Fostering Life Long Learners

Part 3: Teaching Students Basic Literature Review
Acknowledgements

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Guiding Students through Literature Review

Pause the video to reflect on these questions:

• Do you feel reviewing medical literature is important to evidence-based practice?

• Do you feel the students in your practice understand the basics of literature search and review?

• Do you feel comfortable guiding them through this process?
Where to search

- PubMed/Medline
  - WVSOM Library – subscription databases PubMed
- Google Scholar
Selecting search terms

- Does your database have a controlled vocabulary?
  - PubMed - MeSH
  - Google Scholar – Nope!
- Review relevant articles for keywords
- Check published literature reviews for their search strategies.
- Ask your librarian! WVSOM librarians are available to help preceptors.
Search Tips

Include

• Start with small strings and add or take away terms as needed
• Acronyms and complete spellings
• Synonyms (cardiac and heart)
• All possible spellings (behavior, behaviour)
• Prominent authors in the field
Boolean Operators

• **AND** - All terms are present. Example - swine and euthan*

• **OR** - Any one of the terms are present (more than one term may be present). Example - murine or mouse or mice or rats or rat

• **NOT** - The first term but not the second is present. Example-(pig or pigs or swine or porcine) NOT guinea
More tips

- **Truncation** – Add * to the end of the root of a word and search for all forms of a word. Example - behav* = behavior, behaviour, behaves, behave, behaving, behaved, etc.

- **Quotation marks**- Use to search for phrases. If double quotations are not used, words are searched individually using AND. Example “animal welfare”

- **Limit results** – There are many options for limiting results in PubMed the most popular being date ranges and language
Check Your Search Results

• Is there a key article or author not showing up?
  o revise your strategy or ask for help
Save Your Search

So you can repeat it
- Before writing
- Before submission of your paper or poster

So you can add it to your methodology section

You can keep records of your searches and results by using
  - My NCBI for PubMed
  - Email Alerts in Google Scholar
Obtain Full Text Articles

• Some articles are available as full text for free on PubMed or Google Scholar
• Interlibrary Loan for anything else. This service is free to you from the WVSOM library
  - Look for WVSOM logo next to article
  - Submit a request for full text article
Evaluating Articles

Pause the video to reflect on these questions:

- Do you feel it is important for practicing physicians to be able to critically analyze medical literature?
- Do you feel the students you work with are proficient at this skill?
- Do you feel comfortable teaching this skill?
Evaluating articles

• Is your article from a Peer Reviewed journal?
  o The vast majority of articles indexed in PubMed are
  o Not necessarily in Google Scholar
  o Neither database offers a way to limit your search by peer reviewed (some databases like EBSCO’s Academic Search do)
  o If you’re unsure you can check on the journal’s website or with a librarian.

• Does the author have a conflict of interest or possible bias?
Studying a Study

For their book *Studying A Study & Testing A Test* Richard K. Riegelman and Michael L. Rinke developed the **M.A.A.R.I.E. framework** to evaluate studies and trials.
M.A.A.R.I.E. Framework

There are 6 main areas to critically evaluate in published studies:

• **Methods**
• **Assignment**
• **Assessment**
• **Results**
• **Interpretation**
• **Extrapolation**
Method questions to consider

• **Study hypothesis:** What is the study question being investigated?

• **Study population:** What population is being investigated including the inclusion and exclusion criteria for the participants in the investigation?

• **Sample size and statistical power:** How many individuals are included in the study and in the control groups? Are the numbers adequate to demonstrate statistical significance if the study hypothesis is true?

Riegelman and Rinke. *Studying a Study & Testing a Test*. 2013
Assignment questions to consider

• **Process** – What method is used to identify and assign individuals or populations to study/control groups?

• **Confounding variables** – Are there differences between study and control groups that may affect the outcome?

• **Masking or blinding** – Are the participants and/or investigators aware of the assignment to their particular group?

Riegelman and Rinke. *Studying a Study & Testing a Test*. 2013
Assessment questions to consider

- **Appropriate** – Does the measurement of outcomes address the study’s question?
- **Accurate and precise** – Is the measurement of outcomes an accurate and precise measure of the question?
- **Complete and unaffected by observation** – Is the measurement 100% complete, and is it affected by the investigators’ knowledge of the study or control group assignment?

Riegelman and Rinke. *Studying a Study & Testing a Test*. 2013
Results questions to consider

- **Estimation** – What is the magnitude of strength of the relationship? \((P<0.05)\)
- **Inference** – What statistical techniques are used to perform significance testing?
- **Adjustment** – What statistical techniques are used to take into account difference between the groups that may affect results?

Riegelman and Rinke. *Studying a Study & Testing a Test*. 2013
Interpretation questions to consider

- **Contributory cause or efficacy** – Does the factor begin investigated alter the probability that the disease will occur (contributory cause) or reduce the probability of undesirable outcome (efficacy)?
- **Harms** – Are adverse events that affect the meaning identified?
- **Subgroups and interactions** – Do the outcomes in subgroups differ and are there other interactions that affect outcomes?

Riegelman and Rinke. *Studying a Study & Testing a Test*. 2013
Extrapolation questions to consider

• **To similar individuals/groups/populations** – Do investigators extend conclusions to groups similar to those in the investigation?

• **Beyond the data** – Do investigators extend conclusions beyond dose/duration/other characteristics of the investigation?

• **To other populations** – Do investigators extrapolate to populations or settings different from those investigate?

Riegelman and Rinke. *Studying a Study & Testing a Test*. 2013
Teaching Critical Analysis of Medical Literature

• How do I incorporate this into my clerkship instruction?
Teaching Critical Analysis of Medical Literature

• Assigning students to find a journal on a topic related to your practice and present at a journal club
• Assign students to read the same journal article, have them critically analyze using the MAARIE framework and compare their findings in a discussion meeting
References


WVSOM Library contact info

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CME Credit Opportunities

DO Physicians: The West Virginia School of Osteopathic Medicine is accredited by the American Osteopathic Association to sponsor continuing medical education for physicians. WVSOM designates this program for a maximum of .5 AOA Category 1-B credits and will report CME and specialty credits commensurate with the extent of the physician’s participation in this activity pending approval from the AOA CCME.

MD Physicians: WVSOM designates this learning module for a maximum of .5 AMA PRA Category 1 Credits. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
CME Credit Instructions

• After completing the following modules:
  **Fostering Life Long Learning**
  Part 1 – Encouraging Reflective Practice
  Part 2 – Developing Skills for Evidence-based Practice
  Part 3 – Teaching Students Basic Literature Review

Email the Office of Assessment and Educational Development:
oaed@osteo.wvsom.edu
A post-test/survey will be sent for you to complete and return.