Evidence-Based Practice

Original material by Peggy Edwards, AMLS and Travis Real, MLIS Updated by Suzanne Gray, MLS and Shannon Harris, MSLS April 2024



Learning Objectives

After viewing this module students will be able to:

- Define Evidence-Based Practice (EBP).
- Understand the steps in the EBP process.
- Differentiate a clinical question based on diagnosis, therapy, prognosis or etiology.
- Effectively create a PICO clinical question.
- Identify resources to acquire EBP information.
- Evaluate information based on a hierarchy of evidence.
- Describe criteria used to evaluate resources critically.



What is Evidence – Based Practice?

Evidence–Based Practice (EBP) requires the integration of the best research evidence with clinical expertise and the patient's unique values and circumstances.

Use of Evidence–Based Practice resources is an important part of information literacy in healthcare and health sciences.



EBP Process The practice of EBP comprises of 5 basic steps (the 5A's)

Assess	 A clinical question starts with the patient.
Ask	Construct a well built clinical question derived from the case.
Acquire	Select appropriate resources and begin a search.
Appraise	Evaluate the research evidence for validity and applicability.
Apply	 In conjunction with patient preference, clinical expertise, and the researched evidence, apply to practice.



Step 1: Assess the Patient

- Determine what the issues are.
- Prioritize the issues.
- What if too many questions arise?
 - Patients may have several active problems:
 - possible questions about diagnosis, prognosis, therapy for each problem
 - questions may be too numerous to even ask, let alone answer
- What is the most important issue for this patient now?
- Which question, when answered, will help the most?
- Select the few questions that are most important to answer right away.



Step 1: Assess the Patient con't

- Begin with an assessment by the clinician to determine all the pertinent issue(s). This may include a differential diagnosis, treatment decisions, or prognosis.
- Classify the issues:
 - Is this issue a matter of treatment?
 - Is it a matter of whether the treatment is going to hurt my patient?
 - Is it a matter of what is going to happen in the future? Prognosis?
 - Is it a matter of whether I want to implement a clinical policy? Practice Guidelines?
- Knowing the category of the issue leads to the next stage: **ASKING**



Step 2: Ask the Question

Determine through expertise, history taking, and patient interaction what type of clinical question is under investigation.

 Diagnosis: the process of identifying a disease or condition. Making the correct diagnosis is the foundation for making decisions on clinical intervention.

What disease or condition does the patient have?

- Therapy: an action or intervention that can potentially improve care or prevent diseases or conditions.
 What is the best treatment for this disease of condition?
- Etiology: the cause of a disease, condition or situation. It may also be referred to as harm or causation. What is the cause of the patient's disease or condition?
- Prognosis: the progression of a treated disease.

What outcome can be expected from the treatment or intervention used?



PICO

A clinical question should be directly relevant to the problem. Using the PICO format, the question can be phrased to facilitate searching for a precise answer.

- Patient, population or problem being addressed.
- Intervention being considered.
- Comparison intervention or exposure, when relevant.
- Outcomes of interest.



Step 3: Acquire

PubMed's Clinical Queries:

- search tool that quickly locates EBP journal articles
- uses study question categories: therapy, diagnosis, etiology, prognosis
- includes appropriate study designs





PubMed Clinical Queries Search

1)Navigate to: https://ttuhsc.libguides.com/

2) Click on PubMed on library homepage:

Popular Databases

- Access Products Index [*note]
- CINAHL Ultimate
- ClinicalKey
- Cochrane Databases
- DynaMed
- EBSCO Discovery
- Embase
- Essential Evidence Plus [*note]
- Medical Letter
- Micromedex
- Nursing Reference Center
- Ovid databases

PubMed [tip - use LibKey Nomad]

3) On PubMed homepage click on Clinical Queries:



4)Type keywords in search box:





Acquire: Point of Care

Point–of–Care Systems:

- Contain detailed modules about diseases.
- Information overviews; rapid electronic updating.
- Generally, includes information on:

Etiology Diagnosis Therapy Prognosis

- Information is rated according to evidence quality level.
- Available via mobile apps for access at patient bedside.



Accessing Point of Care Tools

Navigate to:

https://ttuhsc.libguides.com/	ClinicalKey'	⊕ English CME/MOC Login Register	Specialties Alerts Drugs A-Z Drug Interactions Ca	Iculators EBM	
opular Databases Access Products Index [*note] CINAHL Ultimate ClinicalKey Cochrane Databases DynaMed	Search for conditions, treatments, drugs, books, journals, and more All Types Type your search Merative Micromedex®	Search	English English Constraints English Constraints English Constraints English Constraints Constraints English Constraints Constraints	Search	Whick personalized alerts and continuing education credits with a free personal account. Isign in Create Account Vaur access countery of TEAS TECH UNIVERSITY- HALTH SCIENCES CENTER LIBRARIES
EBSCO Discovery Embase	Home Drug NEWI Interactions IV Compatibility Drug ID Comparison Search Drug, Disease, Toxicology, and more	n CareNotes UpToDa	ate* Search UpToDate Q & Help v 💄 Texas Tech University Health Science		ch University Health Sciences Center User 🗸
Essential Evidence Plus [*note]		Contents V C	iculators Drug Interactions UpToDate Pathways Pathways		s
Medical Letter Micromedex Nursing Reference Center Ouid databases	Keyword search	Q. View By Specialty	List Alphabetically Search Pathways	Clinically Significant Updat	es Only
Evid databases PubMed [tip - use LibKey Nomad] SCOPUS ScienceDirect	WILEY	SSENTIAL VIDENCE PLUS	Search EE+ for		Q
UpToDate Lexidrug [*note]					and the second sec
Web of Science	New Search				Sign in 🞽 Folder Help
TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER™	Nursing Reference Center Plus	All Areas Diseases Ski Search all content in NRC Plus Advanced Search Search History	ills Drugs Management	Continuing Ed More -	TEXAS TECH UNIVERSITY - HEALTH SCIENCES CENTER LIBRARIES

DynaMed

Acquire EBP Literature Databases

Access below databases at https://ttuhsc.libguides.com/az/databases.

Cochrane Library (from the Cochrane Collaboration) <u>https://www.cochranelibrary.com/</u>

 Collection of three databases that contain different types of high-quality, independent evidence to inform healthcare decision-making.

JBI Tools (Joanna Briggs Institute) (nursing)

 Includes the JBI Library of Systematic Reviews, Best Practice Information sheets, Evidence Summaries and Evidence-Based Recommended Practice.

OTseeker

• Abstracts of systematic reviews and randomized controlled trials relevant to occupational therapy.

PEDro (physical therapy)

Abstracts of randomized controlled trials, systematic reviews, and practice guidelines in physiotherapy.
 Some links to full text articles.

Trip Pro

• Users can easily identify the highest quality clinical evidence from a wide range of sources.



Point of Care Tutorial Links

Each database provides their own tutorials:

- ClinicalKey: <u>Tutorials</u>
- Dynamed: <u>Tutorials</u>
- Essential Evidence Plus: <u>Tutorials</u>
- Micromedex: <u>Tutorials</u>
- Nursing Reference Center: <u>Tutorial</u>
- PubMed: <u>Tutorials</u>
- Rehabilitation Reference Center: <u>Tutorial</u>



Review point #1

Your patient is a 45–year–old female just diagnosed with mild hypertension. She does not want to start taking pills and has asked you if she can make other changes that might bring her blood pressure back within normal range.

The **PICO** statement is:

- P 45-year-old female with mild hypertension.
- I lifestyle modifications.
- C medication.
- O B/P within normal limits.

Is this PICO statement stated correctly?



Answer #1

Yes. Each element of the scenario is precisely stated. This will help you develop a search strategy that will answer your patient's question.



Acquire: Quality of Evidence

- Study design is important in determining the quality of evidence.
- Insufficient attention to quality of evidence risks inappropriate guidelines and recommendations that may lead clinicians to act to the detriment of their patients.
- Factors that affect the strength of a recommendation:
 - Quality of evidence
 - Uncertainty about the balance between desirable and undesirable effects
 - Uncertainty or variability in values and preferences (of patients)
 - Uncertainty about whether the intervention represents a wise use of resources



Definitions of Study Design

- Case-control study: A study that compares people with a specific disease or outcome of interest (cases) to people from the same population without that disease or outcome (controls), and which seeks to find associations between the outcome and prior exposure to particular risk factors. This design is particularly useful where the outcome is rare and past exposure can be reliably measured. Case-control studies are usually retrospective, but not always.
- Case series: A study reporting observations on a series of individuals, usually all receiving the same intervention, with no control group.
- Cohort study: An observational study in which a defined group of people (the cohort) is followed over time. The outcomes of people in subsets of this cohort are compared, to examine people who were exposed or not exposed (or exposed at different levels) to a particular intervention or other factor of interest. A prospective cohort study assembles participants and follows them into the future. A retrospective (or historical) cohort study identifies subjects from past records and follows them from the time of those records to the present. Because subjects are not allocated by the investigator to different interventions or other exposures, adjusted analysis is usually required to minimize the influence of other factors (confounders).



Definitions Cont'd

- Meta-analysis: The use of statistical techniques in a systematic review to integrate the results
 of included studies. Sometimes misused as a synonym for systematic reviews, where the
 review includes a meta-analysis.
- Prospective study: In evaluations of the effects of healthcare interventions, a study in which people are identified according to current risk status or exposure, and followed forwards through time to observe outcome. Randomized controlled trials are always prospective studies. Cohort studies are commonly either prospective or retrospective, whereas casecontrol studies are usually retrospective. In Epidemiology, 'prospective study' is sometimes misused as a synonym for cohort study.
- Randomized controlled trial: An experiment in which two or more interventions, possibly including a control intervention or no intervention, are compared by being randomly allocated to participants. In most trials one intervention is assigned to each individual but sometimes assignment is to defined groups of individuals (for example, in a household) or interventions are assigned within individuals (for example, in different orders or to different parts of the body).



Definitions Cont'd

- Retrospective study: A study in which the outcomes have occurred to the participants before the study commenced. Case-control studies are usually retrospective, cohort studies sometimes are, randomized controlled trials never are.
- Systematic review: A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyze and summarize the results of the included studies.





N-of-1Randomized Controlled Trials

Experiment designed to:

• determine effect of an intervention/exposure on a single study participant

In a one N–of–1 design:

- patient undergoes pairs of treatment periods
- 1 period involves the use of the experimental treatment
- 1 period involves the use of an alternate treatment/placebo
- if possible, patient and clinician are blinded
- outcomes are monitored

Treatment periods are replicated:

- until clinician and patient are convinced that:
 - treatments are definitely different
 - or definitely not different



Evidence-Based Treatment

"Clinicians should use the results of randomized controlled trials (RCTs) of groups of patients to guide their clinical practice. However, clinicians cannot always rely on the results of RCTs...To determine the best care for an individual patient, clinicians can conduct N–of–1 randomized controlled trials in individual patients." (Guyatt, 2008)





Quality of Evidence: GRADE

GRADE: Grading of Recommendations, Assessment, Development, and Evaluation



Code	Quality of Evidence	Definition
А	High	 Further research is very unlikely to change our confidence in the estimate of effect. Several high-quality studies with consistent results In special cases: one large, high-quality multi-centre trial
В	Moderate	 Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate. One high-quality study Several studies with some limitations
С	Low	 Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate. One or more studies with severe limitations
D	Very Low	 Any estimate of effect is very uncertain. Expert opinion No direct research evidence One or more studies with very severe limitations

Working Group 2007 1 (modified by the EBM Guidelines Editorial Team)

Hierarchy of Strength of Evidence

Hierarchy of Strength of Evidence for Prevention and Treatment Decisions

N-of-1 randomized trial

Systematic reviews of randomized trials

Single randomized trial

Systematic review of observational studies addressing patient-important outcomes

Single observational study addressing patient-important outcomes

Physiologic studies (studies of blood pressure, cardiac output, exercise capacity, bone density, etc.)

Unsystematic clinical observations



Recommendations

- Judgements about evidence and recommendations are complex. ("Grading quality of evidence and strength of recommendations," 2004, p. 1)
- The strength of a recommendation reflects the extent to which we can be confident that desirable effects of an intervention outweigh undesirable effects. (Guyatt et al., 2008, p. 1049)
- The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach is a system for rating the *quality of evidence* and *strength of recommendations* that is explicit, comprehensive, and increasingly adopted by guideline organizations. The system classifies the confidence in estimates of effect into 1 of 4 levels (high, moderate, low, or very low). Recommendations are graded as strong or weak.

(In Guyatt, Rennie, Meade, & Cook, 2015, Glossary & American Medical Association, 2015, glossary)



Strength of Recommendation

"Recommendations to administer, or not administer, an intervention, should be based on the tradeoffs between benefits on the one hand, and risks, burdens and, potentially, costs on the other. If benefits outweigh risks and burdens, experts will recommend that clinicians offer a treatment to typical patients. The uncertainty associated with the tradeoff between the benefits and risks and burdens will determine the strength of recommendation."

(GRADE Working Group, 2005)

	 SORT: Strength of Recommendation Taxonomy (A, B, C) 					
Strength-of-Recommendation Taxonomy (SORT)						
	Code	Definition				
	А	Consistent, good-quality patient-oriented evidence *				
	В	Inconsistent or limited-quality patient-oriented evidence *				
	С	Consensus, disease-oriented evidence *, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening				
	* Patient-oriented evidence measures outcomes that matter to patients: morbidity, mortality, symptom improvement, cost reduction, and quality of life. Disease-oriented evidence measures immediate, physiologic, or surrogate end points that may or may n					

https://www.essentialevidenceplus.com/Home/Loe?show=Sort

reflect improvements in patient outcomes (e.g. blood pressure, blood chemistry,

physiologic function, pathologic findings).



Step 4: Critical Evaluation Criteria

The fourth step in the EBP process is to critically appraise the retrieved articles. Consider these questions:

Are the results valid? (validity)

- Did intervention and control groups start with the same prognosis?
- Was prognostic balance maintained as the study progressed?
- Were the groups prognostically balanced at the study's completion?

What are the results? (reliability)

- How large was the treatment effect?
- How precise was the estimate of the treatment effect?

How can I apply the results to patient care? (applicability)

- Were the study patients similar to my population of interest?
- Were all clinically important outcomes considered?
- Are the likely treatment benefits worth the potential harm and costs?

Review point #2

An N–of–1 randomized controlled trial determines the effect of an intervention or exposure on:

a) patients from several cooperating centersb) patients in a test group and in a control groupc) a single study participantd) multiple patients



Answer #2

An N–of–1 randomized controlled trial determines the effect of an intervention or exposure on____.

 The correct answer is (c) a single study participant (see glossary N-of-one study)



Review point #3

Critical evaluation of your retrieved articles is an important part of Evidence– Based Practice. The three main questions you need to ask about the results are:

- What are the results?
- Are the results valid?
- Are the results from a meta-analysis or a systematic review?

Yes or No?



Answer #3

No. The third question to ask is:

How can I apply the results to patient care?

Even if the research you find has been done well and you feel the results are valid, if it is not applicable to your patient then it is not helpful to you.

To refresh your knowledge: see Critical Evaluation in Glossary.



Step 5: Apply- Integrating EBP with Patient Values

The fifth step in the EBP process is to integrate the patients values:

Patient preferences:

- Relative values patients place on various health states.
- Determined by values, beliefs, and attitudes patients consider during decision-making.

Decision making approaches consistent with patient's values:

- Clinician ascertains preferences, makes decision on behalf of patient.
- Informed: Physician provides information, patient makes decision.
- Shared: patient and clinician both bring information/evidence and values/preferences to the decision.

Patient Education Tools:

- Reliable, free consumer medical information in MedlinePlus.gov.
- Consider patient's literacy and health literacy level.



Educating Patients

Health literacy can be defined in two ways:

- Personal health literacy is the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others.
- Organizational health literacy is the degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others. (<u>https://www.cdc.gov/healthliteracy/basics.html</u>)

Health care professionals must be aware of their patients' health literacy levels to maximize the effectiveness of their interactions.



Tools for Educating Patients

CDC's Health Literacy site provides:

- information
- tools
- links

on health literacy research, practice, and evaluation for public health topics and situations.

https://www.cdc.gov/healthliteracy/ basics.html

Centers for Disease Control a CDC 24/7: Saving Lives, Protecting People TM	Search	Q		
Health Literacy				
CDC > Health Literacy				
A Health Literacy	Lissiah Literes en Design			
Health Literacy Basics —	Health Literacy Basics			
What is Health Literacy?		Connect with Us		
Understanding Health Literacy	What Is Health Literacy? Discover why health literacy skills are so important.	Subscribe to Health Literasy		
Understanding Literacy & Numeracy	Understanding Health Literacy Health literacy can help us find, understand, and use health information to prevent health problems and protect our health. Learn more.	Weekly update		
Talking Points About Health		Leaders Talk About Health		
Literacy				
Leaders Talk About Health Literacy		Literacy		
Organizations and Committees	Understanding Literacy and Numeracy		_	
Find Training +	What people know and what they do with that knowledge has a major impact on their overall health. Learn how.			
Create a Health Literacy Plan +				
Collaborate +	Talking Points About Health Literacy Quickly tell people why health literacy is important.			
Guidelines, Laws, & Standards		MAX YA		
Develop & Test Materials +	Leaders Talk About Health Literacy	3		
Health Literacy Research +	Read what senior leaders are saying about health literacy.	<i>"First, we will combat</i>		
Evaluating Your Programs	Organizations and Committees Get health literacy web resources provided by the U.S.	misinformation with clear communication" Vice Admiral Vivek H. Murthy. MD.		



Tools for Educating Patients

MedlinePlus®: patient education database that contains authoritative, reliable information in an easily understood reading level.

Coverage includes:

- Health topics.
- Drugs, herbals, supplements.
- Medical dictionary.
- Medical encyclopedia.
- Directories.
- Organizations.
- Interactive videos.
- Health information in multiple languages.

https://medlineplus.gov/





Final Points

Integrating the principles of EBP into your future practice will include:

- using the five steps of the evidence-based process.
- building a focused well-articulated clinical question using PICO.
- using EBP information resources.
- determining the strength of recommendations, the quality of evidence, and the strength of the evidence.
- critically appraising the information.
- integrating the information with the patient's values.



Further Study

CEBM, Centre for Evidence Based Medicine. (2016). CEBM. Website, Centre for Evidence Based Medicine, University of Oxford, Oxford, U.K. <u>http://www.cebm.net</u>

Straus, S.E., Richardson, W.S., Glasziou, P., & Haynes, R.B. (2005). *Evidence–based medicine: how to practice and teach EBM*. Edinburgh: Elsevier/Churchill Livingstone.

The Cochrane Library. (2024). Cochrane Library. http://www.cochranelibrary.com



Glossary

<u>Best research evidence</u>: Valid and clinically relevant research, often from the basic sciences of medicine.

<u>Clinical Queries (in PubMed)</u>: Provides specialized searches for clinicians. It includes clinical search filters based on research done by R. Brian Haynes, M.D., Ph.D. Five study categories or filters are provided: etiology, diagnosis, therapy, prognosis, and clinical prediction guidelines.

Two scope filters are provided:

Broad/Sensitive search – includes relevant citations but probably less relevant; will retrieve more.

Narrow/Specific search – will get more precise, relevant citations but less retrieval.



<u>Clinical expertise</u>: The ability to use clinical skills and past experience to identify each patient's unique health state and diagnosis rapidly.

<u>Cochrane Collaboration</u>: An independent global network... that gathers and summarizes the best evidence from research to help users make informed choices about treatment. They produce the Cochrane Library.

<u>Critical appraisal</u>: The process of assessing and interpreting evidence by systematically considering its validity, results, and relevance.



<u>Evidence–based practice (EBP)</u>: "Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine requires the integration of individual clinical expertise with the best available external clinical evidence from systematic research and our patient's unique values and circumstances." (Sackett, 2000)

By clinical expertise we mean the ability to use our clinical skills and past experience to rapidly identify each patient's unique health state and diagnosis, their individual risks and benefits of potential interventions, and their personal circumstances and expectations.

By patient values we mean the unique preferences, concerns and expectations each patient brings to a clinical encounter and which must be integrated into clinical decisions if they are to serve the patient. By patient circumstances we mean their individual clinical state and the clinical setting.



<u>GRADE:</u> Grading of Recommendations, Assessment, Development, and Evaluation.

<u>Hierarchy of Study Designs</u>: A system of classifying and organizing types of evidence, typically for questions of treatment and prevention. Clinicians should look for the evidence from the highest position in the hierarchy.

Patient circumstances and unique values:

Circumstances: Their individual clinical state and the clinical setting. Values: The unique preferences, concerns, and expectations each patient brings to a clinical encounter.

PICO: A method for answering clinical questions.



<u>Quality of Evidence</u>: Can be categorized as high, moderate, low, or very low.

Strength of Recommendation Taxonomy (SORT):

Addresses the quality, quantity, and consistency of evidence and allows authors to rate individual studies or bodies of evidence. The taxonomy is built around the information mastery framework, which emphasizes the use of patient—oriented outcomes that measure changes in morbidity or mortality.

A-level recommendation is based on consistent and good-quality patient-oriented evidence.

B-level recommendation is based on inconsistent or limited-quality patient-oriented evidence.

C-level recommendation is based on consensus, usual practice, opinion, disease-oriented evidence, or case series for studies of diagnosis, treatment, prevention, or screening. *(Ebell, & et al., 2004)*



References

Centre of Evidence–Based Physiotherapy. (1999). Welcome to PEDro. Retrieved from http://www.pedro.org.au/

Citrome, L., & Ketter, T. A. (2009). Teaching the philosophy and tools of evidence–based medicine: Misunderstandings and solutions. *Journal of Evidence-Based Medicine, 2* (4) pp.220-5, November, 2009, doi: <u>http://dx.doi.org/10.1111/j.1742-1241.2009.02014.x</u>

Dawes, Martin. (2001). Practice of Evidence–Based Medicine [PowerPoint slides] . Retrieved from: <u>http://slideplayer.com/slide/4593145/</u> 23 Apr. 2018.

Essential Evidence Plus EBM Guidelines Editorial Team. (2010). *Modification of GRADE (grading of recommendations assessment, development and evaluation) working group 2007, http://www.gradeworkinggroup.org/*. Retrieved from http://www.gradeworkinggroup.org/. Retrieved from

Ebell, M.H., Siwek, J., Weiss, B.D., Woolf, S.H., Susman, J., Ewigman, B., & Bowman, M. (2004). Strength of recommendation taxonomy (sort): a patient–centered approach to grading evidence in the medical literature. *American Family Physician*, 69(3) 548-56, Retrieved from http://www.aafp.org/afp/2004/0201/p548.html

Goode, C.J., Fink, R.M., Krugman, M., Oman, K.S. and Traditi, L.K. (2011), The Colorado Patient-Centered Interprofessional Evidence-Based Practice Model: A Framework for Transformation. Worldviews on Evidence-Based Nursing, 8: 96-105. <u>https://doi.org/10.1111/j.1741-6787.2010.00208.x</u>

GRADE Working Group. (2004). *Grading quality of evidence and strength of recommendations.* (2004). *BMJ*, 328(7454), 1490. Retrieved from https://doi.org/10.1136/bmj.328.7454.1490

Guyatt, G. H., Oxman, A. D., Vist, G. E., Kunz, R., Falck-Ytter, Y., Alonso-Coello, P., & Schünemann, H. J. (2008). GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*, *336*(7650), 924-926. PMID 18436948



References cont'd

Guyatt, G. H., Oxman, A. D., Kunz, R., Falck-Ytter, Y., Vist, G. E., Liberati, A., & Schünemann, H. J. (2008). Going from evidence to recommandations. *BMJ*, 336(7652), 1049-1051. PMID 18467413

Guyatt, G. H., Oxman, A. D., Kunz, R., Vist, G. E., Falck-Ytter, Y., & Schünemann, H. J. (2008). What is "quality of evidence" and why is it important to clinicians? *BMJ*, *336*(7651), 995-998. PMID 18456631

Guyatt, G., Rennie, D., Meade, M., & Cook, D. (2015). Users' guides to the medical literature. New York: McGraw-Hill Education Medical.

Health literacy basics. (2023, September 12). Centers for Disease Control and Prevention. https://www.cdc.gov/healthliteracy/basics.html

(n.d.). MedlinePlus - Health Information from the National Library of Medicine. https://medlineplus.gov/

Sackett, D.L. (2000). Evidence-based medicine: how to practice and teach EBM. Edinburgh: Churchill Livingstone.

Straus, S.E., Richardson, W.S., Glasziou, P., & Haynes, R.B. (2005). *Evidence–based medicine: how to practice and teach EBM*. Edinburgh: Elsevier/Churchill Livingstone.

The Cochrane Library. (2024). *About the Cochrane Library.* Retrieved from <u>http://www.cochranelibrary.com/about/about-the-cochrane-library.html</u>

The JAMA Network. The 5A's of the health information cycle: Robert Hayward, MD, defines the 5A's of the health information cycle and helps learners understand the process. *JAMAevidence audio* [audio podcast]. Retrieved from https://jamaevidence.mhmedical.com/podcasts.aspx

