting Better at Teaching ?





DELIBERATE
PRACTICE



TEACHING
JOURNAL



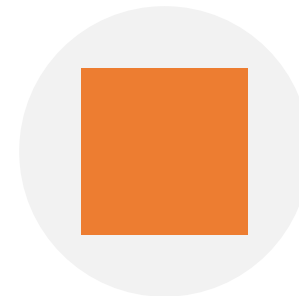
HUMAN LEARNING



COURSES



COACHED ON
TEACHING



COLLABORATION

Take Home Points

- Standalone teaching improves knowledge but not skills, attitudes, or behavior.
- Clinically integrated teaching improves knowledge, skills, attitudes, and behavior.
- Develop Skills
- Identify your resources
- Apply in daily practice

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Now that you have attended this session, how often do you plan to teach EBM in your clinical setting?

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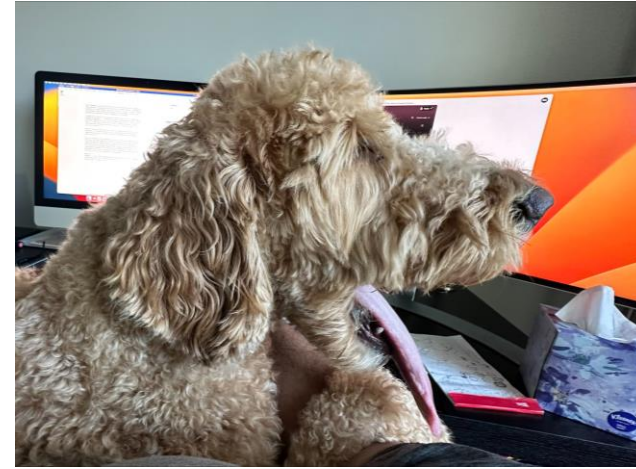
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On a scale of 1 to 5, with 1 being "not at all helpful" and 5 being "extremely helpful", how helpful was this session?

ⓘ Start presenting to display the poll results on this slide.

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Thank You

Questions?

