EBM Core Competencies: An Area of Controversy

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McMaster University
Conflicts of interest

- Work with lots of guideline groups
- Co-chair GRADE working group
- Consultant UpToDate
Clinicians – look after patients or used to?

Work closely with non-academic clinicians?
- Colleagues or students (practicing clinicians, trainees)
Questions

- True or false?
- Conducting critical appraisal of primary research articles core skill/activity EBM clinician
- Conducting critical appraisal
  - Involves assessing risk of bias
- Assessing risk of bias requires reading methods and results
Estimates of behavior

- Non-academic practicing clinicians
- What % have read the methods and results of an original journal article in the last 6 months
  - Less than 5%
  - 5 to 20%
  - 20 to 50%
  - More than 50%
Clinicians who never read methods and results can provide high quality evidence-based clinical care?
My beliefs

- Very few clinicians read methods and results
- Many provide basic EB high quality care
- Few provide most advanced EB care
  - Shared decision-making
How did I get to these beliefs?

- 1990 took over internal medicine residency
- Mission to teach new approach to medicine
- Needed a name: EBM
Evidence-Based Medicine

An internist sees a 70-year-old man whose main problem is fatigue. The initial investigation reveals a hemoglobin of 90 g/L. The internist suspects iron deficiency anemia. How might she proceed?

The way of the past

When faced with this situation during her training just a few years earlier, the internist was told by the attending physician that one ordered serum ferritin and transferrin saturation and proceeded according to the results. She now follows this path. If both results are low, she then orders a bone marrow biopsy and in the meantime investigates iron deficiency and iron deficiency anemia. If both results are normal, she orders a serum ferritin level and transferrin saturation and proceeds according to the results. She now follows this path. If both results are low, she then orders a bone marrow biopsy and in the meantime investigates iron deficiency and iron deficiency anemia. If both results are normal, she orders a serum ferritin level.

The study shows that she should order a serum ferritin level, but not transferrin saturation, which is less powerful and adds no useful information. She also finds that her laboratory's normal range for the test is misleading. The internist estimates the pretest likelihood of iron deficiency and orders the test. When the result is available, she uses data from the article to determine the sensitivity and specificity associated with the serum ferritin value obtained, calculates the post-test probability of iron deficiency, and then decides on further management.

Discussion

The way of the future described above depicts an important advance in the inclusion of new evidence into clinical practice. Clinicians are now taught to look to authority (whether a textbook, an expert lecturer, or a local senior physician) to resolve issues of patient management. Evidence-based medicine uses additional strategies, including quickly tracking down publications of studies that are directly relevant to the clinical problem, critically appraising these studies, and applying the results of the best studies to the clinical problem at hand. It may also involve applying the scientific method in determining the optimal management of the individual patient.

For the clinician, evidence-based medicine requires skills of literature retrieval, critical appraisal, and information synthesis. It also requires judgment of the applicability of evidence to the patient at hand and systematic approaches to make decisions when direct evidence is not available.

The primary purpose of ACP Journal Club is to help make evidence-based medicine more feasible for internists by extracting new, sound clinical evidence from the morass of the biomedical literature so that practitioners can get at it.

Gordon H. Guyatt, MD, MSc

References


*Interested in acquiring or enhancing these skills? Attend the ACP Annual Meeting, 11-13 April 1991, for workshops on Searching the Literature on MEDLINE and Using the Clinical Literature to Solve Clinical Problems – The Editor

ACP Journal Club March/April 1991
Evidence-Based Medicine

A New Approach to Teaching the Practice of Medicine

Evidence-Based Medicine Working Group

EBM represents a new paradigm for medical practice
Less emphasis intuition, clinical experience, pathophysiologic rational
Instead evidence from clinical research

Users’ Guides to the Medical Literature

I. How to Get Started

Andrew D. Oxman, MD, MSc; David L. Sackett, MD, MSc; Gordon H. Guyatt, MD, MSc;
for the Evidence-Based Medicine Working Group
Evolution of EBM

- Residency program the laboratory
- Teaching all residents to critically appraise
- All would be reading methods and results
- Maximal training compatible with residency
Evolution of EBM

- Seven years later
  - Failure in initial goals
  - Most won’t have skills sophisticated appraisal
  - None will have the time

Practitioners of evidence based care

Not all clinicians need to appraise evidence from scratch but all need some skills

- Results and applicability still crucial
  - Trade offs benefits and harms
  - Shared decision-making
Core Competencies in Evidence-Based Practice for Health Professionals
Consensus Statement Based on a Systematic Review and Delphi Survey

Loai Albarqouni, MD, MSc; Tammy Hoffmann, PhD; Sharon Straus, MD, MSc; Nina Rydland Olsen, PhD; Taryn Young, PhD; Dragan Ilic, PhD; Terrence Shaneyfelt, MD, MPH; R. Brian Haynes, MD, PhD; Gordon Guyatt, MD, MSc; Paul Glasziou, MBBS, PhD

What Clinicians Need to Know

- Don’t need
  - RoB
    - RCTs concealment, blinding, LFUP, ITT
    - Observational adjustment

0.4 Practice the 5 steps of EBP: ask, acquire, appraise and interpret, apply, and evaluate

- Still teach – why?

0.3 For each type of clinical question, identify the preferred order of study designs, including the pros and cons of the major study designs
From Evidence to Evidence-Based Resources

Hierarchy of Evidence for Primary Studies

Different hierarchy of designs for each type of question:

- Therapy and harm
  1. Randomized trial
  2. Observational study
  3. Unsystematic observational study

- Diagnosis
- Prognosis
- Differential diagnosis

Level of Processing

- Guidelines
  - Decision analyses

- Systematic reviews

- Primary studies

EBM Resources to Search for Answers

- Summaries and Guidelines

- Preappraised Research
  - Synopses and Systematic Reviews

- Nonpreappraised Research and Clinical Queries
>110 organizations have adopted GRADE
What they need to know

- What do strong, weak recommendations mean?
- What does high to very low quality evidence mean?
  - Teach RoB, imprecision, inconsistency, indirectness, PB
- What is a relative and an absolute effect
  - What is the relation between the two
- Recognize trivial, small, moderate, large effects
Bad sore throat in last decade?
Single dose of dexamethasone

<table>
<thead>
<tr>
<th></th>
<th>Favours steroids</th>
<th>No important difference</th>
<th>Favours no steroids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Complete pain resolution (24 hrs)</strong></td>
<td>224</td>
<td>124 more</td>
<td>100</td>
</tr>
<tr>
<td><strong>Complete pain resolution (48 hrs)</strong></td>
<td>608</td>
<td>183 more</td>
<td>425</td>
</tr>
<tr>
<td><strong>Mean time to resolution (hours)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Complete pain resolution</td>
<td>33.0</td>
<td>11.1 fewer</td>
<td>44.0</td>
</tr>
<tr>
<td><strong>Events per 1000 people</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom recurrence or relapse</td>
<td>34</td>
<td>No important difference</td>
<td>65</td>
</tr>
<tr>
<td>Antibiotics prescription</td>
<td>468</td>
<td>96 fewer</td>
<td>564</td>
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</table>
## Comparison of benefits and harms

### Events per 1000 people – within 2 years

<table>
<thead>
<tr>
<th>Event</th>
<th>Favours transfemoral TAVI</th>
<th>Favours SAVR</th>
<th>Quality of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>73</td>
<td>54</td>
<td>92</td>
</tr>
<tr>
<td>Strokes</td>
<td>56</td>
<td>42</td>
<td>70</td>
</tr>
<tr>
<td>Aortic valve reinterventions</td>
<td>10</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Pacemaker insertions</td>
<td>226</td>
<td>134</td>
<td>92</td>
</tr>
<tr>
<td>Life-threatening bleeds</td>
<td>161</td>
<td>252</td>
<td>413</td>
</tr>
<tr>
<td>New onset atrial fibrillation</td>
<td>134</td>
<td>178</td>
<td>312</td>
</tr>
<tr>
<td>Moderate / severe heart failure</td>
<td>87</td>
<td>18</td>
<td>69</td>
</tr>
</tbody>
</table>

### Events per 1000 people – within 10 years

<table>
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<th>Favours transfemoral TAVI</th>
<th>Favours SAVR</th>
<th>Quality of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aortic valve reinterventions</td>
<td>198</td>
<td>137</td>
<td>61</td>
</tr>
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</table>

### Length of hospital stay

<table>
<thead>
<tr>
<th>Event</th>
<th>Favours transfemoral TAVI</th>
<th>Favours SAVR</th>
<th>Quality of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median days in hospital</td>
<td>8</td>
<td>4</td>
<td>12</td>
</tr>
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</table>
Cross-sectional, paper-based survey
Academic centers in 8 countries,
Internal and family medicine, 531/610 (87%)

Problem: Clinicians don’t understand results
So how can they do shared decision-making?

**Figure 3:** Understanding of the presentation approaches, \( n = 531 \)
Implications for education

- Critically appraise not a core skill
- Evidence summary
  - Magnitude of effect
  - Quality/certainty of evidence
- Much less RoB, critical appraisal
- Much more results, applicability
- Much less primary studies
- Much more systematic reviews, guidelines
- Do you tweet?
@EBCPMcMaster

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