Agenda

- The EBM Information Cycle
- Formulate a search strategy, run the search and acquire the evidence
- Identify EBM Resources
- Practice Exercises

EBM Defined

"the integration of best research evidence with clinical expertise and patient values."

Why Practice EBM?

- Explosion of medical literature
- Stay up to date with current research
- Speed latest research into clinical practice
Dr. Chen is looking at EMR data about patients at his primary care practice. Approx. 8% of patients have insomnia.

He normally prescribes Ambien but wonders about non-prescription treatments, specifically Valerian and Melatonin.

**Ask:** Fill in your background knowledge; move to current situation

- Fill in gaps of knowledge – levels of knowledge vary

**Novice (med student) → Expert (physician or specialist)**

General info → What’s new?

**ASK:** What are your questions?

- Need basic information about insomnia
- What are the possible drug interactions for Valerian and Melatonin?
- Are there specific types?
- What are the current treatment options?
- Is it cost-effective?
Types of EBM Questions

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Suggested Best Type of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapy</td>
<td>RCT (Randomized Controlled Trial)</td>
</tr>
<tr>
<td>Diagnosis/Test</td>
<td>Prospective-blind-comparison-to-a-gold-standard</td>
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<tr>
<td>Prognosis</td>
<td>Cohort study &gt; Case Control &gt; Case Series</td>
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<tr>
<td>Etiology/Harm</td>
<td>RCT &gt; Cohort study &gt; Case Control &gt; Case Series</td>
</tr>
<tr>
<td>Prevention</td>
<td>RCT &gt; Cohort Study &gt; Case Control</td>
</tr>
</tbody>
</table>

Ask: Complete the PICO Formula

- **P** - Patient, population or problem: What are the most important characteristics of the patient and their health status?
- **I** - Intervention/Exposure: What main intervention are you considering (medical, surgical, preventative)?
- **C** - Comparison: What are the alternative benchmark or gold standards being considered, if any?
- **O** - Outcome: What is the estimated likelihood of a clinical outcome attributable to a specific disease, condition or injury?

Ask: Foreground Question

- Developed from PICO
  - For adult patients seeking non-prescription alternatives to insomnia treatment, are Valerian or Melatonin suitable options?
Acquire

- Find the best available evidence:
  - Determine which type of study designs best addresses your question?
  - Identify best resources to search?
  - Construct search strategy using patient’s key characteristics and key concepts – use PICO.

PubMed

- Almost everything is in PubMed
- It’s free and always accessible

PubMed

- 23 million+ citations, 1946 to present
- Current and authoritative
- Includes variety of study types
- Filters for age, language, gender, etc.
- **Clinical Queries** filters results in an evidence-based way
- For quick point of care access, try PubMed for HandHelds: http://pubmedhh.nlm.nih.gov/
Tips for Developing a Search Strategy

- Use PICO for key concepts
  - Identify important words, “phrases” and resource-specific subject headings (MeSH)
    - insomnia (MeSH, words, phrase)
    - valerian (generic, MeSH?, synonyms)
    - melatonin
  - Synonyms are OR'd together
  - Key concepts are ANDed together
  - Apply limits/filters (Age, gender, etc.)

Search Strategy, cont’d

- Concept: Insomnia
  - insomnia
- Valerian
  - valerian
- Melatonin
  - melatonin

Sample search strategy

- Cut and paste search strategy in to search box:
  - Insomnia AND valerian AND melatonin

PubMed Clinical Queries
**ACP Journal Club**

- Selects articles that report original studies & systematic reviews that warrant immediate attention by physicians attempting to keep pace with important advances in internal medicine.
  - Primarily Adults
  - Internal Medicine
  - English language articles

**EBM Reviews**

- **Insomnia AND Melatonin**

**Cochrane Databases**

- **Database of Abstracts of Reviews of Effects (DARE)**
  - A full-text database containing critical assessments of systematic reviews from a variety of medical journals.

- **Database of Systematic Reviews (DSR)**
  - Includes full-text of the regularly updated systematic reviews prepared by The Cochrane Collaboration.

**EBM Reviews (Ovid Database)**

- ACP Journal Club, Cochrane DSR, and DARE - Combined
- EBM Reviews: ACP Journal Club, Cochrane CCTR, CMR, DSR, DARE, HTA and NHSEED - Combined
EBM Reviews

- Insomnia AND Valerian

Additional Resources at the LRC

LRC Research Guide: Evidence Based Medicine (EBM) Resources
https://er.lrc.usuhs.edu/lrcguides/?q=node/16

Appraise

- What is the article type? Where does it appear on the pyramid of evidence?
- Were the results valid?
  - Sample Size
  - Randomized
  - Blinded
  - Similarity of the treatment & control groups
  - Follow-up
- Publication bias: negative results may not be published.
- Funding sources or other conflicts of interest
Quick Review...

- Assess: Patient scenario
- Ask: Fill in knowledge gaps & construct searchable question
- Acquire: Use appropriate resources to obtain best available evidence
- Appraise: Systematically check available evidence for indications of validity, importance, and usefulness
- Apply: Interpret applicability of evidence to specific problem in context of clinical circumstances, given patient preferences and values. Final Step!

Class Exercise

- Dr. Chen is now working as a hospitalist. Unfortunately, he’s been tending to several adult patients hospitalized for pressure ulcers due to GSWs or auto accidents. He’s under pressure to reduce the length of hospital stay due to budget cuts.
- It has been suggested that he consider a Vitamin C supplement to speed wound healing. Is there evidence in the literature?

Apply

- Applicability to your patient
  - Are study’s patients similar to yours?
  - Has medical practice changed since study took place?
  - Are benefits worth risk/cost to patient?
- Clinical Judgment
  - Were all outcomes considered?
- Develop treatment plan based on your expertise and patient’s circumstances and/or preferences

Learning More...

- EndNote: Bibliographic Management Software
- How to Conduct a Systematic Review
EndNote: Bibliographic Management Software

- Use to store, sort and cite your references
- Free to USU students, faculty & staff
  - Available for Mac & PC
- Special Features
  - You can organize citations into user defined groups, e.g., keep/pitch, by database, by keywords, etc.
  - Attach PDFs: 1) Store electronically; and highlight and add notes

EndNote -- Groups

Systematic Review class (1-hour)

- Learn the steps involved in conducting a systematic review, including meta-analysis
  - Identify SR producing organizations
  - How to develop and refine research question
  - Develop search strategy
  - Identify appropriate databases/resources
  - Manage references

- Check the LRC website for upcoming classes.
- Use Request on Demand Class to schedule a class for groups of 3 or more.