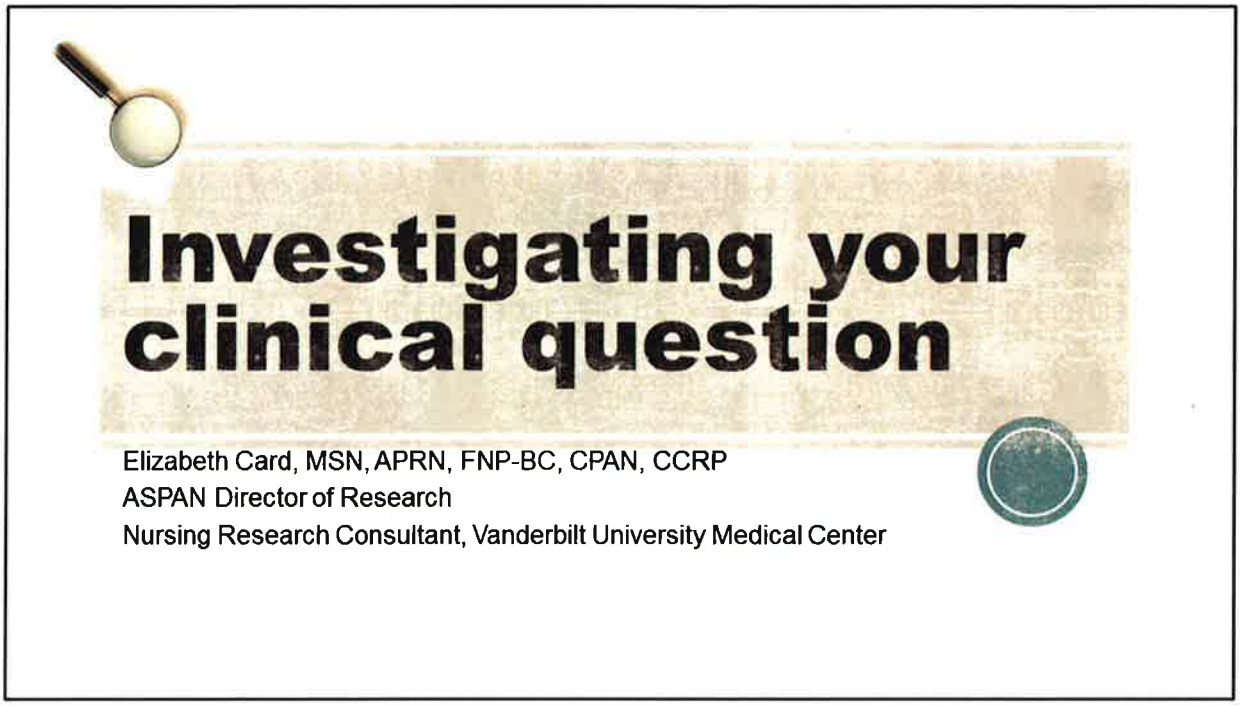


I am so excited you will be in our clinical nurse scholars program! Nurse driven research is my passion! This slide deck will help you prepare your PICO question for the scholars program, lets get started!

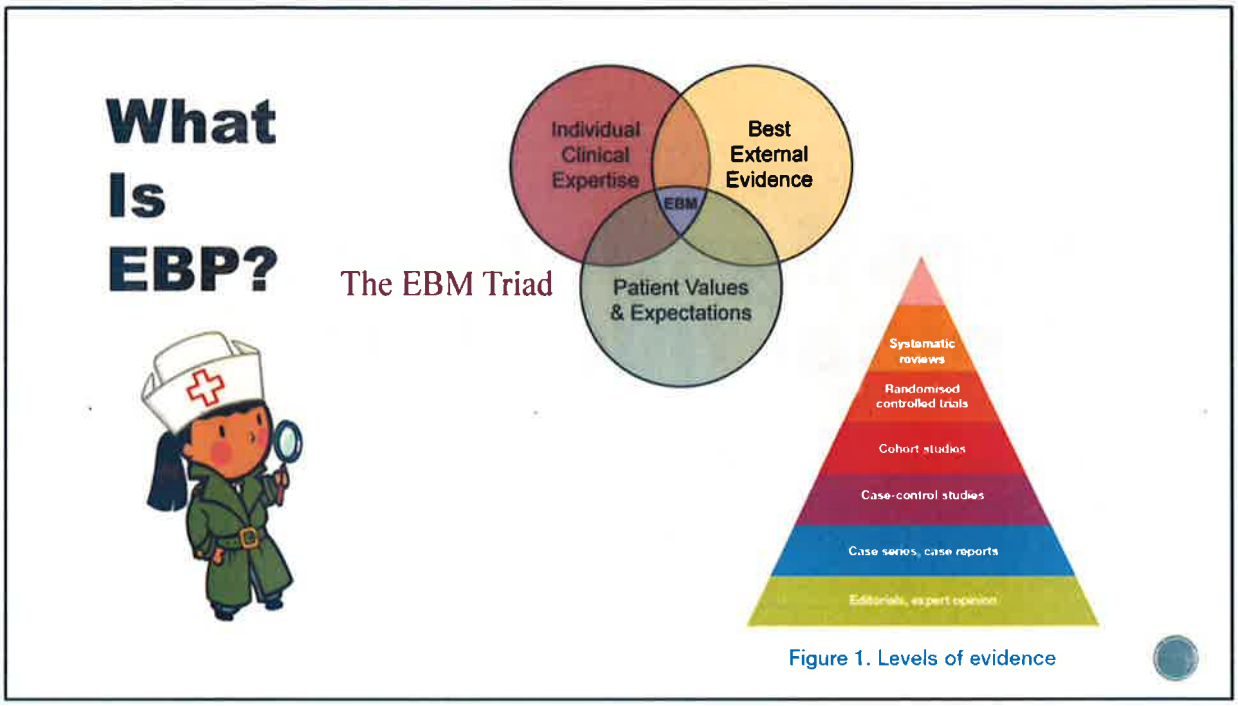


Figure 1. Levels of evidence

The nurse detective's work of finding the strongest "evidence" available but this is only half of the EBP journey.
Incorporating this evidence with the nurse's clinical **expertise** AND her **patient's preferences** is the intersection of EBP or EBM tiad

Example of pt preference: the nurse's patient requests she use healing touch in addition to pain meds for pain relief post-op s/p left forearm radial pinning–there **is** published literature on healing touch being effective in controlling post-op extremity pain, -BUT does the nurse have the clinical expertise? Has she been trained in administering healing touch? If so then the circles line up in the EBP triad and she is practicing EBP

Example- Breast cancer patient requesting to use peppermint aromatherapy for chemo-induced N/V-is there literature stating aromatherapy is effective treatment for chemo induced N/V? Does he nurse have the clinical expertise to administer aromatherapy? If so, then the circles line up for EBP

It is just that simple

What guides your practice?

- Professional Standards & Guidelines?
- National Guidelines Clearinghouse (www.guideline.gov)
- Mosby's
- Hospital policies
- Unit based SOPs?
- ??

So when you think about your nursing practice, what guides how you care for your patients? What do you use to help make clinical decisions? The IOM has mandated that 90% of clinical decisions made by nurses be evidenced based by the year 2020. How close are you? Do you use these resources? What happens when you have a clinical question? What do you do, where do you go for the answers? Let us explore this more

Create a PICO question to guide your clinical inquiry

- P-population, patient, problem
- I-intervention, prognostic factor, exposure
- C-Comparison
- O-outcome (may be disease or patient oriented)
- T-timing or type

- (PICOs serves as a GPS while searching the literature)

Using PICO questions to guide your clinical inquire is like using a GPS to get to your destination. According to the Centre for Evidence Based Medicine (CEBM), "one of the fundamental skills required for practicing EBM is the asking of well-built clinical questions. To benefit patients and clinicians, such questions need to be both directly relevant to patients' problems and phrased in ways that direct your search to relevant and precise answers."

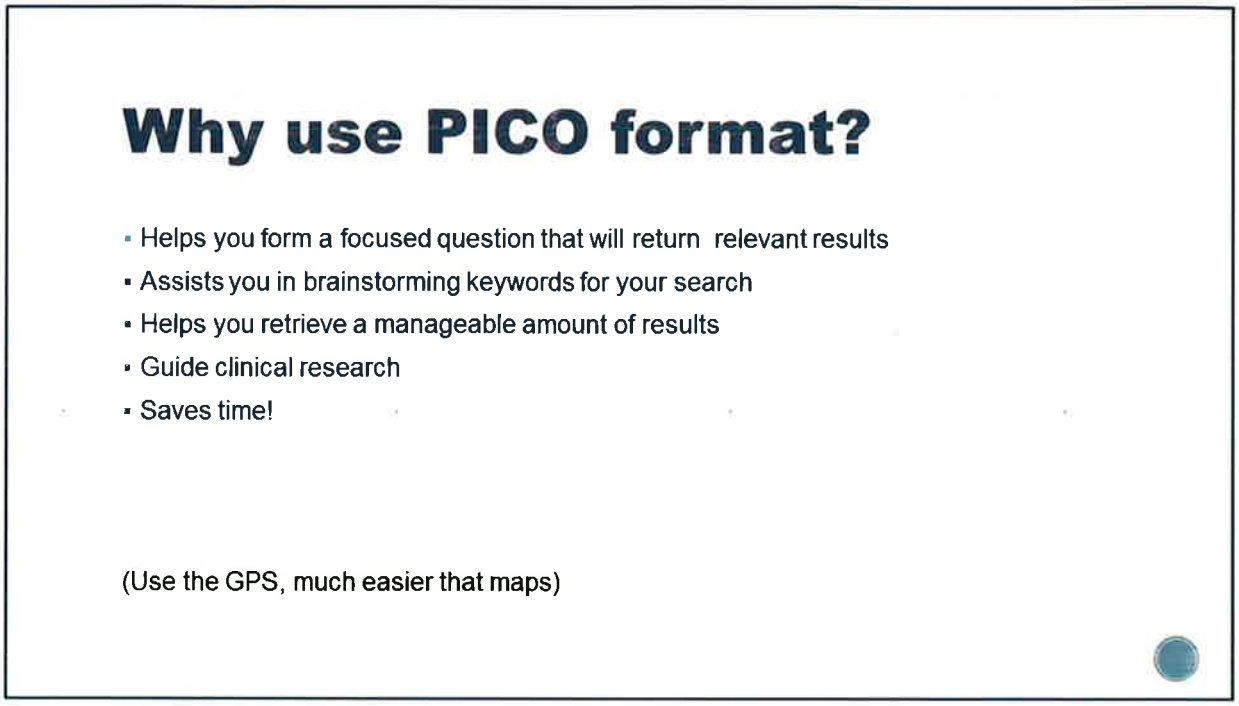
A well-built clinical foreground question should have 4 components. The PICO model is a helpful tool that assists you in organizing and focusing your foreground question into a searchable query. Dividing into the PICO elements helps identify search terms/concepts to use in your search of the literature.

P = Patient, Problem, Population (How would you describe a group of patients similar to you? What are the most important characteristics of the patient?)

I = Intervention, Prognostic Factor, Exposure (What main intervention are you considering? What do you want to do with this patient? What is the main alternative being considered?)

C = Comparison (Can be None or placebo.) (What is the main alternative to compare with the intervention? Are you trying to decide between two drugs, a drug and no medication or placebo, or two diagnostic tests?)

O= Outcome (What are you trying to accomplish, measure, improve or affect? Outcomes may be disease-oriented or patient-oriented.)



PICOT Format

P = Population: What is the group of interest? (e.g., patients, nurses, or community, including a specific diagnosis, demographic, or care setting)

I = Intervention: What procedure or process is planned? (e.g., specific trends, therapies, medications; may be educational or behavioral programming)

C = Comparison: Is there an alternative to the planned intervention? (i.e., may compare to no treatment/program, a different type of treatment/program, or have no comparison)

O = Outcome: What is the desired outcome? (e.g., fewer symptoms, no symptoms, increased or perceived knowledge/skills)

T = Time: What is the time frame? (e.g., during hospitalization, within a specified period, no time period)

Practice

Your carpool friend has been talking about how they use the "Buzzy©" in the peds ED to decrease pain and anxiety for injections and finger sticks. You wonder, would this work for you in the dialysis unit accessing adult patients AV fistulas?

Think about above scenario, what are the

- Population
- Intervention
- Comparator group
- Outcome?

Practice formulating the above PICO question

PICO

- P-adult dialysis patients
- I-use of "Buzzy©"
- C-not using the "Buzzy©"
- O-decrease anxiety and pain during AV fistula access

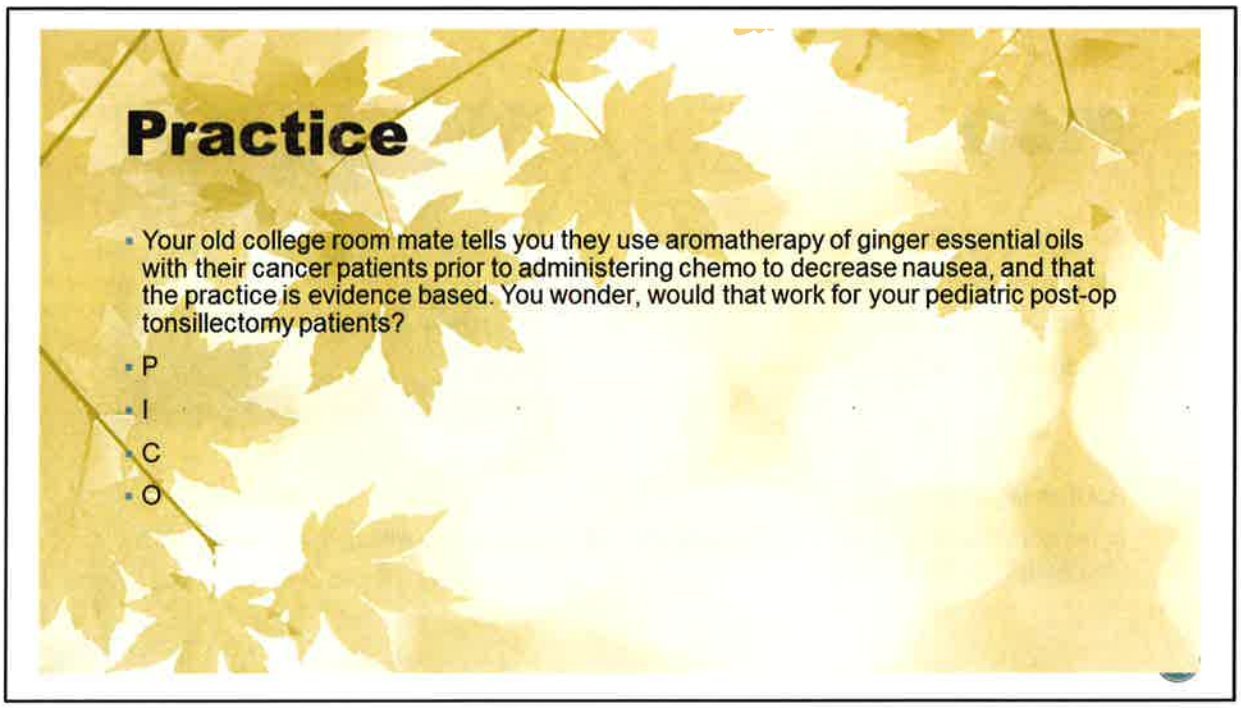
Put it all together:

- In the adult dialysis patient does using the "Buzzy©" when accessing the AV fistula decrease pain and anxiety?

Here is what the PICO looks like. Buzzy works on the gate theory of pain, confusing the neuropathway of pain with the cold and vibration stopping the impulse from being conducted at the dorsal ganglion root, to read more about the buzzy, copy paste the below info into google scholar using a CWS:

Relief of **pain** during blood specimen collection in **pediatric** patients

S Inal, M Kelleci American Journal of Maternal **Child** Nursing: September/October 2012 - Volume 37 - Issue



Practice formulating the PICO

PICO

- P-pediatric post-op tonsillectomy patients
- I-aromatherapy with ginger essential oils
- C-no aromatherapy
- O-decrease post-operative nausea

Put it all together:

In the pediatric post-op tonsillectomy patient will aromatherapy with ginger essential oils decrease post-op nausea?

Types of PICO?

- foreground question and the type of study (methodology)

Therapy	Clinical questions focused on treatment options
Diagnosis	Clinical questions focusing on identification of a disorder
Prognosis	Clinical questions focusing on likelihood of developing or the progression of disease
Etiology/harm	Clinical questions focusing on negative impact from a treatment/intervention/exposure

Foreground questions can be further divided into questions that relate to therapy, diagnosis, prognosis, etiology/harm

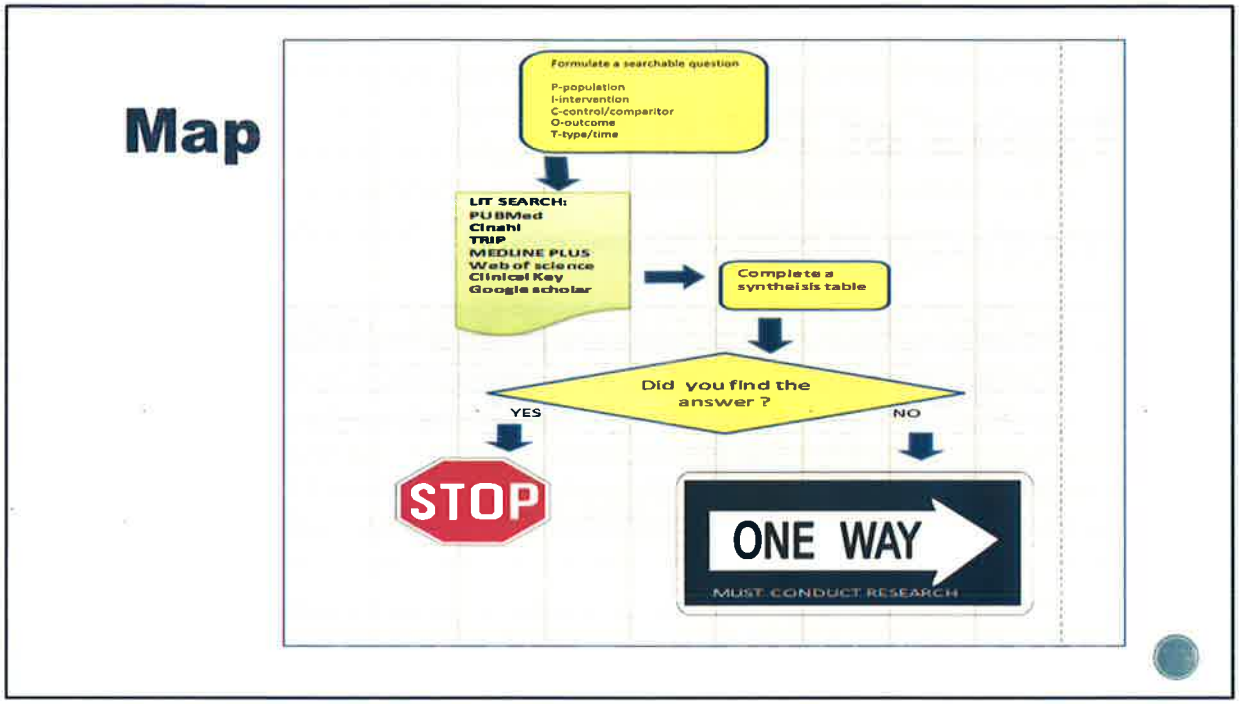
Therapy: Questions of treatment in order to achieve some outcome. May include drug adherence-, surgical intervention, change in diet, counseling, etc.

Diagnosis: Questions of identification of a disorder in a patient presenting with specific symptoms.

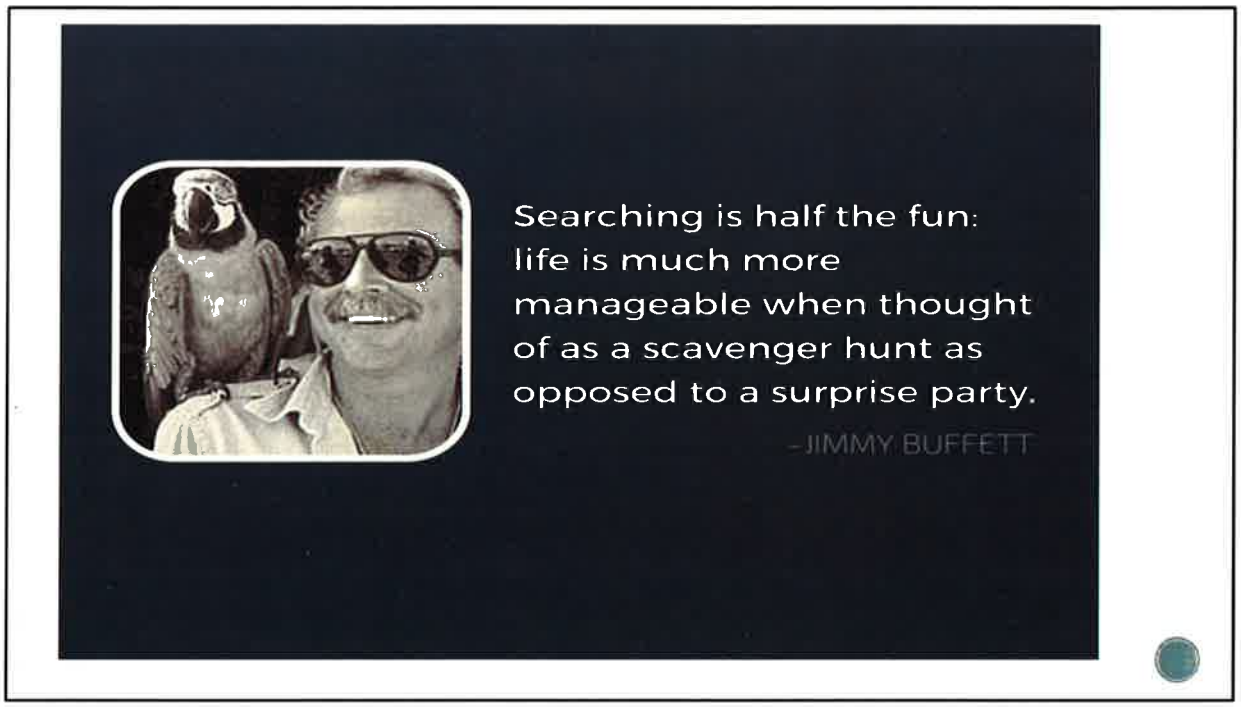
Prognosis: Questions of progression of a disease or likelihood of a disease occurring.

Etiology/Harm: Questions of negative impact from an intervention or other exposure.

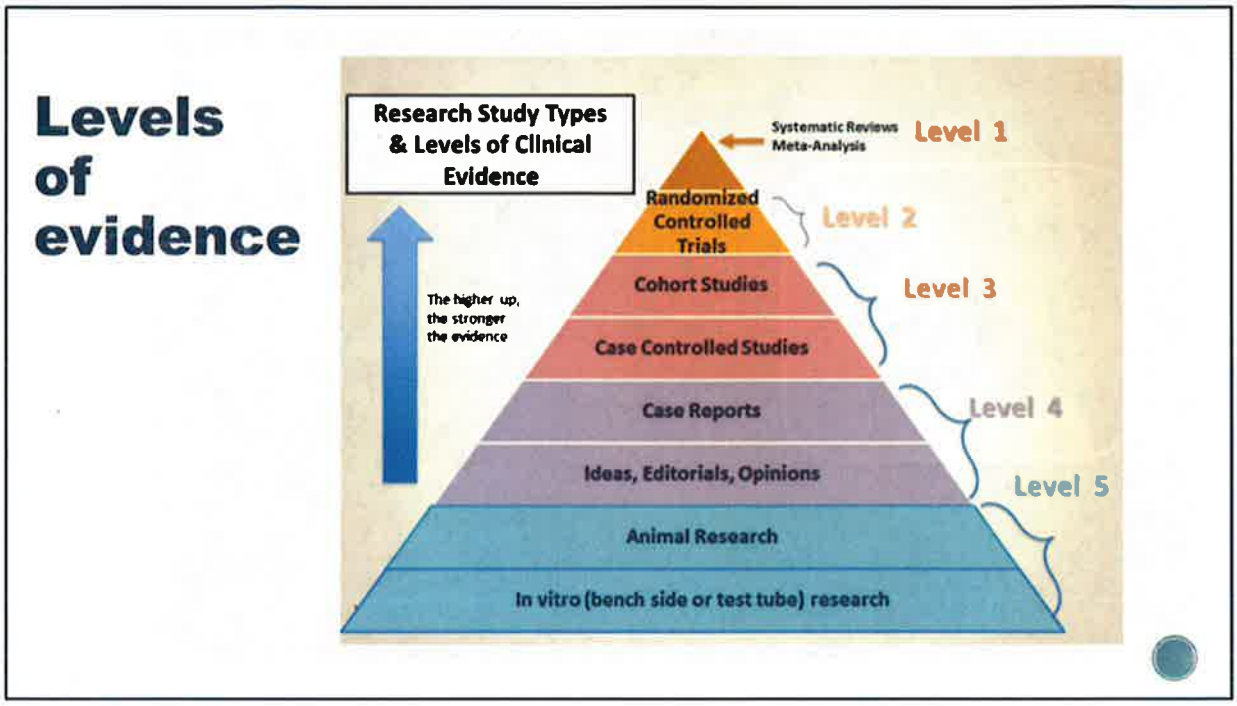
Knowing the type of foreground question can help you select the best study design to answer your question. You always want to look for the study design that will yield the highest level of evidence. Consult the pyramid (click the image to enlarge it) and the definitions below



If you can definitively answer the PICO question, then you can implement evidenced based practice change, however, if you could not answer the question you have found a "gap" in the literature and new knowledge must be generated to answer your question. This is accomplished through completing a research project. ALL of these begin with searching the literature. At VUMC we spend hundreds of thousands of dollars annually so YOU have access to the best and most recent evidence!



And now, some thoughts on searching....

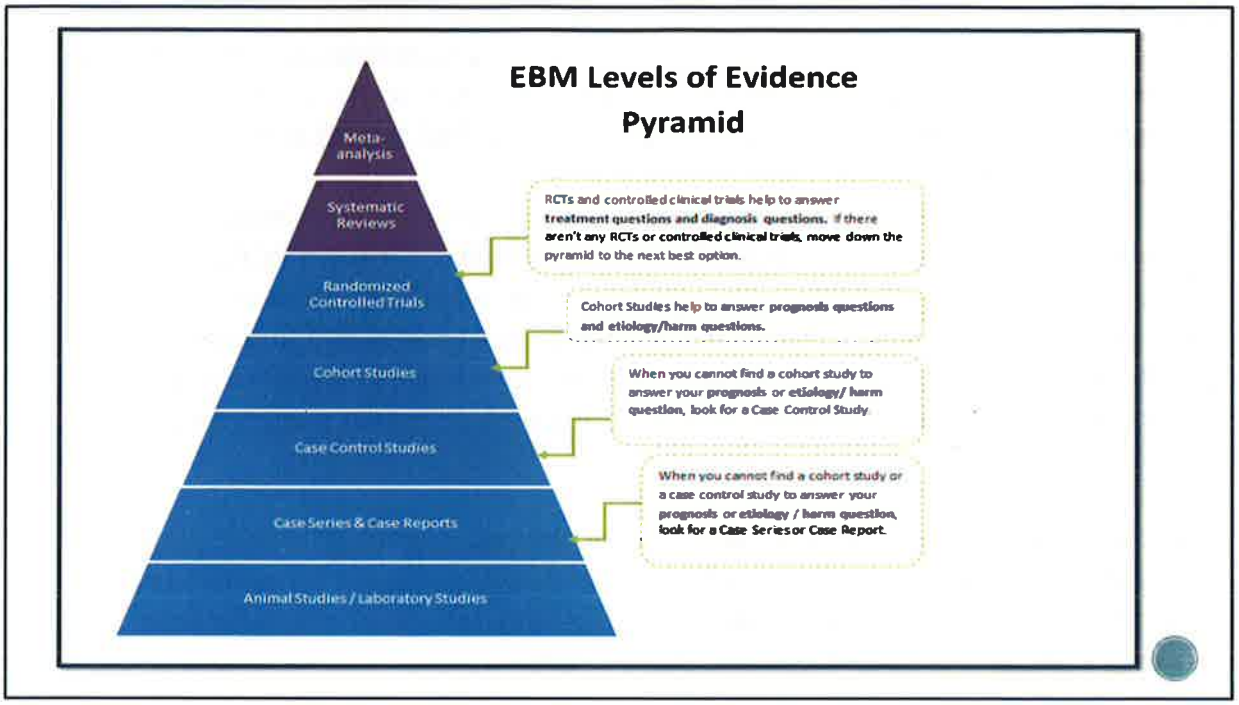


Those unfamiliar, this is an evidence pyramid, not all research and resulting publications are equal (holding the same weight or scientific strength). Evidence is built from the bottom up and the top is the strongest level of evidence (meta-analysis, meta-synthesis, systematic reviews). Each level builds upon the previous levels' research findings. In order for this building of the evidence to continue to grow, researchers must disseminate their findings (through conference posters, presentations, publications). This dissemination is crucial, we stand literally upon the shoulders of giants-those who researched before us. The "best evidence available" is the basis of Evidence base practice or medicine. Nurses are one of the consumers and contributors of this evidence

Example of how the evidence is built (true story)
Several years ago peptic ulcer disease (PUD) and bleeding ulcers were thought to all arise from changes in gastric PH, stress, etc. However, there was a Vanderbilt University Medical Center physician who questioned this, he spent several days a week in his lab (bench side) working with mice, cell cultures and biopsies looking for a different causes for PUD.
Eventually he discovered there was a previously undetected organism in the gut of his mice with PUD, he then isolated H Pylori (he was Dr Marty Blazer) this discovery

formed the bottom of the pyramid **IN VITRO RESEARCH** for understanding PUD. With that discovery and understanding, he went on to test a few of his patient's with terrible PUD (**CASE REPORTS**) and a large number of them harbored this organism. He tested more PUD pts against healthy normals (**CASE CONTROLLED STUDIES**) and found PUD pts had H Pylori, healthy ones did not-the relationship is strengthened. He then followed these same patients over time (**COHORT STUDIES**) the relationship is now even stronger
and then he treated groups of patients with different medical regimens to discover the most effective treatment (**RANDOMIZED CONTROLLED TRIALS-RCT**),
I did not look, however I bet there is enough completed RCT for someone to have published a **Comprehensive Systematic Review** (a synthesis of RCT findings) or a **META-ANALYSIS** (when you re-analize the findings of many RCT together in a single statistical analysis) and/or creation of evidence based treatment guidelines (golden egg!)

So at any point during his journey of discovery, the best and most current evidence was different, it moved as the understanding of PUD increased. There fore when searching the evidence, look for the golden egg first-comprehensive systematic reviews, meta-analysis,etc. If you find those STOP!



Types of Clinical Questions

Clinical questions may be categorized as either background or foreground. Why is this important?

Determining the type of question will help you to select the best resource to consult for your answer.

Background questions ask for general knowledge about an illness, disease, condition, process or thing. These types of questions typically ask who, what, where, when, how & why about things like a disorder, test, or treatment, etc.

For example

•How overweight is a woman to be considered slightly obese?

•What are the clinical manifestations of menopause?

•What causes migraines?

Foreground questions ask for specific knowledge to inform clinical decisions. These questions typically concern a specific patient or particular population. Foreground questions tend to be more specific and complex compared to background questions. Quite often, foreground questions investigate comparisons, such as two drugs, two treatments, two diagnostic tests, etc. Foreground questions may be further categorized into one of 4 major types: treatment/therapy, diagnosis, prognosis, or

etiology/harm.
For example
•Is Crixivan effective when compared with placebo in slowing the rate of functional impairment in a 45 year old male patient with Lou Gehrig's Disease?
•In pediatric patients with Allergic Rhinitis, are Intranasal steroids more effective than antihistamines in the management of Allergic Rhinitis symptoms?

Formulating a Well Built Clinical Question

According to the Centre for Evidence Based Medicine (CEBM), **"one of the fundamental skills required for practicing EBM is the asking of well-built clinical questions. To benefit patients and clinicians, such questions need to be both directly relevant to patients' problems and phrased in ways that direct your search to relevant and precise answers."**

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O= Outcome (What are you trying to accomplish, measure, improve or affect? Outcomes may be disease-oriented or patient-oriented.)

Type of Clinical Question and Study Design

Two additional important elements of the well-built clinical question to consider are the **type of foreground question** and the **type of study (methodology)**. This information can be helpful in focusing the question and determining the most appropriate type of evidence.

Foreground questions can be further divided into questions that relate to therapy, diagnosis, prognosis, etiology/harm

•***Therapy:*** Questions of treatment in order to achieve some outcome. May include drugs, surgical intervention, change in diet, counseling, etc.
•***Diagnosis:*** Questions of identification of a disorder in a patient presenting with specific symptoms.
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Knowing the type of foreground question can help you select the best study design to answer your question. You always want to look for the study design that will yield the

highest level of evidence. Consult the pyramid (click the image to enlarge it) and the definitions below.
To see more info on the relationship between study design and question type, check out **Chapter Four "What is the Question?** from the *Users' Guide to the Medical Literature.*

Definitions of Study Types
(From BMJ's Clinical Evidence Glossary)
Meta-analysis: A statistical technique that summarizes the results of several studies in a single weighted estimate, in which more weight is given to results of studies with more events and sometimes to studies of higher quality.
Systematic Review: a review in which specified and appropriate methods have been used to identify, appraise, and summarize studies addressing a defined question. (It can, but need not, involve meta-analysis). In Clinical Evidence, the term systematic review refers to a systematic review of RCTs unless specified otherwise.
Randomized Controlled Trial: a trial in which participants are randomly assigned to two or more groups: at least one (the experimental group) receiving an intervention that is being tested and another (the comparison or control group) receiving an alternative treatment or placebo. This design allows assessment of the relative effects of interventions.
Controlled Clinical Trial: a trial in which participants are assigned to two or more different treatment groups. In Clinical Evidence, we use the term to refer to controlled trials in which treatment is assigned by a method other than random allocation. When the method of allocation is by random selection, the study is referred to as a randomized controlled trial (RCT). Non-randomized controlled trials are more likely to suffer from bias than RCTs.
Cohort Study: a non-experimental study design that follows a group of people (a cohort), and then looks at how events differ among people within the group. A study that examines a cohort, which differs in respect to exposure to some suspected risk factor (e.g. smoking), is useful for trying to ascertain whether exposure is likely to cause specified events (e.g. lung cancer). Prospective cohort studies (which track participants forward in time) are more reliable than retrospective cohort studies.
Case control study: a study design that examines a group of people who have experienced an event (usually an adverse event) and a group of people who have not experienced the same event, and looks at how exposure to suspect (usually noxious) agents differed between the two groups. This type of study design is most useful for trying to ascertain the cause of rare events, such as rare cancers.
Case Series: analysis of series of people with the disease (there is no comparison group in case series).

Differences in review articles

Type of Review	Search Strategies	Inclusion Criteria	Data Analysis
Literature review	√		
Systematic review	√	√	
Meta-analysis	√	√	√

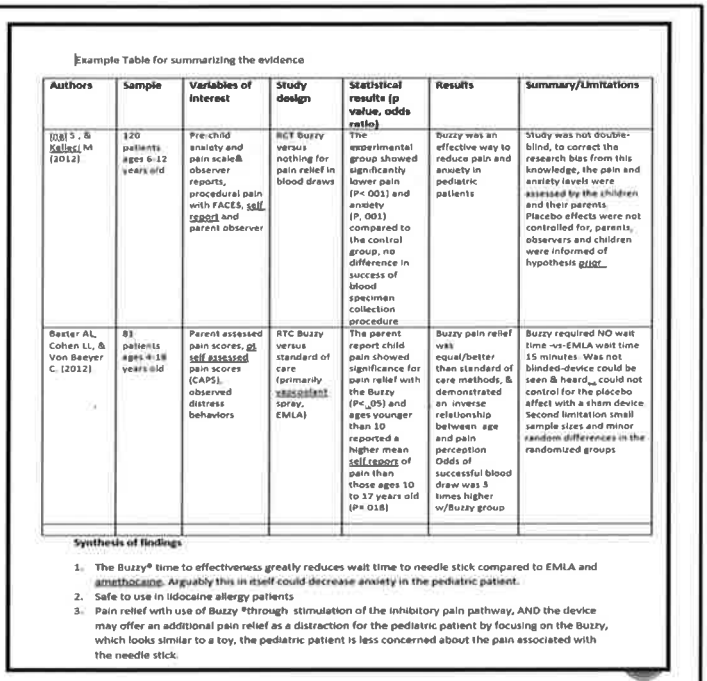
There are several review articles, here is a table explaining what is completed in each and how they differ

Differences in projects

Research	Evidence Based Practice	Quality Improvement
Generates new knowledge	Uses BEST AVAILABLE clinical evidence (from research, clinical expert opinion, etc) to guide practice and make patient care decisions based on patient preference and individual clinicians expertise	Monitoring and evaluating quality & appropriateness of current care based on EBP and research completed methodically focusing on systems at a specific location
Provides general foundation for EBP and QI	Provides ability to continually improve pt care	Provides site-specific ability to best instill and continually evaluate these research based EBP practices
STARTS with a burning clinical question leading to rigorous literature search, critical appraisal and synthesizing findings to identify knowledge GAPS, through using measurable variables (VAS, blood pressure readings, etc.) to describe, explain, predict, and/or control the phenomena OR to develop meaning, discovery or understanding of a phenomena	STARTS with a burning clinical question leading to rigorous literature search, critical appraisal and synthesizing findings to identify best available evidence, evaluates if evidence warrants a practice change AND evaluates if change made if resulting product was what was expected AND if change can be sustained	STARTS with systematic method for improving outcomes and/or processes based upon continuous quality improvement & management focusing on site specific systems-NOT intended for generalizable knowledge or production of best evidence

Sometimes there is confusion if a project is a QI project, EBP or research. Here is a nice table to explain these differences

Synthesize the literature



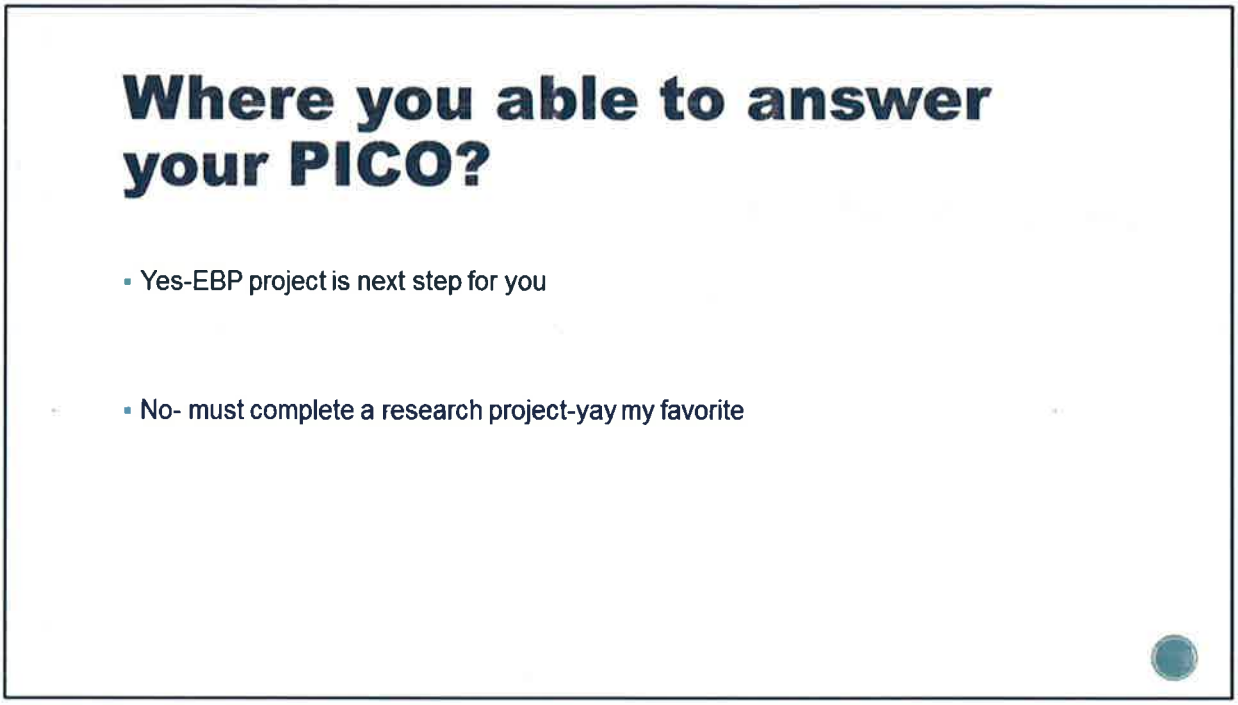
Example Table for summarizing the evidence

Authors	Sample	Variables of interest	Study design	Statistical results (p value, odds ratio)	Results	Summary/Limitations
Inal S , & Kelleci M (2012)	120 patients ages 6-12 years old	Pre-child anxiety and pain scale& observer reports, procedural pain with FACES, self report and parent observer	RCT Buzzy versus nothing for pain relief in blood draws	The experimental group showed significantly lower pain (P< 001) and anxiety (P, 001) compared to the control group, no difference in success of blood specimen collection procedure	Buzzy was an effective way to reduce pain and anxiety in pediatric patients	Study was not double-blind, to correct the research bias from this knowledge, the pain and anxiety levels were assessed by the children and their parents. Placebo effects were not controlled for, parents, observers and children were informed of hypothesis prior
Baxter AL, Cohen LL, & Von Baeyer C. (2012)	83 patients ages 4-18 years old	Parent assessed pain scores, pt self assessed pain scores (CAPS), observed distress behaviors	RTC Buzzy versus standard of care (primarily vapocoolant spray, EMLA)	The parent report child pain showed significance for pain relief with the Buzzy (P<_05) and ages younger than 10 reported a higher mean self report of pain than those ages 10 to 17 years old (P= 018)	Buzzy pain relief was equal/better than standard of care methods, & demonstrated an inverse relationship between age and pain perception Odds of successful blood draw was 5 times higher w/Buzzy group	Buzzy required NO wait time -vs-EMLA wait time 15 minutes. Was not blinded-device could be seen & heard_ could not control for the placebo affect with a sham device Second limitation small sample sizes and minor random differences in the randomized groups

Synthesis of findings

1. The Buzzy® time to effectiveness greatly reduces wait time to needle stick compared to EMLA and amethocaine. Arguably this in itself could decrease anxiety in the pediatric patient.
2. Safe to use in lidocaine allergy patients
3. Pain relief with use of Buzzy ®through stimulation of the inhibitory pain pathway, AND the device may offer an additional pain relief as a distraction for the pediatric patient by focusing on the Buzzy, which looks similar to a toy, the pediatric patient is less concerned about the pain associated with the needle stick.

If there are no recent systematic reviews or meta analysis on your topic, you will need to synthesis what you have found in the literature. After you have collected your journal articles, just how do you make sense of all of the information? Do not worry, the synthesis table as the example here will help you focus your findings and synthesize what the literature is telling you



So after completing the synthesis table, could you answer your clinical question? This will help you understand if you are headed towards an EBP or research project! See you soon!

references

- Graham, Ian D., et al. "Lost in knowledge translation: time for a map?." *Journal of continuing education in the health professions* 26.1 (2006): 13-24.
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- Polit, Denise F., and Cheryl Tatano Beck. *Essentials of nursing research: Appraising evidence for nursing practice*. Lippincott Williams & Wilkins, 2010.
- Keele, Rebecca. *Nursing research and evidence-based practice*. Jones & Bartlett Learning, 2010.

For additional reading if you are interested

Questions?

elizabeth.b.card@Vanderbilt.edu
ecard@aspan.org

Yes, this is a real dog (my dog actually), not a Muppet puppet!