Teaching EBP: Implementation of Evidence: Moving from Evidence to Action

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Implementation of evidence is essential for patients to receive the best care possible (Heater et al. 1988). Implementation is the fourth step in the EBP process and requires moving from a focus on finding and evaluating the evidence to actively using it to produce quality outcomes. Prior columns have addressed teaching nurses how to accomplish the first three steps of the EBP process: (1) asking a compelling clinical question; (2) searching for the best evidence; and (3) critical appraisal and synthesis of evidence. This column will focus on application of evidence to clinical practice. This step actually starts with the clinical scenario and transcends the whole of the EBP process. Without implementation of evidence, the other steps in the process will be less than effective.

THE IMPORTANCE OF MOVING FROM EVIDENCE TO ACTION

It takes an average of 17 years for evidence to be put into practice (Balas & Boren 2000). Part of this extensive delay in translation of research into practice is that nurses tend to view research findings as something someone else should be concerned with versus a critical element of their daily practice (Pravikoff et al. 2005). Traditional education of nurses about research (e.g., laborious critiques that have no clinical relevance; focus on doing research versus using research; teaching research methods without context or clinical relevance) has prompted much of this attitude (Burns & Foley 2005). As learners are often influenced by educators' views of research, one major challenge educators may have in fostering implementation is to be aware of their own view of research and its value in daily practice. Students may gain a negative view of research, a major barrier identified in advancing EBP (Pravikoff et al. 2005) from an educator who does not value research or see it as integral to daily practice. Without taking the time to reflect on this important aspect of teaching EBP, negative
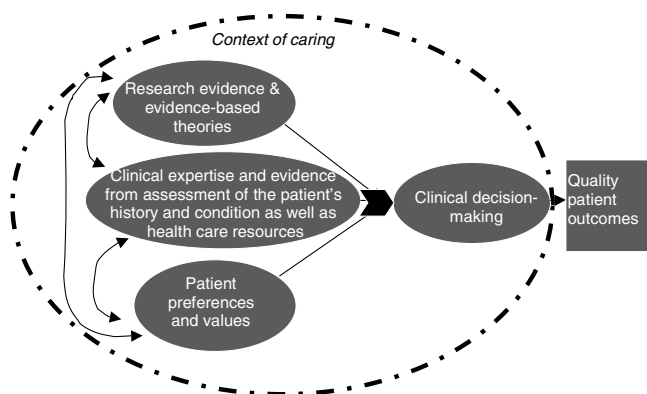
perceptions of research may impede learner's readiness to implement evidence (Pravikoff et al.).

Another consideration for moving from evidence to action is moving past the old adage "there needs to be more research." Most research reports include a statement of this type as part of the conclusion section. However, it is argued here that we should be moving from this passive mindset to one that actively uses what we know from research. Part of moving learners to engage in translation of research findings into practice is to address barriers that nurses have identified that make implementation challenging, such as lack of knowledge and skill, access to evidence at the bedside, and EBP mentors (Hutchinson & Johnston 2004; Melnyk et al. 2004). Prior columns have discussed some of these issues, and others will be addressed here.

Essentials for Implementation: Reflection, Philosophy, and Conceptual Framework

For future nurses' practice to be evidence-based, in addition to attitudes toward research, it is important for educators to assist learners in identifying their current philosophy of practice. One teaching technique that can facilitate this activity is reflection. Reflection and its role in EBP has been discussed previously (see Johnston & Fineout-Overholt 2005). Applying research to practice requires reflection on the essentials of implementation, including the current philosophy of practice, available resources, confidence about the available evidence, and the identification of stakeholders who will influence the implementation of evidence and outcome of implementation. The outcomes expected to be affected from the implementation of evidence must be considered pre- and post-evaluation to demonstrate that there is indeed a clinical issue (pre) and to document successful implementation of the evidence (post).

For educators to be instrumental in advancing the translation of research findings into practice, they must define the conceptual framework that underpins their teaching. When educators use an EBP conceptual framework (see Figure 1), they are able to assist students in understanding how concepts fit together to achieve better patient outcomes and, therefore, why the educator is taking time

Context of caring

Research evidence & evidence-based theories

Clinical expertise and evidence from assessment of the patient's history and condition as well as health care resources

Patient preferences and values

Clinical decision-making

Quality patient outcomes

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Figure 1. Sample EBP conceptual model to drive education and practice.

to teach those concepts (i.e., the utility of the concepts). Knowing how content can be used by learning about it in a formal classroom or an in-service setting is crucial to assigning it value in the future. For example, if an educator is teaching that patterns of knowing are important to EBP, the relationship of those patterns to the EBP process must be demonstrated. Content about patterns of knowing (i.e., empiric, aesthetic, personal, ethical, and sociopolitical) would need to be linked to aspects of the conceptual framework in Figure 1. Specifically, simple linkages could be made from content on empiric knowing to the research aspect of Figure 1; personal and aesthetic knowing could be linked with how one develops clinical expertise; socio political knowing can influence the development of clinical judgment and how nurses use health care resources; ethical knowing can be influential in how nurses ascertain, value, and incorporate patient preferences; and finally, the notion of how all patterns of knowing interact with all the aspects of the EBP process would be addressed.

Reflection on what is being taught about implementation and why it is being taught (i.e., how it advances the conceptual framework) can provide learners with the context for learning about how to use research to guide practice (i.e., why it is important). This should facilitate learning for the practical purpose of improving patient care versus simply an intellectual exercise.

The Transtheoretical Model of Organizational Change is one framework that educators could use to guide their educational approach. This model includes five stages, which are precontemplation, contemplation, preparation, action, and maintenance (Prochaska & Velicer 1997). Ten processes that can produce change are outlined, three of which are (a) appreciating that the change is important to one's success (i.e., self-reevaluation); (b) believing that

a change can succeed and making a firm commitment to the change (i.e., self-liberation); and (c) appreciating that the change will have a positive impact on the work environment, that is, environmental reevaluation (Procheska et al. 2001). This model is now being extended to the field of organizational change, which, if empirically supported, could extend the theory's pragmatic efficacy.

Control theory (Carver & Scheier 1982, 1998) is another framework that can guide educators. This theory contends that a discrepancy between an individual's standard or goal (e.g., EBP) and their current state (e.g., non-evidence-based care) should motivate behaviors to reach one's standard or goal. However, there are certain conditions that may block the initiation of behaviors to attain the standard or goal. Examples of these barriers include uncertainty regarding how to reach the goal, lack of knowledge and skills, heavy patient loads, and poor outcomes expectancy (e.g., that one cannot reach the goal). The educator has the responsibility to remove such barriers by fostering individual learning through teachable moments (i.e., a moment of educational opportunity in which a person is likely to be principally inclined to learn something or especially responsive to being taught a concept[s]) and other educational opportunities (e.g., building beliefs that one can become an evidence-based clinician at the bedside; Estabrooks et al. 2003). Therefore, questions about what barriers exist and how to remove them to accomplish the goal would be topics of discussion in formal coursework or continuing educational endeavors. Further discussions would address what interventions would mitigate these barriers (Fink et al. 2005).

These two theories underpin the Advancing Research and Clinical Practice through close Collaboration (ARCC) model (Melnyk & Fineout-Overholt 2002; Fineout-Overholt et al. 2004). The key component of this model is the EBP mentor — an individual who has proficient knowledge and skills in EBP and a passion to help others practice daily from an evidence base — incorporating his or her clinical expertise and patients' preferences with research and other objective data when making clinical decisions. To prepare learners for today's current work environment, faculty can view themselves as EBP mentors in education. Facilitating learners to learn about EBP, build skills in EBP, and assisting them to move beyond the status quo is the role of a faculty EBP mentor. In addition, educators facilitate learners' growth in their belief that EBP affects patient outcomes and their belief in their ability to implement EBP. Evidence supports the fact that clinicians and educators who have higher beliefs in EBP and their ability to practice based on evidence foster EBP in their colleagues (Melnyk et al. 2004). Through role modeling EBP in the classroom and in teachable moments at the bedside,

faculty can assist learners to realize why their contributions as evidence-based practitioners' are important and that they influence patient outcomes. As a result, faculty can play an important role in helping nurses and students to own their practices and realize that they make a difference in patient care.

Focus on Outcomes

Internationally, government-funded initiatives have been developed with a remit to close the "evidence–practice gap" between available, high-quality research evidence and clinical practice. These programs are designed to not only facilitate the implementation of evidence into practice, but provide tools for evaluating the effectiveness of those implementation strategies — that is, evaluate outcomes. Provision of such tools should, theoretically at least, not only contribute to, and/or enhance, a focus on outcome evaluation practices routinely undertaken within clinical organizations, but also provide a uniform approach to evaluation that allows opportunities for benchmarking outcomes across organizations, nationally and internationally.

In preparing the learner to engage in implementation, they must have evaluation in mind. However, learners are unlikely to understand the impact of their contribution to patient care unless outcomes are collected, analyzed, interpreted, and used by them to improve practice. Emphasis on establishing partnerships with biostatisticians for quantitative data analysis is likely to be critical. These partnerships can assist learners to gain knowledge and skills in how to identify outcomes, how to measure outcomes (e.g., reliability and validity of measurement), and how to collect data at baseline and post implementation. For example, as a beginning step and one that is often overlooked, gathering baseline data is an essential exercise for learners to engage in to assist in documenting whether or not there is change in the outcomes of their implementation projects. Also, entering data into a database and becoming familiar with the conduct of simple statistics (e.g., frequencies) will assist learners to value and use data.

Another learning strategy can be exposing students to initiatives that are focused on the use of data (i.e., data surrounding processes implemented and outcomes evaluated) to improve clinical practice. The Institute for Healthcare Improvement (IHI), founded in the United States in 1991, is a not-for-profit organization whose focus is the improvement of health care throughout the world, including improving the lives of patients, the health of communities, and the health care workforce. For example, the outcome of ventilator-associated pneumonia (VAP) is one of IHI's focus areas in which processes are implemented to reduce this outcome. The incidence of VAP is evaluated to demonstrate that the processes implemented did, indeed, improve patient care.

Learners can also benefit from another example of an organization that is attempting to influence patient care through bringing evidence to bear on outcomes — the National Institute for Health and Clinical Excellence (NICE) (www.nice.org.uk). NICE was established in the United Kingdom in 1999 to provide authoritative advice on the clinical and cost effectiveness of existing and new technologies ranging from pharmaceuticals to diagnostics to interventions. NICE produces guidance on public health, technologies, and clinical practice. The institute has also developed an Implementation Program to aid in the introduction of NICE guidance into practice and developed tools to assess the effectiveness of implementation strategies. The program comprises a number of approaches ranging from those designed for chief executives and directors with overall responsibility for the implementation of NICE guidance to helpful tools for people in local organizations who implement guidance as part of their day-to-day practice. The implementation tools have been developed as a result of consultation and are based on evidence from the literature on effective implementation strategies.

A final example for learners of agencies around the world that are attempting to close the gap between evidence and outcome could be the National Institute of Clinical Studies (NICS) in Australia, which is a government agency with a similar responsibility to NICE, closing gaps between evidence and practice in health care (http://www.nicsl.com.au//). Established in 2000, NICS works with groups of clinicians with shared interests such as palliative care and cardiovascular disease, and larger health care organizations, including hospitals and professional bodies, to identify current gaps in the use of evidence in practice and facilitate evidence uptake. Evidence–Practice Gaps Reports present the best available evidence from the latest high-quality research, and compare recommendations arising from the research with current practice in Australia, highlighting areas where improvements could be made. Clinical Priority Projects are designed to evaluate the impact that the implementation of such evidence has on practice. As an example, a current project, endorsed by the Royal Australian College of General Practitioners, is evaluating the utility of the high-quality evidence source published by the British Medical Journal, Clinical Evidence. A consideration for education programs of health care professionals is how to include information on the availability and use of standardized tools for measuring implementation and outcomes. Without a focus on outcomes preliminarily, implementation can be less than successful.

Successes and lessons learned through engaging evaluation of outcomes and how those data are used to

improve practice need to be shared. Faculty can be a role model for this important skill, assisting learners to understand how reward and reflection can be used in their practice settings to encourage further practice improvements. Faculty can also provide guidance for learners as they engage systems issues surrounding dissemination of evidence, including outcome evaluation, such as presentations, manuscript preparation and research subjects, or ethical review boards. In formal coursework or special classes in the clinical venue, this type of dissemination can be part of course requirements, reinforcing the importance of this endeavor.

Insufficient Evidence: What Should a Clinician Do?

Often, nurses can find some evidence to answer a clinical question, but are not sure if it is enough to generate practice change. Given that the body of research for nursing is still growing, the question arises; when do we act? The answer lies in the soundness of the existing research and agreement across existing studies and whether or not the intervention prescribed from valid, relevant, but sparse research is feasible, and will not cause harm (Rutledge & Kuebler 2005).

There are instruments to assist in determining if an innovation is feasible, such as the CURN (Conduct and Utilization of Research in Nursing) feasibility worksheet (Horsley et al. 1983). If the intervention is feasible and will not cause harm, such as a fall prevention program shown to be successful in two good-quality randomized controlled trials, it should be tested on a small scale and outcomes collected to determine if it works in the given setting. An EBP mentor can assist learners through this process, including dissemination of successes and lessons learned. As part of step four, EBP implementation, understanding the role of evidence generation when there is insufficient or nonexistent evidence to answer the clinical question is essential.

To implement an EBP project, a table or timeline may be a helpful tool for educators, as it provides a step-by-step approach to a complex process (see Table 1). This assists the learner in focusing on the essentials for success and enables a reasonable timeline for project implementation. Faculty need to include content that addresses each step of implementation of an EBP project.

When Evidence is Sparse or Nonexistent

When there is less-than-valid or irrelevant evidence, evidence needs to be generated. For this to be successful, a partnership is required between (nurse) scientists or researchers who can assist with methodological rigor, and clinicians who provide the question, the context, and the implications for the translation of research findings into practice. Educators who are nurse researchers and EBP

mentors are ideal candidates for this partnership role. If educators with these skills are not part of the agency or health care service, partnerships can be forged with academic researchers. EBP mentors can assist learners to develop and practice their skills in negotiating these partnerships.

Strategies for Teaching Implementation of Evidence

Whether nurses are implementing evidence to improve practice or generating evidence in partnership with nurse researchers, senior clinical management support and partnership are critical for successful practice change. One of the first steps in the sample project timeline (see Table 1) is to identify key stakeholders and begin to gather approval from appropriate leadership and other groups. Assisting learners to consider who would be the most appropriate person to begin their approval process with, and how to negotiate their project effectively needs to be addressed; however, this is not a usual part of academic or ongoing educational curricula. Role-playing is an effective teaching tool for this aspect of implementation.

Several strategies can be used to introduce and teach skills, knowledge, and application of evidence to practice. Using PICOT boxes, EBP rounds, journal clubs, or educational prescriptions are only a few of the many strategies that can be helpful in providing learners with the critical tools they need to move from evidence to action.

PICOT Boxes and Posters

There are several methods to introduce the implementation of evidence and the EBP process to a group of people. The most non-threatening is PICOT boxes or posters. A PICOT box (or whatever receptacle you wish to use) can be placed in a central location in a clinical or academic setting. A poster explaining what a PICOT question is and the scenario from which it comes can be placed above the box. Learners are asked to place their question in PICOT format or to write out their patient care scenario and place them in the box. The educator can take the questions and/or scenarios and prioritize them by which has the most available evidence. Across a series of months, the educator places posters with answers to the PICOT question and how they were found (i.e., search strategy, critical appraisal). As the learners move from sure answers to those without as clear answers, discussions around comfort with uncertainty are important. Learners can have discussions while being physically by the posters or they can simply read and learn on their own.

EBP Rounds

EBP rounds are much like a presentation; one person presents and participants usually listen, with perhaps a few questions. The intent is not necessarily to be

TABLE 1
Sample EBP implementation project steps and timeline

TEAM MEMBERS: **PICOT QUESTION:** **EBP MENTOR & CONTACT INFO:**		
Preliminary CheckPoint	□ Who are the stakeholders for your project – Active (on the implementation team) & Supportive (not on the team, but essential to success) □ Identify project team roles & leadership □ Begin acquisition of any necessary approvals for project implementation and dissemination (e.g., system leadership, unit leadership, internal review board [IRB]) □ *Begin relationship with EBP mentor*	
CheckPoint 1 (about 1 month)	□ Hone PICOT question and assure team is prepared □ Gain EBP knowledge & skills □ *Review progress with EBP mentor*	Notes:
CheckPoint 2 (about 1 month)	□ Conduct literature search and retain studies that meet criteria for inclusion – connect with librarian □ Meet with implementation group □ *Review progress with EBP mentor*	Notes:
CheckPoint 3 (about 1 month)	□ Critically appraise literature □ Meet with group to discuss how completely evidence answers question; pose follow-up questions and re-review the literature as necessary □ *Review progress with EBP mentor*	Notes:
CheckPoint 4 (about 1 month)	□ Meet with group □ Summarize evidence with focus on implications for practice and conduct interviews with content experts as necessary to benchmark □ Begin formulating plan for implementation of evidence □ *Review progress with EBP mentor*	Notes:
CheckPoint 5 (about 1 month)	□ Define project purpose □ Define data collection source(s) (e.g., existing dataset), methods & measures □ Define outcome indicators of successful project □ Finalize any necessary approvals for project implementation and dissemination (e.g., system leadership, unit leadership, internal review board [IRB]) □ *Review progress with EBP mentor*	
CheckPoint 6 (about 1 month)	□ Meet with group □ Finalize plan for implementation of evidence. Identify resources necessary to complete project. □ Begin collection of baseline data □ Begin work on poster for dissemination of progress and to educate stakeholders about project – get help from support staff □ Include specific plan for how evaluation will take place: who, what, when, where & how and communication mechanism to stakeholders □ *Review progress with EBP mentor*	Notes:
CheckPoint 7 (about 1 month)	□ Meet with group to review poster □ Make final adjustment to poster with support staff □ Inform stakeholders of start date and poster presentation □ Address any concerns or questions of stakeholders □ *Review progress with EBP mentor*	Notes:
CheckPoint 8 (about 1 month)	□ Poster presentation (preferred event is a system-wide recognition of quality, research or innovation) □ Launch EBP implementation project □ *Review progress with EBP mentor*	Notes:

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interactive, but to provide a safe, informative learning opportunity. By the nature of EBP rounds, requiring participants to engage some content in a group setting, there is more involvement than putting a question in a PICOT box. One must make time to go and, at least theoretically, be interested in the topic and, hopefully, take some information back to their practice. Using EBP rounds to foster interest in the EBP process and the clinical issue of interest can be a great learning strategy. Gather those interested in a topic in a room that is conducive for teaching and learning, serve food/refreshments, and bring learners into the process without them feeling too threatened; they can sit, listen, and learn, without having to actively participate.

Journal Clubs
The intent of journal clubs is that everyone participates, quite different from EBP rounds. These are designed to be smaller and more intimate than EBP rounds. The environment needs to be safe, and mistakes are viewed as opportunities to learn versus punitive. The leader is key to the success of a journal club; a leader must be visionary, committed, and have excellent communication skills. There can be many approaches to conducting a journal club. For example, the journal club may be focused on teaching the EBP process, with each step addressed in a series of journal club meetings. Topic-based journal clubs can address a different aspect of a chosen topic across a series of meetings. Skill-based journal clubs focus on a certain skill (e.g., searching or critical appraisal) and different aspects of a skill are addressed across a series of meetings (Fineout-Overholt 2006).

Educational Prescriptions
Finally, learners need to be asked to write their own educational development plan or "prescription" that reflects their level of knowledge, skill, or proficiency in one or more areas of the EBP process, and how they plan to address any shortfalls. Educational prescriptions were originally described by Sackett and colleagues (1991). An educational prescription places the accountability for learning on the learner and moves it away from the educator. Certainly, an educational prescription can be used in combination with the above three strategies for developing an EBP culture.

CONCLUSIONS

Implementation is not an option. Gelinas (2006) indicated in a recent presentation that, in reality, "it is not a lack of evidence; it is a lack of execution" of what we already know that maintains the existing 17-year gap from the generation of research findings to the implementation into practice.

In health care, we need to translate research into practice, value our clinical expertise and judgment, and include the patients' value and preferences in decision making; therefore, the major charge for educators, clinical and academic, is to move in their own mind from evidence to action and to mentor others to do the same.

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