Welcome

Searching the Literature in an Evidence-Based Way

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Objectives:

• Discover the process of scientific research

• Practice searching the literature in order to find evidence.

• Explore various types of studies and their level of bias.

• Read a research paper in a “skeptical” way.
Evidence-Based Practice

- Evidence-based Practice is “the conscientious and judicious use of current best evidence in making decisions about the care of individual patients.”

  Finding the Evidence a Review – O’Rourke and Weglarz UMDNJ-RWJ Library of Health Sciences

- EBP arose because very often health practitioners were making decisions solely based on personal experience. “This is how we do it.”

- New research is taking place, but literature is published at a rate that is impossible for individual healthcare clinicians to keep up with.
  - 2010 study indicates that over 75 clinical trials and 11 systematic reviews were published every day in medicine.¹
  - At 10 minutes per article it would take over 14 hours a day to read them all.

  Bastian H, Glaziou P, Chalmers I. Seventy-five trials and eleven systematic reviews a day: how will we ever keep up?

- EBP tools and methods help you to summarize the best information making good evidence easier to find. This reduces the delay and provides better support for changing care.
The “As” of Evidence Based Practice

Assess the situation:  What is the story?  Your patient or case.

Ask questions:  Find background information to fill in your knowledge
Foreground – the question that needs an answer now

Acquire the evidence:  from quality resources

Appraise the literature:
  * Was it a well conducted study?
  * Were there statistics and were they significant?
  * How does it relate to my patient?

Apply what you have found and
Activate it in your daily practice:  by transferring the knowledge into
guidelines and protocols.
Step 1 - Assess the situation
What is the story? (Case study)

You are answering a call from the family of an adult with longstanding severe asthma. She is experiencing an acute attack and continuous nebulized bronchodilator treatments and inhaled steroids are not relieving her wheezing and difficulty in breathing. You have recently heard from colleagues that magnesium sulfate has been effective in its use for acute asthma in adults. Would administering magnesium sulfate during transport to the Emergency Department prevent a hospital admission?
Step 2: ASK Questions
Formulating a Well-Built Question

The acronym **PICO** assists in remembering the steps:

- **P** – Patient or problem  patient, population, problem (disorder or disease)
- **I** – Intervention (What is going to happen?)  examine? treat? prevent?, diagnose? Screen? (This is the finding under review.)
- **C** – Comparison intervention comparison to, placebo, Gold Standard*, benchmark, guideline, protocol, NOTHING*  *In medicine the gold standard test usually refers to a diagnostic test or benchmark that is the best available under reasonable conditions.
- **O** – Outcome(s) (What do you want to happen?)  mortality, disease progression, results of diagnostic test, cost effectiveness, etc.

*Some questions do not fit into the PICO format.* You may not have a specific comparison or you might have multiple outcomes. PICO helps to focus your question. Changes may be made as you gather more information.
PICO Components

What is the patient’s disorder or disease? _____________________________________________

What is the intervention? __________________________________________________________

What is the comparison intervention? ______________________________________________

What is the outcome? ______________________________________________________________

If you cannot “fit” into PICO, then think “exposure to outcome.”

What has happened and what am I going to do about it?
Where does medical information come from?
What types of sources should I look for?
How do I find reliable information?
Step 3 - Acquire the evidence from quality sources. Start with the **library**.

- Find background information to fill in your knowledge

- Links to Webster’s online medical dictionary
- Links to Stedman’s Medical Dictionary
- MedlinePlus®
- STAT!Ref
- Drug Information Portal
- PDR
Databases for Paramedic Research

The 3 databases listed below contain clinical trials, case studies, reports of research, etc. You have to do the work of searching, gathering, comparison, and appraisal of research.

Primary Information: (BCC Homepage – Databases A-Z List)

- **PubMed** (Largest Medical Index in the world.) Not everything is full-text. (4300 Journals Indexed, Over 11 million citations, 1966-present.)
- **Science Direct** (Worldwide scientific and medical publications)
  Primary Sources – “Research”  Filtered Resources – “review”
- **CINAHL** (Cumulative index to Nursing and Allied Health Literature; Very little full text.)
Databases for Paramedic Research (Cont.)

Filtered Information: (BCC Has Access)
- PubMed Clinical Queries (Part of PubMed Database)
- ECRI Guidelines Trust

Limited Free Access
- TRIP Database (Turning Research Into Practice)
- DARE (Database of Abstracts of Reviews of Effectiveness)
- Cochrane Database of Systematic Reviews (Abstracts only)

Other Filtered Databases: (BCC does not have access)
DynaMed, ACP Pier, Joanna Briggs Institute EBP Database, UpToDate
What is MeSH?

- an acronym for Medical Subject Headings.
- the U.S. National Library of Medicine's controlled vocabulary (thesaurus).
- a vocabulary that gives uniformity and consistency to the indexing and cataloging of biomedical literature.
- a distinctive feature of MEDLINE: Description of the Database.
- arranged in a hierarchical manner called the MeSH Tree Structures.
- updated annually.
- Searchers of MEDLINE/PubMed, library catalogs, and other databases use MeSH to assist with subject searching.
- National Library of Medicine (NLM) indexers use MeSH to describe the subject content of journal articles for MEDLINE.
- CINAHL subject headings are based on MeSH.

There are **two ways** to search PubMed to find evidence based literature.

1- Put important words and phrases into the PubMed **search box** and checkout the words, phrases and MeSH used and related papers to lead to other citations.
   
   Add filters for: clinical trials; controlled clinical trial; randomized controlled trial; meta analysis; case studies, etc.  
   (upper left side of screen)

2- Start in **Clinical Queries** and put words in the search box and choose the category.  (You will receive only filtered information.)
TYPES OF STUDY DESIGNS

- Systematic review -- Comprehensive, unbiased analysis of research findings on a specific topic which uses a strict scientific design to assess related scientific studies.

- Meta-Analysis -- Merged statistical results from a number of related studies.

- Double-Blind Randomized Control trial – Neither the researcher(s) nor the subject(s) know who is receiving the medication or a placebo.

- Randomized control trial – Randomly assigns participants into an experimental group or a control group. As the study is conducted, the only expected difference between the control and experimental groups is the variable being studied.

- Cohort studies – A study where one or more groups of subjects (called cohorts) are followed prospectively and subsequent status evaluations with respect to a disease or outcome are conducted to determine which initial participants or exposure characteristics (risk factors) are associated with the disease or outcome.

- Case Control Study – A study that retrospectively compares patients who have a disease or an outcome of interest with patients who do not have the disease or outcome (controls). Compares relationship between the risk factor and the disease.

- Case Series – Samples patients with specific outcomes and specific exposure or just specific exposure. There is no comparison group. (weak study design)

- Case Reports -- Reports that describe the history of a single patient, or a small group of patients, usually in the form of a story.

- Case Study -- An intensive investigation of a case involving a person or small group of persons, an issue, or an event.
Critically Appraise Evidence

• Was the assignment of patients really randomized?
• Were all clinically relevant outcomes reported?
• Were the study patients recognizably similar to your patient?
• We both clinical and statistical significance considered?
• Is this intervention feasible in your practice?
• Were all the patients who entered the study accounted for at its conclusion?

Finding the Evidence a Review – O’Rourke and Weglarz
UMDNJ-RWJ Library of Health Sciences
Evidence Pyramid

- Systematic Reviews
- Critically-Appraised Topics [Evidence Syntheses and Guidelines]
- Critically-Appraised Individual Articles [Article Synopses]
- Randomized Controlled Trials (RCTs)
- Cohort Studies
- Case-Controlled Studies
- Case Series / Reports
- Background Information / Expert Opinion

Quality of Evidence

FILTERED INFORMATION

UNFILTERED INFORMATION

Bergen Community College
Rare Opportunities. Shared Dreams.
Systematic Reviews

• Systematic reviews locate, appraise and synthesize evidence from scientific studies in order to provide important, *empirical answers to scientific research questions.

• Systematic Reviews differ from other reviews in that they adhere to strict scientific design to make them more comprehensive, minimize bias, and ensure reliability.

  *empirical – results derived from scientific evidence rather than theory

Finding the Evidence a Review – O’Rourke and Weglarz
UMDNJ-RWJ Library of Health Sciences
What are structured abstracts?
A structured abstract is an abstract with distinct, labeled sections (e.g., Introduction, Methods, Results, Discussion) for rapid comprehension.  

U.S. National Library of Medicine
Parts of a Research Article

• **Article Title** – Succinct description stating purpose of article and using important keywords that can be retrieved by various search engines.

• **Author information** – Author(s) names and institutional affiliations. Contact information.

• **Abstract** – Summary of the scientific process used including introduction, methods, results and conclusion.

• **Introduction** – Background information. Previous research. Research gap that is being addressed. Purpose of the research.

• **Methods** – How the study, experiment or observation was conducted. Participants chosen, methods, materials, procedures. How data was analyzed. Methods are described in detail so that study can be replicated.

• **Results** – Reports data gathered, analysis of data. Includes tables and graphs.

• **Discussion/Conclusions** – Clearly states primary findings. States explanations and conclusions that can be drawn. Assesses limitations. Suggestions for further research.

• **References/Bibliography** – Prior research that was consulted.
Example of a Systematic Review - Evidence

https://ac.els-cdn.com/S109455391630102X/1-s2.0-S109455391630102X-main.pdf?_tid=8ccd90ac-a5f2-11e7-8512-00000aab0f27&acdnat=1506784862_a7538bf7f162bf2c6395b9e8eeceea5bd
Step 4: Critical Appraisal (Cont.)

CASP Appraisal Checklists –
http://www.casp-uk.net/checklists

• Checklists for different types of studies.
• Definitions for each type of study.
Step 5: Apply what you have found

- Once you have determined that the study and its results are valid, you need to decide if it applies to your specific patient and situation.

- A study can be rigorously conducted and generate clinically significant results, but the results can be useful only if they apply to your patient.

Evidence-Based Practice: An Interprofessional Tutorial. University of Minnesota Libraries. https://www.lib.umn.edu/apps/instruction/ebp/ https://creativecommons.org/licenses/by-nc-sa/4.0/
**Step 6: Activate it in your daily practice**

by transferring the knowledge into guidelines and protocols. One that you create or one already proven.

**ECRI Guidelines Trust:** create a free account

STAT!Ref: create an account, sign up for Evidence Alerts
Step 7: Re-Evaluating the Evidence

EBP builds on itself. It is constantly being reshaped by clinical research and the clinical expertise of the practitioners.

- Was the diagnosis or treatment successful?
- *Is there new evidence on this topic?*
- What was the patient’s response or attitude?
- What information would help you to make a decision next time?
Citing your Journal Articles

Use APA format

• Many resources will provide the citation automatically.
• Go to the full text or PDF of the article if available.
• Look for any link that says “cite.”
• To create your own citation:
  • Click on Citation Help from the library home page
  • Click on the APA tab
Obtaining Full Text Articles

PDF’s or html from Library databases, PubMed (open access), or Google Scholar

**Journals A-Z List** – Lists all journals to which we have access.

**Use Google Scholar** – Links to BCC Library Holdings and “open access” articles.

**Interlibrary Loan** – copies from other libraries
Questions?
Comments?

Reference Desk
Phone: (201) 447-7436
Click on “Got questions?”
on library website:
http://www.bergen.edu/library
Contact me directly:
E-mail: jdalrymple@bergen.edu
http://bergen.libguides.com/paramedic