1-16-2024

Tips for Teaching EBM in the Busy Clinical Setting

Sonam Kiwalkar
*Legacy Salmon Creek*

Basil Verghese
*Rochester Regional Health, basil.verghese@rochesterregional.org*

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Tips for teaching EBM in the busy clinical setting

Sonam Kiwakar MD FACP
Clinical Rheumatologist
Associate Program Director, Legacy Salmon Creek IMRP
Clinical Assistant Professor, Elson S. Floyd College of Medicine, Washington State University

Basil George Verghese MD FACP FHM
Academic Hospitalist
Associate Program Director, Rochester General Hospital IMRP
Adjunct Clinical Assistant Professor, Lake Erie College of Osteopathic Medicine
Join at slido.com
#3796782

Start presenting to display the joining instructions on this slide.
What is your current work role?
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
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

1. Assess
2. Ask
3. Acquire
4. Appraise
5. Apply
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
• 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.
### General Principles of teaching EBM in the clinical setting: The 6Ts

**6Ts Teaching Tips (Figurski, Patel, Keitz, Cook, EBM Workshop 2005)**

**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)

<table>
<thead>
<tr>
<th>The 6 T's</th>
<th>Observations and Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time management (before &amp; during)</td>
<td></td>
</tr>
<tr>
<td>Teamwork (ensure engagement)</td>
<td></td>
</tr>
<tr>
<td>Tools (use them)</td>
<td></td>
</tr>
<tr>
<td>Triage (decide what you can’t cover)</td>
<td></td>
</tr>
<tr>
<td>Tone (respectful, safe)</td>
<td></td>
</tr>
<tr>
<td>Take home message(s) (obligatory!)</td>
<td></td>
</tr>
<tr>
<td>Other Things…</td>
<td></td>
</tr>
</tbody>
</table>
Teaching EBM in the Clinical Setting

1. **Assess**: Assess learner knowledge gap during a clinical encounter.
2. **Ask**: Help learner to ask a well-formulated question (PICO-TT).
3. **Acquire**: Encourage learner to acquire evidence from appropriate resources.
4. **Appraise**: Encourage learner to appraise quality of evidence.
5. **Apply**: Provide feedback when learner is explaining evidence to patient. Role model shared decision making.

Diagram:
- Assess
  - Ask
    - Acquire
      - Appraise
        - Apply
          - Assess learner knowledge gap during a clinical encounter
          - Help learner to ask a well-formulated question (PICO-TT)
          - Encourage learner to acquire evidence from appropriate resources
          - Encourage learner to appraise quality of evidence
          - Provide feedback when learner is explaining evidence to patient
            - Role model shared decision making
How often do you teach evidence-based medicine (EBM) in your clinical setting?
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.
## Educational Prescription

- **Co-created by faculty-learner**
- **PICO – TT**
- **Who is responsible**
- **Timeframe**

### Educational Prescription Form

<table>
<thead>
<tr>
<th>Patient’s Initials/MRN: __________ Learner: __________</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-part Clinical Question</td>
</tr>
<tr>
<td>Patient or Problem:</td>
</tr>
<tr>
<td>Intervention:</td>
</tr>
<tr>
<td>Comparison:</td>
</tr>
<tr>
<td>Outcome(s):</td>
</tr>
<tr>
<td>Type of question:</td>
</tr>
<tr>
<td>Study type:</td>
</tr>
<tr>
<td>Date and place to present findings: _________________</td>
</tr>
</tbody>
</table>

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?

<table>
<thead>
<tr>
<th>Background Question</th>
<th>Foreground Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is a more basic question that answers who, what, where, when, why, and how.</td>
<td>This a specific clinical query: PICO question.</td>
</tr>
<tr>
<td>Patient population/Problem</td>
<td>Patient population/Problem</td>
</tr>
<tr>
<td>Intervention/exposure</td>
<td>Intervention/exposure</td>
</tr>
<tr>
<td>Comparison (if applicable)</td>
<td>Comparison (if applicable)</td>
</tr>
<tr>
<td>Outcome</td>
<td>Outcome</td>
</tr>
</tbody>
</table>

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 of having a fracture
Risk for 100 people like you who do not medicate for bone problems.

Current Risk
What is my risk of breaking a bone?

- Age: 67
- Gender: Male
- Population Group: Caucasian
- Calculation using: BMD
- Femoral neck BMD: -2.4

Previous fracture: Yes
Parents fracture Hip: Yes
Secondary osteoporosis: Yes
Glaucoma: Yes
Current Smoking: No
Alcohol 3 or more units/day: No

Over 10 years
81 will not break a bone
19 will break a bone

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

Current Risk vs Downside according to my personal health information
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

https://sites.duke.edu/ebmworkshop/files/2022/04/EBP-Grab-Bag-Topics-1.pdf
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.
Uses of Likelihood Ratios

thennt.com
LRs & Physical exam

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

A. Pain provocation test: painful arc test
Examiner brings patient’s shoulder into full abduction.

- 180°: No pain
- 120°: Subacromial pain
- 90°: Subacromial pain
- 60°: No pain

Positive test result: shoulder pain between 60° and 130° indicates subacromial or rotator cuff disorder.

B. Strength tests

1. Internal rotation lag test (subscapularis muscle)
   - Hand of affected arm is lifted off of back by examiner, and patient is asked to maintain position.
   - Subscapularis muscle
   - Positive test result: patient is unable to maintain the position

2. External rotation lag test (supraspinatus and infraspinatus muscles)
   - Examiner passively rotates the patient’s arm into full external rotation.
   - Positive test result: patient is unable to maintain a position of full external rotation

C. Composite test: external rotation resistance test (infraspinatus muscle)
   - Examiner applies pressure proximal to the patient’s wrist against external rotation by the patient.
   - Positive test result: patient experiences either pain or weakness during the maneuver

D. Drop arm test (supraspinatus muscle)
   - Patient is asked to lower the arm slowly from abduction.
   - Positive test result: immediate drop of the arm accompanied by pain
<table>
<thead>
<tr>
<th>Finding</th>
<th>Rotator Cuff Condition</th>
<th>Studies, No.</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
<th>LR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pain provocation tests</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Painful arc[45]</td>
<td>Disease</td>
<td>1</td>
<td>71 (60-83)</td>
<td>81 (68-93)</td>
<td><strong>3.7 (1.9-7.0)</strong></td>
</tr>
<tr>
<td>Cross-body adduction[45]</td>
<td>Disease</td>
<td>1</td>
<td>75 (64-85)</td>
<td>61 (46-76)</td>
<td>1.9 (1.3-2.9)</td>
</tr>
<tr>
<td>Hawkins[44,45,46]</td>
<td>Disease</td>
<td>3</td>
<td>76 (56-89)</td>
<td>48 (23-74)</td>
<td>1.5 (1.1-2.0)</td>
</tr>
<tr>
<td>Neer[45,48]</td>
<td>Disease</td>
<td>2</td>
<td>64-68</td>
<td>30-61</td>
<td>0.98-1.6</td>
</tr>
<tr>
<td>Yocum[48]</td>
<td>Disease</td>
<td>1</td>
<td>79 (61-97)</td>
<td>40 (10-70)</td>
<td>1.3 (0.75-2.3)</td>
</tr>
<tr>
<td>Passive abduction[48]</td>
<td>Disease</td>
<td>1</td>
<td>74 (54-93)</td>
<td>10 (0-29)</td>
<td>0.82 (0.58-1.1)</td>
</tr>
<tr>
<td><strong>Strength tests</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External rotation lag[47]</td>
<td>Full tear</td>
<td>1</td>
<td>47 (21-71)</td>
<td>94 (85-100)</td>
<td><strong>7.2 (1.7-31)</strong></td>
</tr>
<tr>
<td>Internal rotation lag[47]</td>
<td>Full tear</td>
<td>1</td>
<td>97 (88-100)</td>
<td>83 (70-96)</td>
<td><strong>6.6 (2.6-12)</strong></td>
</tr>
<tr>
<td>Drop arm[45]</td>
<td>Disease</td>
<td>1</td>
<td>24 (13-34)</td>
<td>93 (85-100)</td>
<td><strong>3.3 (1.0-11)</strong></td>
</tr>
<tr>
<td>Dropping sign[47]</td>
<td>Full tear</td>
<td>1</td>
<td>73 (51-95)</td>
<td>77 (62-92)</td>
<td>3.2 (1.6-6.5)</td>
</tr>
<tr>
<td>Gerber (lift-off test)[44,48]</td>
<td>Disease</td>
<td>2</td>
<td>34-68</td>
<td>50-77</td>
<td>1.4-1.5</td>
</tr>
<tr>
<td><strong>Composite test for pain or weakness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External rotation resistance[44]</td>
<td>Disease</td>
<td>1</td>
<td>63 (49-77)</td>
<td>75 (69-82)</td>
<td>2.6 (1.8-3.6)</td>
</tr>
<tr>
<td>Full can[45]</td>
<td>Disease</td>
<td>1</td>
<td>75 (64-85)</td>
<td>68 (54-83)</td>
<td>2.4 (1.5-3.8)</td>
</tr>
<tr>
<td>Patte[48]</td>
<td>Disease</td>
<td>1</td>
<td>58 (36-80)</td>
<td>60 (30-90)</td>
<td>1.4 (0.62-3.4)</td>
</tr>
<tr>
<td>Empty can (Jobe)[44,45,48]</td>
<td>Disease</td>
<td>3</td>
<td>71 (49-86)</td>
<td>49 (42-56)</td>
<td>1.3 (0.97-1.6)</td>
</tr>
<tr>
<td>Resisted abduction[48]</td>
<td>Disease</td>
<td>1</td>
<td>58 (36-80)</td>
<td>20 (0-45)</td>
<td>0.72 (0.55-8.1)</td>
</tr>
<tr>
<td><strong>Combinations of findings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawkins and Neer (both positive)[46]</td>
<td>Disease</td>
<td>1</td>
<td>78 (66-90)</td>
<td>50 (22-78)</td>
<td>1.6 (0.87-2.8)</td>
</tr>
</tbody>
</table>

Abbreviation: LR, likelihood ratio.

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

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

b $P = 0.45, P = .16$.

c $P = 0.2, P = .75$.

$^e$ 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]

$^g$ $P = 0.70, P = .04$. 

---

Table 3. Accuracy of Physical Examination Maneuvers for Rotator Cuff Disease or Full Rotator Cuff Tears From Quality Level 1-2 Studies
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, PhD; Maria Sandovici, MD, PhD; Elisabeth Brouwer, MD, PhD; et al

Author Affiliations | Article Information

<table>
<thead>
<tr>
<th>Finding by study</th>
<th>No. of patients (No. of cohorts)</th>
<th>Sensitivity (95% CI), %</th>
<th>Specificity (95% CI), %</th>
<th>Diagnostic OR (95% CI)</th>
<th>Positive LR (95% CI)</th>
<th>Negative LR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;60&lt;sup&gt;a&lt;/sup&gt;</td>
<td>261 (7)</td>
<td>96.6 (76.0-99.6)</td>
<td>22.6 (15.4-31.8)</td>
<td>8.39 (1.05-67.11)</td>
<td>1.25 (1.12-1.39)</td>
<td>0.15 (0.02-1.13)</td>
</tr>
<tr>
<td>&gt;70&lt;sup&gt;a&lt;/sup&gt;</td>
<td>261 (7)</td>
<td>73.5 (49.5-88.7)</td>
<td>55.3 (39.2-70.3)</td>
<td>3.42 (1.68-6.96)</td>
<td>1.64 (1.29-2.09)</td>
<td>0.48 (0.27-0.86)*</td>
</tr>
<tr>
<td>&gt;80&lt;sup&gt;a&lt;/sup&gt;</td>
<td>208 (6)</td>
<td>19.0 (10.4-32.0)</td>
<td>85.1 (73.4-92.1)</td>
<td>1.33 (0.62-2.86)</td>
<td>1.27 (0.67-2.40)</td>
<td>0.95 (0.84-1.09)</td>
</tr>
<tr>
<td>Male&lt;sup&gt;c&lt;/sup&gt;</td>
<td>7798 (42)</td>
<td>31.7 (26.3-36.9)</td>
<td>64.9 (62.5-67.2)</td>
<td>0.86 (0.77-0.96)</td>
<td>0.90 (0.84-0.97)</td>
<td>1.05 (1.01-1.09)</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craniotic</td>
<td>6918 (36)</td>
<td>72.2 (68.3-75.8)</td>
<td>45.7 (39.1-52.4)</td>
<td>2.19 (1.72-2.78)</td>
<td>1.33 (1.19-1.48)</td>
<td>0.61 (0.53-0.70)</td>
</tr>
<tr>
<td>Temporal headache&lt;sup&gt;e&lt;/sup&gt;</td>
<td>545 (4)</td>
<td>65.9 (37.4-86.2)</td>
<td>31.8 (14.1-57.1)</td>
<td>0.90 (0.56-1.46)</td>
<td>0.97 (0.82-1.14)</td>
<td>1.07 (0.78-1.47)</td>
</tr>
<tr>
<td>Scalp tenderness&lt;sup&gt;f&lt;/sup&gt;</td>
<td>2951 (15)</td>
<td>38.9 (31.7-46.7)</td>
<td>78.9 (69.7-85.9)</td>
<td>2.39 (1.70-3.34)</td>
<td>1.85 (1.40-2.44)</td>
<td>0.77 (0.71-0.84)</td>
</tr>
<tr>
<td>Jaw claudication&lt;sup&gt;g&lt;/sup&gt;</td>
<td>6867 (35)</td>
<td>37.5 (33.8-41.3)</td>
<td>92.3 (89.6-94.4)</td>
<td>7.24 (5.45-9.62)</td>
<td>4.90 (3.74-6.41)*</td>
<td>0.68 (0.64-0.71)</td>
</tr>
<tr>
<td>Visual disturbance&lt;sup&gt;h&lt;/sup&gt;</td>
<td>3023 (25)</td>
<td>33.9 (29.6-38.4)</td>
<td>71.8 (66.7-76.4)</td>
<td>1.30 (1.06-1.60)</td>
<td>1.20 (1.04-1.39)</td>
<td>0.92 (0.86-0.98)</td>
</tr>
<tr>
<td>Loss of vision&lt;sup&gt;i&lt;/sup&gt;</td>
<td>4585 (14)</td>
<td>21.7 (15.1-30.3)</td>
<td>85.3 (76.2-91.3)</td>
<td>1.61 (1.21-2.14)</td>
<td>1.48 (1.15-1.91)</td>
<td>0.92 (0.88-0.96)</td>
</tr>
<tr>
<td>Transient loss of vision&lt;sup&gt;i&lt;/sup&gt;</td>
<td>1181 (9)</td>
<td>10.7 (7.1-16.0)</td>
<td>92.9 (86.6-96.4)</td>
<td>1.57 (0.88-2.82)</td>
<td>1.51 (0.88-2.60)</td>
<td>0.96 (0.92-1.01)</td>
</tr>
<tr>
<td>Double vision&lt;sup&gt;h&lt;/sup&gt;</td>
<td>3799 (8)</td>
<td>6.5 (4.5-9.3)</td>
<td>96.2 (93.2-97.9)</td>
<td>1.76 (1.13-2.75)</td>
<td>1.72 (1.12-2.63)</td>
<td>0.97 (0.95-0.99)</td>
</tr>
<tr>
<td>Cerebrovascular accident&lt;sup&gt;j&lt;/sup&gt;</td>
<td>1089 (5)</td>
<td>2.6 (1.3-5.1)</td>
<td>95.9 (83.0-98.5)</td>
<td>0.62 (0.23-1.63)</td>
<td>0.63 (0.25-1.59)</td>
<td>1.02 (0.98-1.06)</td>
</tr>
<tr>
<td><strong>Systemic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constitutional symptoms&lt;sup&gt;m&lt;/sup&gt;</td>
<td>1274 (8)</td>
<td>62.5 (35.5-83.5)</td>
<td>46.8 (29.1-65.2)</td>
<td>1.47 (0.89-2.41)</td>
<td>1.17 (1.00-1.38)</td>
<td>0.80 (0.56-1.14)</td>
</tr>
<tr>
<td>Malaise&lt;sup&gt;n&lt;/sup&gt;</td>
<td>1267 (10)</td>
<td>55.5 (44.0-66.4)</td>
<td>51.7 (38.8-64.4)</td>
<td>1.33 (1.02-1.75)</td>
<td>1.15 (1.00-1.33)</td>
<td>0.86 (0.75-0.99)</td>
</tr>
<tr>
<td>Anorexia&lt;sup&gt;n&lt;/sup&gt;</td>
<td>1932 (8)</td>
<td>40.2 (28.0-53.8)</td>
<td>74.5 (64.5-82.5)</td>
<td>1.97 (1.51-2.57)</td>
<td>1.58 (1.33-1.88)</td>
<td>0.80 (0.71-0.91)</td>
</tr>
<tr>
<td>Weight loss&lt;sup&gt;n&lt;/sup&gt;</td>
<td>2882 (18)</td>
<td>39.3 (31.0-48.3)</td>
<td>76.7 (72.2-80.6)</td>
<td>2.13 (1.64-2.77)</td>
<td>1.69 (1.44-1.98)</td>
<td>0.79 (0.71-0.89)</td>
</tr>
<tr>
<td>Fever&lt;sup&gt;n&lt;/sup&gt;</td>
<td>3091 (23)</td>
<td>26.7 (19.8-34.9)</td>
<td>78.0 (68.4-85.3)</td>
<td>1.29 (1.03-1.62)</td>
<td>1.21 (1.01-1.46)</td>
<td>0.94 (0.90-0.99)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myalgia&lt;sup&gt;f&lt;/sup&gt;</td>
<td>1855 (15)</td>
<td>39.8 (35.0-44.9)</td>
<td>57.5 (46.9-67.4)</td>
<td>0.90 (0.61-1.31)</td>
<td>0.94 (0.75-1.17)</td>
<td>1.05 (0.89-1.23)</td>
</tr>
<tr>
<td>PMR&lt;sup&gt;n&lt;/sup&gt;</td>
<td>2814 (23)</td>
<td>33.4 (27.5-39.8)</td>
<td>74.3 (65.9-81.2)</td>
<td>1.45 (1.14-1.84)</td>
<td>1.30 (1.08-1.56)</td>
<td>0.90 (0.84-0.95)</td>
</tr>
<tr>
<td>Previous PMR&lt;sup&gt;n&lt;/sup&gt;</td>
<td>519 (4)</td>
<td>19.1 (13.4-26.5)</td>
<td>90.8 (82.3-95.4)</td>
<td>2.32 (0.92-5.82)</td>
<td>2.07 (0.92-4.65)</td>
<td>0.89 (0.79-1.00)</td>
</tr>
<tr>
<td>Arthralgia&lt;sup&gt;l&lt;/sup&gt;</td>
<td>656 (6)</td>
<td>25.4 (15.5-38.6)</td>
<td>73.3 (64.6-80.6)</td>
<td>0.94 (0.60-1.46)</td>
<td>0.95 (0.68-1.33)</td>
<td>1.02 (0.91-1.14)</td>
</tr>
<tr>
<td>Limb claudication&lt;sup&gt;l&lt;/sup&gt;</td>
<td>405 (6)</td>
<td>19.6 (12.5-29.4)</td>
<td>96.7 (84.2-99.4)</td>
<td>7.23 (1.62-32.21)</td>
<td>6.01 (1.38-26.16)*</td>
<td>0.83 (0.76-0.91)</td>
</tr>
</tbody>
</table>
Sensitivity of temporal artery biopsy in the diagnosis of giant cell arteritis: a systematic literature review and meta-analysis

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


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

1. Get a commitment
2. Probe for supporting evidence
3. Teach a general principle
4. Reinforce what was done well
5. Correct errors/make recommendations

Educational Prescription/PICO-TT

Visual Aids
LRs/Fagan nomogram

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.**

**TIPS: Relative risk reduction, absolute risk reduction and number needed to treat.**

**TIPS: Measures of precision (confidence intervals)**

**TIPS: Measures of observer variability (kappa statistic)**

**TIPS: Assessing heterogeneity of primary studies in systematic reviews and whether to combine their results**

**TIPS: The effect of spectrum of disease on the performance of diagnostic tests.**

**TIPS: Making sense of diagnostic test results using likelihood ratios.**

**TIPS: Adjusting for prognostic imbalances (confounding variables) in studies on therapy or harm.**
What are some challenges you encounter while teaching EBM in the clinical setting?
<table>
<thead>
<tr>
<th>Feature</th>
<th>United Kingdom (N=29)</th>
<th>Hungary (N=21)</th>
<th>The Netherlands (N=18)</th>
<th>Germany (N=17)</th>
<th>Switzerland (N=18)</th>
<th>Poland (N=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest median rank</td>
<td>Lack of time (4)</td>
<td>Lack of EBM requirements (6)</td>
<td>Lack of EBM requirements (3)</td>
<td>Lack of time (5)</td>
<td>Lack of EBM requirements (6)</td>
<td>Lack of EBM requirements (6)</td>
</tr>
<tr>
<td>Perceived lack of improvement by peers (3)</td>
<td>Lack of time (5)</td>
<td>Lack of time (3)</td>
<td>Lack of EBM requirements (4)</td>
<td>Lack of time (5)</td>
<td>Trainees level understanding English articles (6)</td>
<td></td>
</tr>
<tr>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Lack of knowledge and skills trainers (4)</td>
<td>Perceived lack of improvement by peers (3)</td>
<td>Trainees time required reading English articles (4)</td>
<td>Lack of knowledge and skills trainers (4)</td>
<td>Trainees time required reading English articles (6)</td>
<td></td>
</tr>
<tr>
<td>Lack of EBM requirements (3)</td>
<td>Perceived lack of improvement by peers (4)</td>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Trainees level understanding English articles (4)</td>
<td>Lack of EBM requirements (3)</td>
<td>Lack of assistance in finding evidence (4)</td>
<td></td>
</tr>
<tr>
<td>Lack of assistance in finding evidence (4)</td>
<td>Lack of knowledge and skills trainers (4)</td>
<td>Perceived lack of improvement by peers (3)</td>
<td>Lack of assistance in finding evidence (3)</td>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Lack of assistance in finding evidence (5)</td>
<td></td>
</tr>
<tr>
<td>Lack of hard evidence in discipline (4)</td>
<td>Perceived lack of improvement by peers (3)</td>
<td>Lack of assistance in finding evidence (3)</td>
<td>Teachers level of understanding articles written in English (5)</td>
<td>Perceived lack of improvement by peers (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trainees level understanding articles written in English (4)</td>
<td>Lack of hard evidence in discipline (3)</td>
<td>Perceived lack of improvement perceived by trainees (3)</td>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Perceived lack of improvement by peers (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived lack of improvement by head department/dean (4)</td>
<td>Lack of hard evidence in discipline (3)</td>
<td>Perceived lack of improvement perceived by trainees (3)</td>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Perceived lack of improvement perceived by trainees (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of evidence summaries (3)</td>
<td>Perceived lack of improvement by head department/dean (3)</td>
<td>Lack of hard evidence in discipline (3)</td>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Perceived lack of improvement perceived by trainees (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative attitude trainees towards EBM (3)</td>
<td>Perceived lack of improvement perceived by trainees (3)</td>
<td>Lack of evidence summaries (3)</td>
<td>Lack of knowledge and skills trainers (3)</td>
<td>Perceived lack of improvement perceived by trainees (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low availability and access to relevant databases (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lack of access to internet in outpatient department (3)</td>
<td></td>
</tr>
</tbody>
</table>

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

Acquire

Assess

Ask

Apply

Appraise
Summary Resources

Uptodate Dynamed

Advantages:

- Consolidation.
- Overview.

Disadvantages:

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

Advantages:
Curated, High-quality articles.
Early access.
Established credibility.

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:

<table>
<thead>
<tr>
<th>Advantages:</th>
<th>Disadvantages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Automates complex equations.</td>
<td>• Potential for over-reliance.</td>
</tr>
<tr>
<td>• Consistent application.</td>
<td>• Risk of incorrect data entry.</td>
</tr>
<tr>
<td>• Allows risk stratification.</td>
<td>• May not apply to all populations.</td>
</tr>
</tbody>
</table>
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
Now that you have attended this session, how often do you plan to teach EBM in your clinical setting?

1 Start presenting to display the poll results on this slide.
On a scale of 1 to 5, with 1 being "not at all helpful" and 5 being "extremely helpful", how helpful was this session?
Questions?