Evidence Based Practice (EBP)

EBP is a process that involves finding the most current evidence based literature (usually a Randomized Controlled Trial), using your clinical expertise, and combining it with the needs of your patient(s) to make a treatment or diagnostic decisions, or to change policies.

EBP is usually a specific question about diagnostic tests, therapy, prognosis, harm/etiology, prevention, cost analysis or qualitative studies.

The Steps in the EBP Process

| ASSESS the patient | 1. Start with the patient -- a clinical problem or question arises from the care of the patient |
| ASK the question   | 2. Construct a well built clinical question derived from the case |
| ACQUIRE the evidence | 3. Select the appropriate resource(s) and conduct a search |
| APPRAISE the evidence | 4. Appraise that evidence for its validity (closeness to the truth) and applicability (usefulness in clinical practice) |
| APPLY: talk with the patient | 5. Return to the patient -- integrate that evidence with clinical expertise, patient preferences and apply it to practice |
| Self-evaluation   | 6. Evaluate your performance with this patient |

Let's walk through the first three steps

Step 1. Identify the patient(s) or the problem from this Scenario:

During your clinical experience, you hear patients complaining that their health care providers are interrupted by their smartphones, or they are using their laptops/iPads during a physical examination, a medical test, or a patient appointment. One disgruntled patient noted that her OB/GYN provider answered a phone call during her exam and did not wash her hands after using her cell phone. You begin to observe this behavior and wonder if cellphones, like stethoscopes, can transmit infections to patients (or to others), and if so, should clinicians be educated in proper infection control measures when using cellphones during patient care. Since cellphones are ubiquitous, should everyone visiting or working in a clinical area or hospital be made aware of these issues?

Step 2. Frame your clinical RESEARCH QUESTION or statement using PICO(TT), PICO, or PEO.

PICO(TT) is an acronym to help you formulate your specific patient question.

Patient or Problem or Population—describe the population

Intervention--describe the intervention/treatment, diagnostic study, or drug interventions
**Comparison** (optional)---(i.e. CT scan vs. MRI, or oral dose vs. IV, statins or no statins)

**Outcome**—describe what you want to accomplish, to measure, to improve, or to affect

**Time element** to evaluate results (optional), or the **Type of Question / Type of Study** that is required for your PICO question

**Why use PICO?**
- Helps you form a focused question.
- Assists you in brainstorming keywords for your research.

**When do you use PICO?**
- When you are looking for evidence to support best practice.
- Patient centered outcome measures (e.g. pressure ulcers, falls, VAP)
- Nurse Centered Intervention Measures (e.g. smoking cessation counseling)
- System Centered Measures (e.g. Ventilator/Sepsis bundles developed by the Institute for Healthcare Improvement or IHI and are evidence based and have shown to improve patient outcomes.)
- When you have a question about patient care.

For qualitative research or for exposure outcomes, **PEO (Population, Exposure, and Outcomes)** is recommended.

**Example:** Are high school students that are exposed to bullying develop depression?

**What are the most important concepts or key concepts in your question?**

- **Population:** clinicians using cellphones in the clinical area
- **Intervention:** proper infection control measures before and after cellphone use (hand hygiene and device decontamination)
- **Comparison:** no infection control measures
- **Outcome:** decreased transmission of bacterial infections

**Your PICO Question(s) might be:**

Do cell phones harbor infections that could contribute to hospital associated infections? Does following infection control guidelines before and after using cell phones among healthcare workers reduce hospital acquired infections? What is the role of cell phones in spreading nosocomial infections?


**BRAINSTORM Keywords or Key phrases**

Keywords are the **main ideas** of your research question. Keywords are the exact words used by the author in the **title** or the **abstract** and may or may not be the focus of the article. Discover more terms by **reading articles** that you find!! Look at the **bibliography** in each article to make sure you have the titles.
Example:

**Cellphones:** mobile phone* OR smart phone* OR smartphone* OR tablet* OR cell phone* OR cellphone* OR cellular phone* OR hand-held* OR iPad* OR handheld device* OR droid* OR mobile device* OR keypad* OR touch-screen OR iPhone*

**Clinicians:** healthcare worker* OR health personnel OR physician* OR clinician* OR nursing student* OR nurse* OR surgeon*

**Infection:** infection* OR contaminat* OR pathogen* OR nosocomial OR hospital acquired OR communicable diseases OR equipment contamination OR cross infection OR fomites OR fungi OR contamination  **[Fomites]** is also a MeSH term meaning inanimate objects that carry pathogenic microorganisms and thus can serve as the source of infection. Microorganisms typically survive on fomites for minutes or hours. Common fomites include clothing, tissue paper, hairbrushes, and cooking and eating utensils.

**Infection control:** Disinfectants OR disinfection OR infection control OR hand washing OR handwashing OR hand hygiene OR alcohol swipes OR sanitization

**BRAINSTORM Subject Headings**

Most articles are indexed by subject experts who read the articles and assign a specific terminology to describe the **content** of the article.

In PubMed the subject headings are called **Medical Subject Headings** or **MeSH**. When you use MeSH terms you retrieve all records on a subject regardless of the terms used by the author. This is also true with the **CINAHL Subject Headings**.

To view MeSH terms for a particular citation, click the title and scroll below the abstract and click .

To find MeSH terms for your search, change drop down menu next to search box from PubMed to **MeSH**.

**Combine the BEST keywords and subject headings in your search for comprehensiveness**

Not every article in PubMed has MeSH terms for various reasons (e.g. in process of being indexed, out of MEDLINE scope, or just released by the publisher) so you will need to use keywords.

**Example of keywords, MeSH, and a combination of both:**

(Contamination OR cross infection) AND (smartphone* OR cell phone* OR cellphone* OR cellular phone* OR droid*)

"Cell Phone"[Mesh] AND ("Cross Infection"[MeSH Terms] OR "Equipment Contamination"[Mesh])

("Cell Phone"[Mesh] OR smartphone* OR mobile phones) AND ("Cross Infection"[Mesh] OR "Fomites"[MeSH Terms] OR fomites)
Select the BEST Search Tools!

**Databases**

Click [Research Databases](lib.uconn.edu) from [lib.uconn.edu](http://lib.uconn.edu) and select one database at a time.

If PDF link is not available, click [UCONN Full Text](http://lib.uconn.edu) to link through to the item or to request item via [Interlibrary Services](http://lib.uconn.edu).

Examples of pertinent databases for this project are on the EBSCO platform:

- **CINAHL Plus with Full Text** (Cumulative index to Nursing and Allied Health)
- **Academic Search Premier**
- **PsycINFO**

Examples of other helpful databases that are not in EBSCO, but available through the library:

- **PubMed** (includes Medline)
- **Scopus**
- **Cochrane** (Systematic reviews and clinical trials; login is not necessary)
- **TRIP Medical Database** (free search engine) **Turning Research Into Practice**

**NOTE:** When you find an article of interest, copy/paste the article title in Scopus to find other articles that have cited this article. In this example, the 2013 citation by Manning was cited in 28 publications.

<table>
<thead>
<tr>
<th>Document title</th>
<th>Authors</th>
<th>Year</th>
<th>Source</th>
<th>Cited by</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPads, droids, and bugs: Infection prevention for mobile handheld devices at the point of care</td>
<td>Manning, M.L.; Davis, J.; Sparron, E.; Ballard, R.M.</td>
<td>2013</td>
<td>American Journal of Infection Control</td>
<td>28</td>
</tr>
</tbody>
</table>

**Full-text Databases**

Is a searchable collection of research literature that includes the entire text of an article or book, reproduced as a webpage and/or in PDF format, and other related resources.

These databases may be multidisciplinary (covering a range of subjects) or subject-specific (for one subject only), and are limited in scope!

**Example:** [PMC (PubMed Central)](http://www.ncbi.nlm.nih.gov/pmc), [JSTOR](http://www.jstor.org)
**Reliable health related web sites**

Useful for background information, statistics and guidelines.

**Example:** DynaMed (an EB tool), Micromedex Healthcare Series, MedlinePlus, Medscape Reference, AccessMedicine (for clinical sources, e.g. *Current Practice Guidelines in Primary Care 2019*)

**Examples from U.S. health agencies:** AHRQ, Patient Safety Network, U.S. Preventive Services Task Force Recommendations (USPSTF), ERCI Institute Guidelines Trust (replaces the National Guidelines Clearinghouse), CDC FastStats, CDC Features, CDC, Healthy People, National Institute of Nursing Research

**Search box on Library webpage**

Searches multiple databases and the library’s catalog at once. The library catalog is an online tool used to find items housed physically in the library and electronic items such as articles, eBooks and streaming media. Remember to **SIGN IN** to renew what you have checked out, to create and save lists, or to request Items. WorldCat is another tool that searches our holdings and other research libraries.

You can find a lot of research on a topic quickly, but it may bring back **too many results** from many different fields of study on a topic.

Certain databases (e.g., CINAHL, PsycINFO, or Academic Search Premier) may not be included, so it is still important to check the other databases!

**Advanced Search** screen is more efficient and much easier to narrow results.

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**Browse journals for information (not always efficient)!**

Click **Find** on webpage; then click **E-Journal Search**; type the name of the journal. You can Browse the **Table of Contents** for each issue of a journal OR search for your topic within a specific journal.

View journal contents via the **BrowZine** database; full text articles are available, if we subscribe to journal.
ACP Journal Club summarizes the best new evidence for internal medicine from over 120 clinical journals. Search ACP Journal Club Archives (1991-2008) and from 2008 to the current year as a monthly feature in Annals of Internal Medicine.

Web search engines

Returns high quantity of results from the full range or sources available on the web. Results are determined by a formula involving popularity and relevancy. May not be the best place to start for scholarly research.

Example: Google, Google Scholar

Types of Literature

Try to find peer reviewed RESEARCH ARTICLES from academic journals.

Journal articles are written by a researcher or scholar for a specific field, some are reviewed by peer scholars before publication.

You may want to find a review of the literature for background information.

Your PICO question will often require a specific type of study design to answer the question (e.g., Clinical Trials, Randomized Controlled Trials, Systematic review, Qualitative Studies, Quantitative studies, Meta-Analysis, or Comparative Study).

Questions about Diagnosis ~ find prospective studies, blind comparison to a gold standard
Questions about Therapy ~ find Randomized Controlled Trials (RCTs), meta-analysis, systemic reviews
Questions about Prognosis ~ find cohort studies, case control or case series
Questions about Harm or Etiology ~ find RCTs, cohort studies, case control, or case series
Questions about Prevention ~ find RCTs, cohort studies, case control, case series, meta-analysis, systematic reviews
Questions about Cost Analysis ~ find economic analysis
For Qualitative articles ~ find qualitative studies

You may want to exclude Letters, Editorials, Comments, Meeting Abstracts, and Book Reviews.

USE Boolean Operators – Insert AND, OR and NOT into your search to broaden or narrow it.

Example  obese OR obesity OR overweight will broaden your results
Example  nursing practice AND refugees will narrow your results
Example  Puerto Ricans NOT Mexican Americans will exclude irrelevant terms, but use with CAUTION!
MORE tips

Use an Asterisk * to truncate a root word for more terms (e.g. mimic* will find mimic, mimics, mimicking).

Use double Quotes to search an EXACT phrase, use with caution.

Use a search tag to indicate term should be found in a specific place: beverage*[ti] AND "Portion Size"[Mesh]

Use Parentheses if you are using more than one Boolean.

Check limits that pertain to your search: __Age __English Language __Year of Publication __Peer Reviewed Journal

Step 3. Let’s take our keywords (natural language) and search in CINAHL Plus with Full Text.

EBSCO platform provides multiple search boxes. Put one topic on each line and click Search.

Enter key term(s) in search box (similar concepts are combined with OR), and click Search button.
Narrow topic by adding (AND) another concept (e.g. journal name or author name).

Use the pull-downs in Select a Field if you want to look for words in a specific part of the citation (e.g. title, author, or abstract fields)
– remember this may drop important articles!

Click Search History located below search box to manipulate search sets, if desired.

Click Show More under Refine Results on left to filter results in one step:
Select Peer Reviewed, English, Research Article, Publication Date
From the Publication Box select Review, Guidelines, if needed

Note: If you choose “Limit to Full Text” you will not get the UCONN Links!!
EXPAND your keywords

Find more precise terms-Click article title to view the CINAHL Subjects (Major/Minor).

To find a subject heading in CINAHL, enter one term in the search box and check Suggest Subject Terms box, click Search.

Your results show that the correct CINAHL Heading is Cellular phone, check box next to term.
NOTE, *Cellular phone* is a broad term with narrower concepts under it (e.g. Smartphone, texting), you may wish to include the narrower terms by selecting the **Explode** box.

A middle column for **Subheadings** appears which allows you to zero in on a specific aspect of cellular phones, but we will not select a subheading for this exercise.

**Scope** provides you with the definition and search hints.

Scroll down to bottom of page and click **Browse Additional Terms**. Type *Contamination*, click **BROWSE** and select the **broader** term **Microbial Contamination** (click Scope note for the definition and suggestions).

Change the radio button from **OR** to **AND** before you click **Search Database** (both concepts have to be in the article).

Click **Search Database** which will run the search and return to the main page.

You will see this on the main page:

(MH "Cellular Phone") AND (MH "Microbial Contamination") the “+” sign represents an explodable term

**Expand your search** using other CINAHL Subject Headings:
(MH "Cellular Phone+" OR MH "Computers, Hand-Held+" OR MH "Wireless Communications") AND (MH "Microbial Contamination+" OR "Equipment Contamination")

Open the full text document to Read article to build search term list, to look at the bibliography in each article to make sure you have the titles. If you discover an article title that you should have found, find out how that article is indexed.

Copy/paste an article title of interest in Scopus to find other articles that have cited this article.

Run same search in different EBSCO databases without retyping your strategy!

Step 1. Click Choose Databases to navigate to other EBSCO Databases.

Step 2. Deselect the database you were in (e.g. CINAHL Plus with Full Text) - just remove check mark in box.

Step 3. Select the box next to a new database (e.g. Academic Search Premier) – one database at a time.

Step 4. Click OK button and your search will now run in Academic Search Premier.

Step 5. Click Search button to run the search in the new database.

Step 6. Click Select all and then click Refresh Search Results button.

NOTE: Subject Headings are unique to each database, so CINAHL Subject Headings may have zero results in Academic Search Premier.
Let's run the same search in PubMed. [NOTE that a new version of PubMed will occur in December 2019]

Click Search History in CINHAL and copy best search strategy and paste in PubMed search box, click Search. Use parentheses to delineate each topic or group synonyms.
This example will find terms anywhere in the record: (contamination OR cross infection) AND (cell* phone* OR smartphone)

PubMed retrieves huge results! View Search Details on the results page to see the query translation and irrelevancy.

Narrow results further by searching terms as a phrase in specific fields - Caution!
- Use [tiab] to find terms in the title or abstract, use [ti] to find terms in the title:

Click article titles to view the MeSH and possibly add to your search. Click Advanced under search box to review search history.

NOTE: The current PubMed allows you to view search results using a Best Match Sort Order. Use CAUTION, the Best Match is an algorithm and may not give the same results as a keyword/Mesh search. You can toggle under Sort By and choose, Most Recent or Best Match.
To filter your results, click Show Additional Filters on left navigation column to view more options. See Example 1.

Check the Languages box, then select Languages, click SHOW, select English to activate.

Check Ages to select specific age groups to show, click SHOW then select your filter.

For more Article Types (e.g. Practice Guidelines, Systematic review, Meta-analysis, Randomized Controlled Trials), click Customize under Article Types, select article type to show, click Show, then activate your filters. See Example 2).
Advanced PubMed Tips:

Use [PubMed Clinical Queries](#), found on the PubMed homepage, to find clinical research articles quickly. Not as comprehensive as PubMed.

Advanced search using MeSH Terms for precision (MeSH defines the content of the article.)
Many citations are indexed with MeSH Terms, just click MeSH Terms link below the abstract or PMID number to view.
Use the drop-down search menu to access the **Mesh** database. Search for a term or concept, e.g., *cell phones*, and click **Search**.

Step 2. Results bring up one Mesh term, *cell phone*, click the **ADD to Search Builder button** on the right side which will populate the **PubMed Search Builder box**. If multiple items are retrieved click on the desired term. You can also select subheadings, if needed.

Step 3. Clear screen and type *cross infection*; click **Search**.

Step 4. Select MeSH term **Cross Infection**; click **ADD to Search Builder using AND**.

Step 5. Click **Search PubMed** to return to PubMed and view your results.

PubMed has a special filter that allows you to limit a search to **systematic reviews** or to **meta-analysis** *Systematic [sb]* (12/18).

- Add *systematic [sb]* or meta-analysis[sb] to your Search set
- “heart diseases’[mesh] AND systematic[sb]

A broader approach is to combine the search term, **meta-analysis**, with your search results using **AND**.

- cross infections[mesh] AND meta-analysis

Click title of article to find UCONN Full Text and the full text. This example shows a full text link from **PMC & UCONN Full Text**.
Send your total results to the **Clipboard icon** to print results, email results, to save in your **My NCBI Collections**, or to export results to **RefWorks**. Select citations by clicking the check box next to them. From the **Send to** menu, select **Clipboard**; then click the **Add to Clipboard** button. Click the **Clipboard** items link to view citations. **Clipboard items will be stored for eight hours.**

**Use our Research Guides for more help**  
Examples: [Health Subject Guide](#) or [Psychology Subject Guide](#) or [Citation Guides](#)

**ORGANIZE YOUR RESEARCH**

Set up a **MY EBSCOhost** account to save your work in EBSCO databases:

Select [Sign In](#) located on the top toolbar to create a new account.

Click blue icon [+] located next to article title you want, once article is saved it turns yellow.

Once you save articles, click open folder [Folder] to view you saved citations.

If you close your browser without saving your work to your my EBSCOhost account you will lose your temporary folder and the contents! 😞

Set up a **My NCBI** account to save your work in PubMed

Select [Sign in to NCBI](#) click [Register for an NCBI account](#) and create account.

Click the box next to the article title you want and send to **Clipboard**. When finished save to **Collections** or export to **RefWorks**.

Save your search, save your references, set up search alerts, turn on highlighting for ease of searching.

**Use a Citation Manager/Reference Manager**

An online tool or desktop software used to organize and store citations and full-text articles or other documents, create bibliographies, insert in-text citations into a paper, and share references with research partners.

Examples: [RefWorks](#), Mendeley, Zotero

**Get full text articles**

To find all UConn full text articles when searching our databases, **NEVER** limit your retrieval to full text! **Look for:**

PDF symbol which will automatically give you the PDF article
HTML symbol which will give you the article in HTML format

**UCONN Links** if PDF symbol is not given, click **UCONN Full Text**

**UCONN Full Text may provide** a link to the article, journal website (from there you can search for the article), or a link to order the article from Interlibrary Services. The scanned article will be sent you via your UConn email.

Click **Ask A Librarian** located on the library website if you have a question.

You can also contact Valori Ann Banfi **valori.banfi@uconn.edu** or at **860-486-2824**

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