Teaching EBP: Asking Searchable, Answerable Clinical Questions

Ellen Fineout-Overholt, RN, PhD, Linda Johnston, RN, PhD

Asking questions is part and parcel of being a nurse. Nurses are constantly asking about clinical issues, nurse educators are asking about educational issues, and nurse scientists are asking about issues of discovery and application. Since asking questions is so commonplace with health care providers, why would it be important to learn or teach a specific way to ask a clinical question? Green and Ruff (2005) found that one of the barriers to clinicians answering questions is making them a priority. In addition, for evidence-based practice (EBP) to be successful, clinicians must exhibit a personal commitment to the EBP process, starting with asking a searchable, answerable question (Green & Ruff 2005).

In the last column, we discussed gaining comfort with uncertainty as Step Zero in the EBP process (Johnston & Fineout-Overholt 2005). We also described clinical inquiry as an imperative to the EBP process. Clinical questions flow out of an attained comfort with uncertainty and a sustained spirit of inquiry. Not knowing the answer prompts the question. A culture that supports EBP fosters questioning in education and practice about why health care providers use certain processes and how these processes can be improved. Nurses need to spend time learning how to formulate a searchable, answerable question so that they can efficiently find the right answer to the question. Thus, the next step, "Step One," in the EBP process is asking the searchable, answerable clinical question.

Teaching learners how to critically examine the clinical problem for the purpose of quickly determining the important issues and placing them into one question can be challenging. There are several aspects to consider when formulating a clinical question in a searchable, answerable way (see Table 1). First, learners must be taught to take the time to *reflect* on the clinical issue and extract the important components to form the clinical question. Reflection requires thoughtful consideration of the aspects of the clinical situation that influence process and outcome and how the provider interacts with these influences. Such influences can be the clinical judgment and experience gained by years in the provider role, as well as the patients' perspectives that may clarify the use of evidence in the decision-making process. Reflection may result in a changed perspective for the provider.

Often, reflection to formulate a question can be overwhelming, and a *standardized format* for asking questions is helpful. Whatever format is chosen, consistent use by the learner is important. A standardized format assists the learner to define as specifically as possible the components of the clinical situation. Careful delineation of these components will *drive the search strategy* and make it more efficient (Fineout-Overholt et al. 2005). The clinical question also determines what *kind of evidence* will answer the question. Finally, well-formulated questions assist in *identifying the outcomes* to be evaluated when the evidence is applied.

Reflecting on the Clinical Situation

In our last column, we discussed the need for reflection for clinicians to effectively practice. Johns (1995) indicates that the purpose of reflection is to assist the clinician to understand and learn as a result of experiencing a clinical situation and thereby determine the most effective intervention for that scenario. In nursing education programs (clinical or academic) there needs to be time devoted to reflection on clinical practice. For learners to adequately address the meaningful aspects of the clinical situation (e.g., the patient, the issue under examination, the appropriate comparison, outcomes of interest), they need to reflect on the situation. Guided reflection using a defined format can assist learners to more efficiently formulate their foreground questions, those that require predictive, inferential knowledge. Inadequate time for, or unguided reflection, may lead to questions that are too broad or are totally unrelated to the issue of interest. In addition, lack of reflection may lead clinicians toward background questions, those that establish foundational information and can usually be

Ellen Fineout-Overholt, *Director, Center for the Advancement of Evidence-Based Practice, Arizona State University, Tempe, Arizona.* **Linda Johnston,** *Chair of Neonatal Nursing Research and Deputy Head of School, Associate Head, Research, School of Nursing, The University of Melbourne, Australia.*

Address correspondence to Ellen Fineout-Overholt, RN, PhD, Director, Center for the Advancement of Evidence-Based Practice, Arizona State University, PO Box 872602, Tempe, AZ 85287-2602; ellen.fineout-overholt@asu.edu

1545-102X1/05

TABLE 1
Aspects of asking clinical questions

Reflect on the clinical situation
Use standardized format to formulate clinical questions
Use clinical question components to drive the search strategy
Determine kind of evidence required to answer clinical question
Identify evaluation outcomes from the clinical question

answered by textbooks (Ellis et al. 2000; Sackett et al. 2000; Nollan et al. 2005).

Techniques for teaching reflection may include critical thinking exercises in which learners extract the salient aspects of a clinical scenario or clinical experience, or providing time and a format for nurses to debrief after work with the intent on distilling the day into some searchable, answerable questions.

Standardized Format for Formulating Clinical Questions

One standardized format for constructing clinical questions is PICOT, which has been used for several years with much success in assisting learners to formulate searchable, answerable questions (Nollan et al. 2005). Table 2 provides a brief explanation of the aspects of a searchable, answerable question. Each element of the clinical question is important to be thoughtfully considered because these drive the rest of the EBP process. The first aspect of the PICOT question is *P*atient population (P) and requires the learner to determine the specific population of interest. In a clinical scenario in a long-term facility where clinicians noted that the incidence of decubiti had increased over the last month, the population would not be elders, but elders at risk for decubiti who are residents in long-term care facilities. The more specific the population, the more likely the evidence found will be relevant and applicable to the clinical situation.

The second and third aspects of the clinical question are the issues to be examined and compared. In the example, the *I*ssue of interest (I) could be the latest evidence-based skin assessment practices and the *C*omparison (C) could be the current skin assessment technique used in the facility. The issue of interest and its comparison are easily identified if the question is about therapy; however, if the question is about meaning or prognosis, the issue of interest may be apparent, but there may be no comparison.

TABLE 2
One standardized format for formulating searchable, answerable questions

P – Specific patient population of interest
I – Intervention of interest or issue of interest
C – Comparison of interest (i.e., intervention or issue)
O – Outcome of interest
T – Time frame

The fourth aspect of a clinical question is the desired *O*utcome (O) upon which the issue/intervention and comparison will be evaluated. The outcome in the example could be a decrease in the incidence of decubiti or the outcome could be a skin condition. Determining the specific outcome of interest is important for the same reason, so that the evidence sought matches the situation to which it could be applied.

The final aspect of the clinical question is the *T*ime frame (T) in which the question occurs. This aspect may not always be used, but including it in a standardized format lessens the likelihood that time would be missed. In the example, the PICOT question would be, "In patients in long-term care facilities (P), does use of the Skin Ulcer Risk Evaluation (SURE) Score (Inman et al. 1999; I) prevent pressure ulcers (O) better than general skin assessment during scheduled baths (C)?" There is no time frame for this question, so the T aspect would not be appropriate. Table 3 contains several types of questions using the PICOT format. Each aspect of the PICOT format leads to a focused efficient search.

A technique for teaching the PICOT format may be to provide clinical scenarios and, after reflection, have learners generate the components of the PICOT format, then provide templates for learners to insert given components to assist in understanding the principles underpinning different types of clinical questions.

Questions Drive the Search Strategy

Using keywords in the question to drive the search strategy is the first step in the search. For example, in the scenario, keywords from the question to start the focused, streamlined search could be elders in long-term care facilities, decubiti, and skin assessment techniques. If searching in a database with a controlled vocabulary heading (e.g., CINAHL), these keywords likely will map onto one of these headings and enable the searcher to improve the scope of the search. Combining these individual searches narrows the cohort of studies that can answer the question. Limiting the search along the lines of what type of question the clinician is asking (e.g., intervention, meaning, or prognosis) will make the final cohort more relevant. For example, if the question is an intervention question, then searching for only randomized controlled trials (RCTs)would be appropriate. If the question is about meaning or how a patient experiences as phenomenon, a meta-synthesis of qualitative studies would provide the best answer. The next

TABLE 3
Examples of different types of clinical questions using PICOT format and types of evidence to answer the given question

QUESTIONS	TYPES OF EVIDENCE TO ANSWER THE QUESTION
Therapy: In patients living in a long-term care facility who are at risk for decubiti, what is the effect of an ongoing pressure ulcer prevention program compared to the standard of care (e.g., turning every two hours) on signs of emerging decubiti?	Randomized controlled trial (RCT)
Etiology: Are fair-skinned women who have prolonged unprotected UV ray exposure (>1 hour) at increased risk of melanoma compared to darker-skinned women without prolonged unprotected UV ray exposure?	Cohort Study
Diagnosis or diagnostic test: Is d-dimer assay more accurate in diagnosing deep vein thrombosis compared to ultrasound?	RCT &/or Cohort Study
Prevention: For obese children does the use of community recreation activities reduce the risk of diabetes mellitus compared to educational programs on lifestyle changes over a 6-month period?	Prospective Study &/or RCT
Prognosis: Does dietary carbohydrate intake influence healthy weight maintenance (BMI <25) in patients who have family history of obesity (BMI >30)?	Cohort Study &/or Case-Control Studies
Meaning: How do middle-aged women with fibromyalgia perceive loss of motor function?	Qualitative Study

Teaching EBP column will be about teaching and using focused, streamlined searching techniques.

Techniques for teaching how well-formulated clinical questions can drive the search include exercises in searching, using the traditional method of searching keyword without any guiding format (i.e., PICOT) and conducting the same search, using a guided format. With proper combinations and limits derived from the question, the comparison of outcomes (e.g., 100 or more articles versus fewer) and time taken to get to the final cohort of best evidence can be a valuable learning experience for the clinician.

The Type of Evidence Needed Comes From the Question

Often, clinicians and academics desire a defined hierarchy of evidence to reflect its strength. Defining a hierarchy or leveling of evidence can be helpful; however, the educator must keep in mind that learners must understand how the question indicates which type of evidence will best answer it. There is no universal hierarchical leveling system. The most commonly described leveling system addresses evidence to answer a therapy question and holds syntheses (systematic reviews and meta-analyses) of RCTs as the strongest evidence. Table 4 represents this type of leveling system or hierarchy table. However, if the question is, for example, about prognosis or meaning, a systematic review of RCTs is not the appropriate type of evidence to answer the question (see Table 3). Table 5 represents a leveling system or hierarchy table for which evidence is strongest for answering a meaning question.

Techniques for teaching how to determine which evidence best answers the question include providing learners with several clinical questions, such as in Table 3, and asking them to match the type of evidence to answer it. This matching exercise can be effective using either clinical questions (e.g., left column on Table 3) as the generator of the match (matched with a study type [e.g., right column in Table 3]) or a citation (e.g., study authors, titles, and abstracts) as the generator of the match (matched with a clinical scenario).

TABLE 4
Leveling or hierarchy of evidence for intervention (i.e., cause-&-effect) decision making

Level I (strongest evidence to answer the question)	Systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)
Level II	Evidence-based clinical practice guidelines based on systematic reviews of RCTs
Level III	Evidence obtained from at least one well-designed RCT
Level IV	Evidence obtained from well-designed controlled trials without randomization and from well-designed case-control and cohort studies
Level V	Evidence from systematic reviews of descriptive and qualitative studies
Level VI	Evidence from a single descriptive or qualitative study
Level VII	Evidence from the opinion of authorities and/or reports of expert committees

TABLE 5
Leveling or hierarchy of evidence for decision making around meaning

Level I (strongest evidence to answer the question)	Evidence from systematic reviews of descriptive and qualitative studies (i.e., meta-synthesis)
Level II	Evidence from a single descriptive or qualitative study
Level III	Evidence from the opinion of authorities and/or reports of expert committees
Level IV	Evidence-based clinical practice guidelines based on systematic reviews of RCTs
Level V	Evidence obtained from well-designed controlled trials without randomization and from well-designed case-control and cohort studies
Level VI	Systematic review or meta-analysis of all relevant RCTs
Level VII	Evidence obtained from one well-designed RCT

Questions Help Identify Outcomes for Evaluation

Identifying implementation outcomes, a later step in the EBP process, begins with identifying appropriate outcomes as part of the clinical question. If a question has depression as an outcome, it can be defined in various ways and measured with different instruments. For clinicians to identify simply depression as the outcome is insufficient to drive the search strategy; such non-specific outcomes do not provide ideas for what other outcomes would be appropriate to evaluate implementation of evidence. While there may be other evaluation outcomes to be identified, the outcome in the clinical question provides an excellent start. In the example, you also may be interested in a reduction in symptoms, improved quality of life, reduced number of deaths, or reduced costs.

A technique for teaching how to identify outcomes for searchable questions is to have learners determine what the outcome for a given clinical scenario requires for clarification (e.g., definition and measurement) to ensure that relevant evidence would be sought.

SUMMARY

Asking a searchable, answerable question is a basic step in the EBP process. Sackett and colleagues (2000) referred to this step as the most challenging step in the EBP process. One could assume that the skill of asking a searchable, answerable clinical question is already developed in clinicians, since they are practicing. As well, one may assume it is easily developed in pre-licensure students; however, when attempting to ask the question using a standardized format, the challenge and thought required increases. Keeping these factors in mind will assist educators in designing curricula in which objectives are dedicated to assisting learners in how to ask the question in a searchable, answerable format, and to understanding the subsequent implications of this endeavor.

Inquiry is fatal to certainty.—Will Durant

References

Ellis P., Green M. & Kernan W. (2000). An evidence-based medicine curriculum for medical students: The art of asking focused clinical questions. *Academic Medicine*, *75*(5), 528.

Fineout-Overholt E., Nollan R., Stephenson P. & Sollenberger J. (2005). Finding relevant evidence. In B.M. Melnyk & E. Fineout-Overholt(Eds.), *Evidence-based practice in nursing and healthcare: A guide to best practice* (pp. 39–70). Philadelphia: Lippincott, Williams & Wilkins.

Green M. & Ruff T. (2005). Why do residents fail to answer their clinical questions? A qualitative study of barriers to practicing evidence-based medicine. *Academic Medicine*, *80*(2), 176–182.

Inman K., Dymock K., Fysh N., Robbins B., Rutledge F. & Sibbald W. (1999). Pressure ulcer prevention: A randomized controlled trial of 2 risk-directed strategies for patient surface assignment. *Advances in Wound Care: The Journal for Prevention and Healing*, *12*(2), 72, 74–80.

Johns C. (1995). Framing learning through reflection within Carper's fundamental ways of knowing in nursing. *Journal of Advanced Nursing*, *22*, 226–234.

Johnston L. & Fineout-Overholt E. (2005). Teaching EBP: "Getting from zero to one." Moving from recognising and admitting uncertainties to asking searchable, answerable questions. *Worldviews on Evidence-Based Nursing*, *2*(2), 98–102.

Nollan R., Fineout-Overholt E. & Stephenson P. (2005). Asking compelling clinical questions. In B.M. Melnyk & E. Fineout-Overholt(Eds.), *Evidence-based practice in nursing and healthcare: A guide to best practice* (pp. 25–38). Philadelphia: Lippincott, Williams & Wilkins.

Sackett D., Richardson W., Rosenberg W. & Haynes R. (2000). *Evidence-based medicine: How to practice and teach EBM*. New York: Churchill Livingstone.