TENDING OUR PUBLIC HEALTH GARDEN:

KEEPING OUT OF THE POLITICAL WEEDS AND FINDING THE EVIDENCE-BASED FRUIT

Yajaira Valdez, MPH Candidate

Community Outreach Coordinator

Jacki Travers, Pharm.D.

Clinical Pharmacist

Pharmacy Management Consultants (PMC)

Disclosures

No conflicts of interest

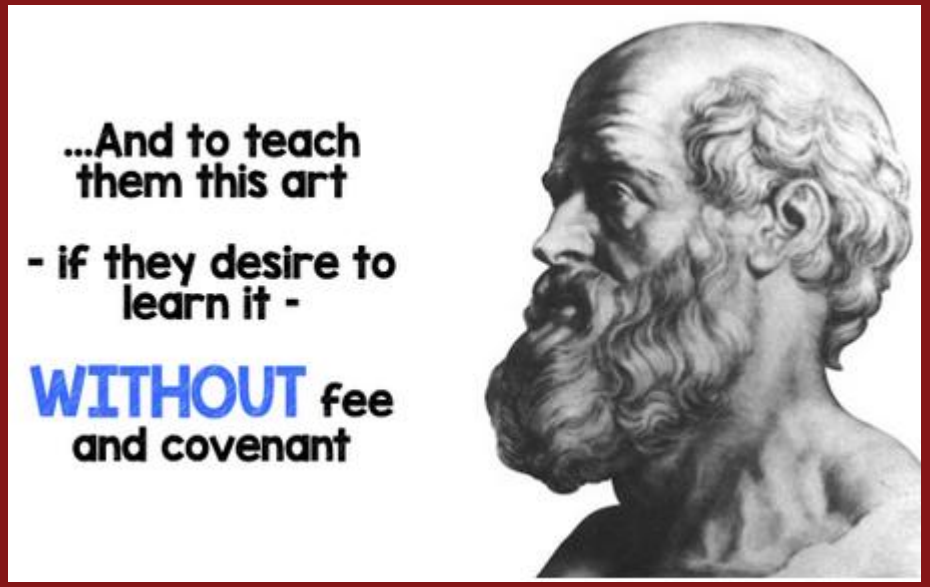
No financial or non-financial relationships of concern

Introduction

- Covid-19 global pandemic
- National legacy healthcare organizations
- Misinformation
- Politically driven healthcare narratives
- Accelerated publication timelines
- Open-access platforms
- “Publish or perish” research culture

FOAM:
Free Open Access Medical Education

- Podcasts
- Blogs
- Vlogs
- Social media
- Websites

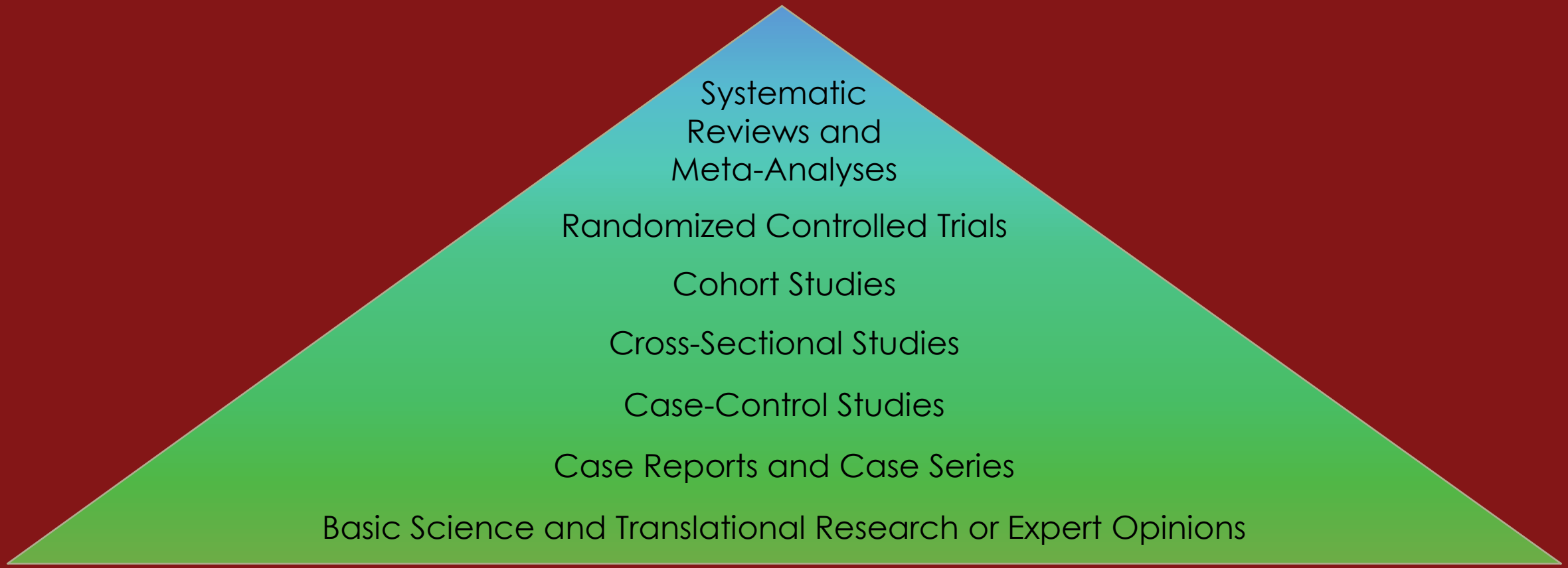


Which FOAM resources do you use most often?

2024 Top FOAM websites

- EM Docs (266)
- Life in the Fast Lane (232)
- EMCrit (188)
- ALiEM (185)
- Don't Forget the Bubbles (181)
- Rebel EM (174)

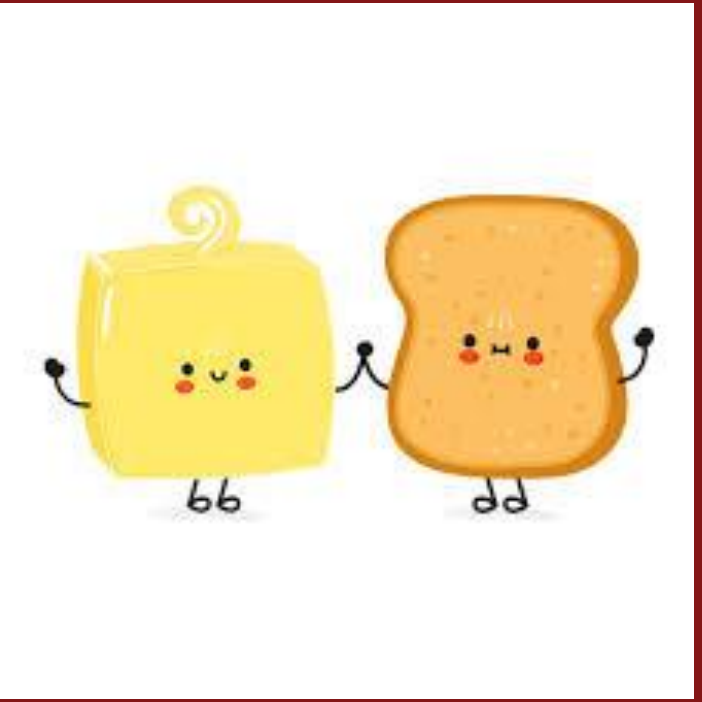
Hierarchy of Evidence



SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Systematic Reviews and Meta-Analyses

- Highest level of evidence
- Synthesizes multiple randomized control trials and other studies
- Distinctly different from narrative review
- Often uses the GRADE system to evaluate individual studies



SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Randomized Controlled Trials

- Placebo or standard of care comparators
- May be blinded
- Strongest support for causation

SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Cohort Studies

- Specific population with a subset of individuals
- Can show association

SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Cross-Sectional Studies

- Data collected for a specific time point
- Simultaneous measurement of exposure and outcome
- Often used for survey-based studies
- Can show association

SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Case-Control Studies

- Compares 2 or more groups
- Quick and economical to implement
- Helpful for rare diseases
- Can show association

SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Case Reports and Case Series

- Describes a clinical event
  - Case Report: Usually 4 or fewer patients
  - Case Series: Usually >4 patients
- Helpful for rare diseases or unusual presentations
- Helpful for generating hypotheses for additional studies
- Can show association

SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Basic Science, Translational Research, and Expert Opinions

- Basic Science and Translational Research:
  - Foundation for clinical research
  - Helpful for generating hypotheses for additional studies
  - Helpful to establish safety before human studies
- Expert Opinion:
  - Based on individual experience
  - Often subjective, biased, non-data based

SS Wallace, et al; Hierarchy of Evidence Within the Medical Literature. *Hosp Pediatr* August 2022; 12 (8): 745–750. **https://doi.org/10.1542/hpeds.2022-006690**

Hierarchy of Evidence

Think back to the most recent health recommendation or proclamation you saw/read/heard.

Where would you now say it fits into the hierarchy of evidence?

PICO(T): Building an Evidence-Based Clinical Question (1)

- Structured approach
- Systematic appraisal of evidence
- Identifies most applicable studies

https://www.nlm.nih.gov/oet/ed/pubmed/pubmed_in_ebp/02-100.html

PICO(T): Building an Evidence-Based Clinical Question (2)

P: Patient, Population, or Problem

- Who is the patient or population?
- What is the health issue or condition?

I: Intervention

- What main intervention, exposure, or treatment are you considering?

C: Comparison

- What is the alternative (if any, e.g., placebo, standard therapy, no intervention)?

O: Outcome

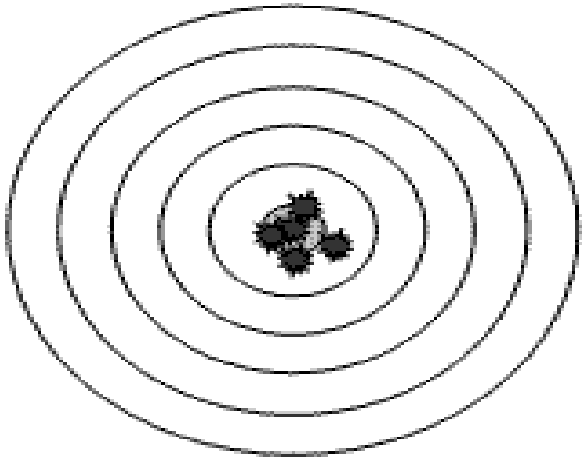
- What do you hope to accomplish, measure, or improve?

T: Time (optional)

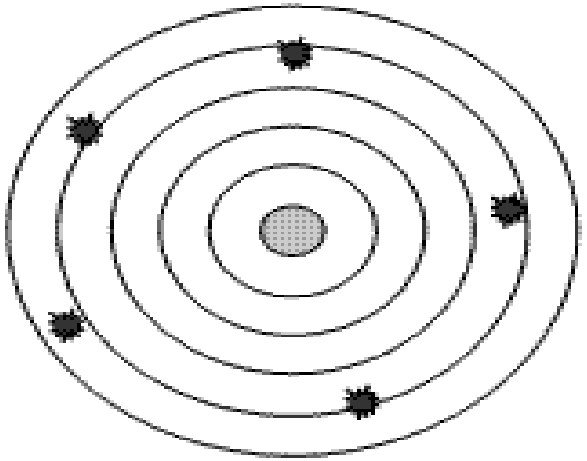
- Over what period will you observe outcomes? What is the alternative (if any)?

https://www.nlm.nih.gov/oet/ed/pubmed/pubmed_in_ebp/02-100.html

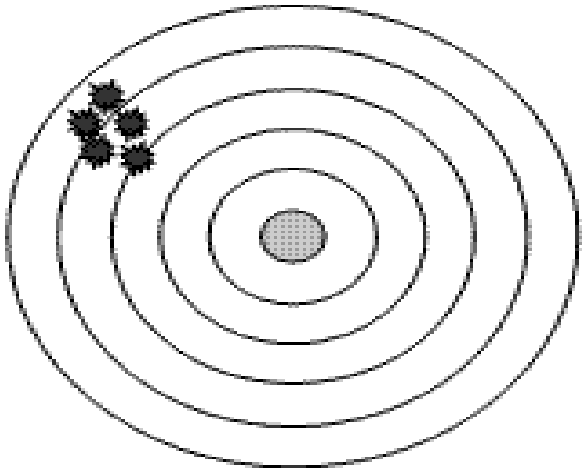
Validity & Reliability



Good reliability
Good validity



Good reliability (on average)
Poor validity



Good reliability
Poor validity

https://www-doh.nj.gov/doh-shad/home/ReliabilityValidity.html

Impact Factor (1)

- Average number of citations to recent articles in a journal
- Measure of influence, prestige, scientific impact
- Clarivate Analytics
- Original research articles and review articles

https://authorservices.taylorandfrancis.com/publishing-your-research/choosing-a-journal/journal-metrics/

Impact Factor (2)

- Advantages:
  - Quantitative standardized comparison method
  - Reflects the frequency of citations in other research
- Limitations:
  - Varies by discipline
  - Can be skewed or manipulated
  - Not a direct measure of the evidence quality

https://libguides.napier.ac.uk/researchperformance/journalimpact

On Your Own:

Try to estimate the number of "hits" for each of the following using the search term "ivermectin." Compare the top search results returned and evaluate the degree to which the best evidence is provided. Consider how you might incorporate this information when caring for your patients.*

- Centers for Disease Control and Prevention (CDC)
- Fox News
- Google
- Google Scholar
- Journal of the American Medical Association (JAMA)
- New England Journal of Medicine (NEJM)
- PubMed
- Slate

* These sites do not have paywalls. There are other left-leaning and right-leaning sites with paywalls that may yield different search results.

References and Additional Reading:

1. NA Peters, Everywhere, everything: Social media and emergency medicine pharmacist education, *AJHP*, 2025, **https://doi.org/10.1093/ajhp/zxaf205.**
2. A Grock, et al. FOAM authorship: Who's teaching our learners? *AEM Educ Train*. 2024 May 27;8(3):e10995. **doi: 10.1002/aet2.10995.**
3. J Kamtchum-Tatuene, JG Zafack. Keeping Up With the Medical Literature: Why, How, and When? *Stroke*. 2021;52(11). Available online at: **https://doi.org/10.1161/STROKEAHA.121.036141**. Last accessed 11/03/2025.
4. AM Esteves, B Bernardoni, et al. Major publications in the critical care pharmacotherapy literature: 2024. *J. Crit. Care*. 2025;90. Available online at: **https://doi.org/10.1016/j.jcrc.2025.155177**. Last accessed 11/03/2025.
5. A Ghasemi, P Mirmiran, et al. Scientific Publishing in Biomedicine: A Brief History of Scientific Journals. *Int J Endocrinol Metab*. 2022;21(1):e131812. Available online at: **https://doi.org/10.5812/ijem-131812**. Last accessed 11/03/2025.
6. DA Erku, SA Belachew, et al. When fear and misinformation go viral: Pharmacists' role in deterring medication misinformation during the 'infodemic' surrounding COVID-19. *RSAP*. 2021;17(1):1954-1963. Available online at: **https://doi.org/10.1016/j.sapharm.2020.04.032**. Last accessed 11/03/2025.

Additional Resources

- The Cochrane Collaborative: https://www.cochrane.org/
- NIH: Evidence-Based Medicine: https://www.ncbi.nlm.nih.gov/books/NBK470182/
- Winona State University Evidence Based Practice Toolkit: https://libguides.winona.edu/ebptoolkit
- Cornell University Library: https://guides.library.cornell.edu/public-health
- Harvard Countway Library: https://guides.library.harvard.edu/hms/ebm
- The GRADE Working Group: https://www.gradeworkinggroup.org/
- *How to Read a Paper, Fifth Edition*, Trisha Greenhalgh, ISBN-10: 1118800966: **https://www.amazon.com/How-Read-Paper-Evidence-Based-Medicine/dp/1118800966**

TENDING OUR PUBLIC HEALTH GARDEN:

KEEPING OUT OF THE POLITICAL WEEDS AND FINDING THE EVIDENCE-BASED FRUIT

Yajaira Valdez, MPH Candidate

Community Outreach Coordinator

Jacki Travers, Pharm.D.

Clinical Pharmacist

Pharmacy Management Consultants (PMC)