



# EVIDENCE-BASED PRACTICE

An Implementation Guide for  
Healthcare Organizations

Janet Houser and Kathleen S. Oman

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Healthcare Organizations

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# Preface

The term *evidence-based practice (EBP)* is hard to avoid in contemporary health care. Even if an organization were not motivated to rely on interventions shown to be effective, a host of external forces would push them toward EBP with relentless force. The Joint Commission, consumers, and the American Nurses Credentialing Center, to name a few, expect organizations to develop and maintain systems to find, appraise, and disseminate best practices to clinicians.

Yet, there remains no “roadmap” for the healthcare organization to use in determining *how* to make this happen. The aim of this book is to provide that guide for hospitals, clinics, rehabilitation centers, and other organizations that deliver health care. It can be a valuable guide for the individuals who practice in organizational settings. Every healthcare practitioner needs to understand and contribute to the body of knowledge that is the basis for clinical practice. For a long time in health care, scientific research was left to academics. That no longer works in health care. The contemporary healthcare environment makes every clinician in the organization accountable for determining the value of their interventions.

The book begins with an overview of the importance of evidence-based practice for organizations and clinicians, and specifically introduces the Magnet standards for EBP systems. A practical approach to implementing EBP is provided in the chapters that follow. Chapters help in building the case for EBP to those in the organization that may not readily see the return on investment from EBP efforts. The skills needed to lead an EBP effort, prepare staff, help identify EBP opportunities, and design studies are laid out in detail for clinicians. Organizational concerns—such as structures, guiding principles, garnering resources, and using technology—are also presented in a practical way, based on the experiences of the authors and contributors. A case study demonstrating how an EBP system is pulled together finishes the book, showing the application of information contained in the chapters.

The chapters have a number of features designed to provide examples and demonstrate the concepts in the book. *Voices from the Field* give real-world,

first-person accounts of the activities outlined in the chapters. Numerous tables and figures demonstrate and expand on key concepts. The appendices provide numerous forms and checklists that can be used immediately to assess resources, prioritize opportunities, and design studies.

It is our hope that this book will serve as a guide, providing uncomplicated direction for the complicated process of building an evidence-based practice system in a healthcare organization. It is also our hope that the book will inspire clinicians—whether they are still students or practicing in the field—to create scientific evidence for their own practices.

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# Evidence-Based Practice in Health Care

*Janet Houser*

## INTRODUCTION

It would seem a foregone conclusion that effective clinical practice is based on the best possible, rigorously tested evidence. The public assumes it, patients expect it, and practitioners profess to value it. Yet it is only in the past two decades that an emphasis on evidence as a basis for practice reached the forefront of health care.

While it may be surprising that assurances of the scientific basis for health-care practice have been this long in coming, there are many reasons why evidence-based practice (EBP) is a relatively recent effort. The past decade has seen unprecedented advances in information technology, making research and other types of evidence widely available to healthcare practitioners. While a clinician practicing in the 1980s may have read one or two professional journals a month and attended perhaps one clinical conference in a year, contemporary healthcare professionals have access to a virtually unlimited bank of professional journal articles and other sources of research evidence via the Internet. Technology has supported the rapid communication of best practice and afforded consumers open access to healthcare information as well. As a result, evidence-based practice is quickly becoming the norm for effective clinical practice.

## WHAT IS EVIDENCE-BASED PRACTICE?

*Evidence-based practice* is the use of the best scientific evidence integrated with clinical experience and incorporating patient values and preferences, in the practice of professional patient care. All three elements are important. An

**Box 1-1 Voices from the Field**

I was working as the clinical nurse specialist of a busy surgical intensive care unit (ICU) when we received a critically ill patient. He was fresh from cardiac surgery and quite unstable; he needed multiple drugs and an intra-aortic balloon pump just to maintain his perfusion status. He was so sick that we were not able to place him on a special bed for pressure relief. For the first 24 hours, we were so busy trying to keep him alive that we did not even get a chance to turn him.

About 36 hours into his ICU admission, he was stable enough to place on a low-air-loss mattress for pressure ulcer prevention. When we were finally able to turn him, we noted he had a small stage II pressure ulcer on his coccyx. Despite the treatments that we used, the pressure ulcer evolved into a full thickness wound. He recovered from his cardiac surgical procedure, but unfortunately, required surgeries and skin grafts to close the pressure ulcer wound.

The experience I had with this patient prompted me to review the evidence-based practice guidelines we had in place to prevent pressure ulcers in critically ill patients. I wanted to make sure we could prevent this from happening again, but I had a lot of questions. Could we preventively place high-risk patients on low-air-loss mattresses while they were still in the peri-operative service? Did we even know the patients that were at risk for pressure ulcers? What assessment tools did nurses use to assess the patient's risk? When a high-risk patient was identified, what interventions did the nurses use to prevent pressure ulcers? How were the ulcers treated once they appeared?

I was fortunate that my Chief Nursing Officer (CNO) was a strong advocate for evidence-based practice (EBP), and she encouraged me to initiate an EBP review of pressure ulcer prevention and treatment. Specifically, I wanted to find out what nursing interventions were supported by research evidence when we were trying to prevent pressure ulcers in the surgical ICU. So I contacted other inpatient units at the hospital to determine what they were doing.

I discovered that the surgical ICU was not different from the other inpatient units. There *was* no standard, evidence-based nursing practice for pressure ulcer prevention. Units were not consistently using the same skin assessment tools, so it was hard to objectively communicate risk from one unit to another. The tools we were using were not necessarily based on research. It was clear that we needed to identify the best available evidence and devise a protocol.

We started by establishing an evidence-based skin care council for the hospital. The team consisted of bedside nurses from all inpatient units and the peri-operative service. Initially the council reviewed current nursing skin assessment forms, and we conducted a review of the literature on pressure ulcer prevention and interventions. We discovered the Association for Healthcare Research and Quality (AHRQ) guidelines on pressure ulcer prevention and treatment, a key source of evidence for healthcare practices.

Over the course of the next year, we revised our nursing policy and procedure, incorporating the AHRQ evidence into a treatment guideline. The guideline included a procedure for skin assessment and nursing documentation, and pressure ulcer assessment and treatment decision algorithms. We reviewed skin care products and narrowed down the products to those that were supported by evidence. One algorithm helped staff make selections between products that maximized prevention and treatment. Another algorithm guided nurses in the use of therapeutic surfaces (e.g., low-air-loss mattresses) to prevent pressure ulcers. To monitor our progress, we began quarterly pressure ulcer prevalence studies. As part of the implementation, we scheduled a skin care seminar featuring a national expert on skin care.

At the beginning of our EBP skin care journey, our pressure ulcer prevalence was 9%. Since implementing our EBP skin care initiatives, our pressure ulcer prevalence has dropped to 3–5%. The EBP skin care council continues to be active in our hospital. We meet monthly and continue to seek out the best evidence to guide all skin and wound care product decisions, practice guidelines, protocols, and policies. My initial search for a solution—based on my experience with one patient—led to improvements in practice that have benefited many patients since then.

Mary Beth Makic, PhD, RN

analogy may be made to a three-legged stool, as depicted in **Figure 1-1**. The triad of rigorous evidence, clinical experience, and patient preferences must be balanced to achieve clinical practices that are both scientifically sound and acceptable to the individuals applying and benefiting from them.

While healthcare practitioners have long used research as a basis for practice, a systematic approach to the translation of research into practice has been introduced relatively recently. The first documented use of the term “evidence-based practice” was less than 2 decades ago. A clinical epidemiologist used the term in a text to describe the way students in medical school should be taught to develop an attitude of “enlightened skepticism” toward the routine application of diagnostic technologies and clinical interventions (Sackett, 1991). The authors described how effective practitioners rigorously review published studies to inform clinical decisions. The goal stated in this publication was an *awareness* of the evidence upon which professional practice is based and a *critical appraisal* of the soundness of that evidence.

The term entered the American literature on a broader stage in 1993, when an article in the *Journal of the American Medical Association* described the need for an established scientific basis for healthcare decisions (Oxman, 1993). The authors of the article noted that the goal of evidence-based practice is to



Figure 1-1 Triad of Evidence-Based Practice



Source: Houser, 2008

help practitioners translate the results of research into clinical practice. They emphasized that the scientific practice of health care required sifting through and appraising evidence in order to make appropriate decisions.

Even with the relatively recent birth of the term, evidence-based practice has rapidly become an international standard for all healthcare practitioners. Using the best scientific evidence as a basis for clinical practice makes intuitive sense and joins other science-based professions in using evidence as a foundation for decision making.

### What Evidence-Based Practice Is NOT

A wide range of activities contribute to evidence-based practice. Many of these activities—reviewing research, consulting expert colleagues, considering patient preferences—are common in clinical practice. However, there are many

activities that are *not* considered evidence-based practice, but rather other forms of decision making used to solve problems.

***Evidence-based practice is not clinical problem solving.***

While evidence-based practice is a mechanism for solving clinical problems and making decisions about interventions, it is distinct from traditional problem-solving approaches in health care. Conventional decision making about clinical practices relied on expert opinion—sometimes achieved by consensus, but rarely through experimentation—combined with “standard practice.” Evidence-based practice is a systematic process of reviewing the best available research evidence and then incorporating clinical experience and patient preferences into the mix.

***Evidence-based practice is not solely randomized controlled trials.***

Evidence-based practice does not mean choosing only those interventions supported by randomized controlled trials—although these studies are clearly important in providing guidance for effective practices. A somewhat tongue-in-cheek article by Smith and Pell (2006) suggested that we did not need a randomized trial to inform practitioners of the importance of a parachute as a measure of preventing death when jumping from an airplane (and, in fact, noted the difficulty in recruiting a control group for such a trial!). Evidence-based practice does not rely solely on one type of evidence, but rather is founded on a hierarchy of evidence, with individual studies rated from “strongest” to “weakest” based on the type of design and quality of execution. Evidence can come from many different types of studies in addition to randomized trials.

***Evidence-based practice is not “cookbook medicine.”***

Guidelines based on the best available evidence do not mean that the practitioner has an edict to practice in a single way. In fact, evidence alone is never sufficient to make a specific clinical decision about a specific patient. The

### **Box 1-2 Sacred Cows and Evidence Eagles**

**Sacred Cow:** Cover gowns and shoe covers prevent infections in patients undergoing surgery and other invasive procedures such as bone marrow transplants.

**Evidence Eagle:** Cover gowns and shoe covers worn by caregivers provided no benefit in reducing complications of surgery, including surgical site infections. Outcomes of bone marrow transplants were unaffected by staff wearing cover gowns and shoe covers.

### Box 1-3 Sacred Cows and Evidence Eagles

**Sacred Cow:** There are more incidents of bleeding, psychiatric illness, and trauma during the full moon.

**Evidence Eagle:** While the day of the week influences emergency department admission volumes, the phases of the moon have no relationship with the rate of any clinical conditions or traumatic events.

clinician needs evidence *plus* good judgment, clinical skill, and knowledge of the patient's unique needs to apply evidence to a specific patient care situation. The definition of evidence-based practice, in fact, holds evidence as only one element of the triad of decision making. Clinical judgment and patient values must be considered when applying the evidence to a single situation.

#### ***Evidence is not the same as theory.***

Theoretical effects must be tested and retested to be determined effective. As late as the early twentieth century, physicians still believed that bloodletting was an effective treatment for a host of disorders. This belief was based on the empirical observation that a patient's pulse rate slowed when they were bled and the *theory* that a slower pulse reduced irritation and inflammation. While the empirical observations were accurate—the patient's pulse would slow, indeed, but due to ensuing hypovolemic shock—the theoretical relationship to a therapeutic response was ill-founded. Many contemporary healthcare interventions are, unfortunately, based on similar theoretical relationships that have been untested for years. Recent research has refuted many of these theoretical assumptions, including the protective value of hormone-replacement therapy, the use of rubbing alcohol to prevent infection in a neonate's umbilical cord, and the use of heat to treat inflammation, among many others.

#### ***Evidence-based practice is not just evidence-based medicine.***

The nature and processes of research are likely to be unique for any given profession. Medicine relies on science that is primarily concerned with the cause of disease and effects of treatment. The evidence for medical care, by necessity, focuses on scientific studies that verify and quantify these effects. Medical evidence has been criticized, though, for its sometimes artificial nature. It is a research paradox that the more an experiment is controlled, the less applicability the results will have in the real world. Randomized controlled trials, then,

may provide the most rigorous scientific evidence, but that evidence may not apply well to individual patients with a broad range of physical, psychological, and behavioral conditions.

Patient care, on the other hand, requires a holistic approach to the care of individuals with physical, psychosocial, and/or spiritual needs. This care is founded on the provider–patient relationship and an appreciation of the patient’s unique needs. The evidence for health care, then, will require a broad range of methodologies as a basis for care. This is not to imply that these sources of evidence are not subjected to healthy skepticism and systematic inquiry, but rather that a broad range of evidence is considered as a basis for practice.

### **The Importance of Evidence-Based Practice**

Evidence-based practice is important to the healthcare professional for many reasons. At the top of this list is the contribution of evidence to the effective care of patients. Studies have supported the conclusion that patient outcomes are substantially improved when health care is based on evidence from well designed studies versus tradition or clinical expertise alone. Leufer and Cleary-Holdforth (2009) aggregated outcomes studies related to evidence-based practice changes. A wide range of effects was found in multiple specialties including orthopedic, cardiovascular, respiratory, and obstetrical outcomes. Evidence-based practices in obstetrics and neonatal care reduced morbidity and mortality, sometimes dramatically. The use of corticosteroids in premature labor, for example, reduced the risk of premature infant death by 20%. A seminal meta-analysis by Heater (1988) demonstrated the impact of evidence-based practices on a range of behavioral, physiological, and psychosocial aspects of patient well-being. The linkage between evidence-based interventions and outcomes is an important one, and determining the scientific support for a practice prior to its implementation makes intuitive sense.

#### **Box 1-4 Sacred Cows and Evidence Eagles**

**Sacred Cow:** Hydrogen peroxide is an effective antibacterial cleaning agent when applied to wounds. Bubbling of hydrogen peroxide means bacteria are present.

**Evidence Eagle:** Concentrated hydrogen peroxide is caustic and exposure may result in local tissue damage, and can hinder neodermal development, which is necessary for wound healing. The bubbling occurs when hydrogen peroxide is exposed to air, not bacteria.

While quantitative studies of cause and effect are limited, there are indications that evidence as a basis for process improvement and leadership practices may benefit the organization as well as its patients (Stetler, 2007). Changes in attitudes, knowledge, and skills related to evidence-based practices have been demonstrated through testing educational interventions (Varnell, 2008). Evidence-based practice may soon become the norm for both the way care is delivered and the way organizations operate.

Healthcare providers operate in an era of accountability where quality issues, patient safety, and cost concerns are primary drivers of patient care processes. Using evidence to guide practice streamlines patient care (Newhouse, 2007). Practices that are unnecessary are eliminated; ineffective practices are replaced with practices that result in desired outcomes.

Existing practices may even be unintentionally harming patients (as was found in the hormone-replacement studies) and so it is ethically unjustified to continue using untested interventions. Evidence can help healthcare professionals avoid making errors in decision making relative to patient care. Using research decreases the need for trial-and-error, which is time-consuming and may be counter-productive. In any case, time is not spent on practices that may be ineffective or unnecessarily time intensive.

Consumers are well-informed about their options for personal health care and often resist the traditional, paternalistic approach to health interventions. The public expects that care will be based on scientific evidence, and believes that care processes should routinely lead to high quality outcomes that are physically and mentally desirable (Aarons, 2009). Healthcare professionals must be able to respond to their patient's questions about the scientific merit of interventions and about the relative benefit of treatment options.

Evidence might come in the form of journal articles, policies, guidelines, professional consensus statements, and standards of practice as well as formalized research. While evidence-based practice implies scientific evidence,

### Box 1-5 Sacred Cows and Evidence Eagles

**Sacred Cow:** Neonates and infants should be placed in the prone position during sleep periods to prevent aspiration.

**Evidence Eagle:** Sleeping in the prone position among blankets and pillows has been discovered to be a primary cause of sudden infant death syndrome through suffocation. Neonates and infants should be placed on their backs with minimal contact with pillows, stuffed animals, or blankets. Warm sleepwear is sufficient to prevent hypothermia.

the words “relevant” and “rigorous” might be better adjectives to describe the kind of evidence needed by healthcare professionals. Critical skills include the ability to judge both the *type of evidence* that is needed and the *value of that evidence*.

Healthcare practitioners do not practice in professional isolation, but rather explore what works and does not work using empirical methods. An increased emphasis on evidence-based practice can be viewed as a response to these broader forces in the context of healthcare delivery and a logical progression toward the utilization of research as a basis for patient care decisions.

### **How Can Evidence Be Used in Health Care?**

At its best, evidence provides the basis for effective, efficient patient care practices. At a minimum, an evidence-based approach can enhance practice by encouraging reflection on what we know about virtually every aspect of daily patient care. The EBP process need not be onerous and basically includes five elements: (1) formulating an appropriate question, (2) performing an efficient literature search, (3) critically appraising the best available evidence, (4) applying the best evidence to clinical practice, and (5) assessing outcomes of care (Noteboom, 2008). The original question can come from a variety of sources in a healthcare setting and, likewise, there is a wide range of organizational processes for which evidence can improve outcomes.

*Evidence can be used as a basis for healthcare processes.* Evidence can be incorporated into virtually every phase of the healthcare process. Evidence exists for best practices in:

- Assessment of patient conditions
- Diagnosis of patient problems
- Planning patient care
- Interventions to improve the patient’s function, condition, or to prevent complications
- Evaluation of patient responses to interventions

*Evidence can be used as the basis for policies and procedures.* While healthcare professionals from different educational programs, backgrounds, and experience may have different ways of delivering patient care, few can argue with the need for best practices. Evidence-based practice provides the foundation for policies and procedures that are tested and found effective (Oman, 2008), as opposed to “the way we’ve always done it.”

*Evidence can be used as the basis for patient care management tools.* The evidence that is revealed through systematic review of research and other sources of evidence provides an excellent basis for patient care management tools such as care maps, critical paths, protocols, and standard order sets.

**Box 1-6 Sacred Cows and Evidence Eagles**

**Sacred Cow:** Oral care is a secondary consideration in patients on ventilators; maintaining a clear airway is the primary preventive method for ventilator-associated pneumonia.

**Evidence Eagle:** Simple oral care with toothbrush and paste or other means of cleaning the teeth and oral cavity are one of the most effective and primary strategies for reducing the rate of ventilator-associated pneumonia.

One of the benefits of patient care management tools is the reduction of variability in practices, and evidence serves as a rational basis for standardized practices.

*Evidence can be used as a basis for care of the individual.* The complexity of patients that need care in the healthcare system can make the clinician wonder if evidence can ever be applied to an individual patient. It is easy to consider the question, “Is my patient so different from those in the research that results will not help me make a treatment decision?” This question, more than any other, may stand in the way of applying evidence to individual patient care situations. In fact, one study found that the more familiar a patient was to a practitioner, the *less likely* the clinician was to use evidence as a basis for their care (Summerskill, 2002).

As practitioners, though, we must ask if these assumptions about the uniqueness of patients are in their best interest when it comes to clinical care. Uncertainty is inherent in the healthcare process; evidence helps to quantify that uncertainty. Concern for the uniqueness of the individual patient is not a reason to ignore the evidence, but rather to learn to critically apply it appropriately. Evidence is not intended to be rigid, but rather—as our definition makes explicit—is *integrated* with clinical experience and the patient’s unique values to arrive at optimal outcomes.

Evidence in clinical practice is not solely limited to patient care, however. Healthcare professionals might be interested in evidence as it relates to team functioning, the best way to communicate change, organizational models for research utilization, or even the effects of insurance on healthcare usage. Evidence in health care abounds on a variety of topics, and research utilization can improve patient care in a multitude of ways.

Using evidence as a basis for a broad range of clinical practice problems would seem logical. However, there are a variety of reasons that evidence-based practice is yet to be the standard, which is not surprising given the complexity of healthcare delivery.

**STRATEGIES FOR IMPLEMENTING EVIDENCE-BASED PRACTICE**

Considering the benefits of basing clinical practice on evidence, it would make sense that evidence-based practice be the norm. Unfortunately, this is not the case. There are many reasons why evidence-based practices are the exception rather than the rule. Some of these are limitations created by EBP systems themselves. Some barriers are related to human factors, and still others are related to the organizations within which patient care is delivered. **Table 1-1** lists some of the common barriers to using evidence as a basis for practice.

Organizations do not commonly have systems in place to support clinicians in the development of EBP tools. While there has been a surge in the resources available for practitioners who want to participate in the development of practice guidelines, there has been little in the way of operational models to guide

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**Table 1-1 Barriers to Using Evidence in Clinical Practice**

<b>Barrier</b>	<b>Causes</b>
Limitations in evidence-based practice systems	Overwhelming amount of information in the literature
	Sometimes contradictory findings in the research
Human factors that create barriers	Lack of knowledge about evidence-based practice
	Lack of skill in finding and/or appraising research studies
	Negative attitudes about research and evidence-based care
	Perception that research is “cookbook medicine”
	Perception that research is only for medicine
Organizational factors that create barriers	Patient expectations (e.g., demanding antibiotics)
	Lack of authority for clinicians to make changes in practice
	Peer emphasis on status quo practice because “we’ve always done it this way”
	Demanding workloads with no time for research activities
	Conflict in priorities between unit work and research
	Lack of administrative support or incentives

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healthcare organizations that want to implement pervasive evidence-based practice (Salbach, 2007).

The complexities of changing practice based on evidence are daunting indeed. Pagogo *et al.* (2007) studied the barriers and facilitators of evidence-based practice as perceived by healthcare professionals. Seven themes were used to describe both barriers and facilitators:

- Training and educational support
- Attitudes toward EBP and research
- Consumer demand for evidence-based care
- Logistical and organizational considerations
- Institutional and leadership support
- Policies and procedures
- Access to appropriate evidence

### Strategies for Overcoming Barriers

While there is little that can be done to reduce the complexity of contemporary clinical care, there are some strategies that can help improve the rate at which healthcare professionals utilize research as a basis for their practice.

Begin the process by specifically *identifying the facilitators and barriers of EBP practices*. Use of a self-assessment such as that tested by Gale (2009) can help identify organizational strengths and limitations in preparation for an EBP effort.

*Education and training* can improve knowledge and strengthen practitioners' beliefs about the benefits of EBP (Varnell, 2008). Clinicians may fear that they will appear to lack competence, and knowledge will give them confidence in determining an evidence base for their practice.

One of the most helpful—and difficult—strategies is to *create an environment that encourages an inquisitive approach* about clinical care. The first

#### Box 1-7 Sacred Cows and Evidence Eagles

**Sacred Cow:** Women in labor have traditionally been directed to push immediately at 10-cm cervical dilation, which is thought to shorten the second stage of labor and therefore result in better outcomes for the neonate.

**Evidence Eagle:** Passive descent (encouraging mothers to push only when they feel the need) increases the chance that a mother will have a spontaneous vaginal birth, decreases the risk of having instrument-assisted birth procedures, and reduces the amount of time women need to push before the baby is born. Women who were directed to push at 10 cm had increased rates of fetal oxygen desaturation.

step in identifying opportunities for best practices is questioning current practice. This can be accomplished by creating a culture in which EBP is valued, supported, and expected.

Despite the barriers inherent in implementing evidence-based practice in clinical practice, it is imperative that structures and processes are created that reduce these obstacles. Regardless of the system within which the clinician practices, there is a systematic approach to finding and documenting the best possible evidence for practice. The process involves defining a clinical question, identifying and appraising the best possible evidence, and drawing conclusions about best practice.

## EBP AND PROFESSIONAL PRACTICE

Assuming all other issues regarding EBP are equal, a final case for practice based on research is that this characteristic typifies a *profession* more than any other. Professions by definition require advanced educational preparation, self-regulation, and practice based on a broad body of knowledge. Given that advanced education is being required of every healthcare professional—many now at the practice doctorate level—research-based practice is also imperative in order to fulfill our obligations as a profession.

This level of professional practice is required for successful achievement of Magnet Recognition, awarded by the American Nurses' Credentialing Center for demonstrating excellence in nursing services. The New Knowledge and Innovation Component makes explicit the expectation that practice is based on high-quality evidence. A summary of the standards related to evidence-based practice appears in **Table 1-2**.

Fundamentally, “to achieve Magnet status, the Chief Nurse Executive needs to create, foster and sustain a practice environment where nursing research and evidence-based practice is integrated into both the delivery of nursing care and the framework for nursing administration decision making” (Turkel, 2005, p. 254). This implies that evidence is used in the organization to support a range of professional activities—including direct patient care, staff development, and management. When Magnet candidates are evaluated, reviewers are looking for signs that evidence has been integrated into all areas of professional practice. Some questions asked might be, “When you have a clinical question, how do you resolve it?” and “How has research informed your staff development content and process?”

For nurses to value and recognize the relevance and importance of EBP, they need ongoing, concrete support. Systems for finding, prioritizing, and answering evidence-based practice should be in place with formalized structures and processes. Sufficient resources must be applied to assure success. Magnet

**Table 1-2 Summary of Magnet Standards Relevant to EBP**

<b>Standard</b>	<b>Description Describe and Demonstrate:</b>
New Knowledge (NK) 1	That nurses at all levels evaluate and use published research findings in their practice.
NK 2	Consistent membership and involvement of a nurse in the Institutional Review Board or other governing body responsible for the protection of human subjects in research; nurse has vote on nursing related protocols.
NK 3	That direct-care nurses support the human rights of participants in research protocols.
NK 4	The structure(s) and process(es) the organization uses to develop, expand, and/or advance nursing research.
NK 4 Empirical Outcomes (EO)	Nursing research studies in the past 2 years, ongoing or completed, generated from the structure(s) and process(es) in NK4. Provide a table, including: study title; study status; principal investigator name(s) and credentials; role of nurses in study; study scope; study type. Select one completed research study and respond to the four criteria listed in the EO guidelines: <ol style="list-style-type: none"> <li>1. Describe the purpose and background.</li> <li>2. Describe how the work was done.</li> <li>3. Discuss who was involved and what units participated.</li> <li>4. Describe the measurement used to evaluate the outcomes and the impact.</li> </ol>
NK 5	How the organization disseminates knowledge generated through nursing research to internal and external audiences.
NK6	The structure(s) and process (es) used to evaluate nursing practice based on evidence.
NK 7	The structure(s) and process (es) used to translate new knowledge into nursing practice.
NK 7 EO	How translation of new knowledge into nursing practice has affected patient outcomes

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### Box 1-8 Sacred Cows and Evidence Eagles

**Sacred Cow:** Inflammatory muscle injuries should be treated in the first 24 hours with ice, and subsequently with heat.

**Evidence Eagle:** For pure muscle injury, heat increases inflammation. Ice application according to usual protocols reduces inflammation and pain associated with muscle injury throughout the first few days.

standards will lead reviewers to ask, “Are staff members paid for their work on EBP?” and “Do staff members have access to search engines and databases?” Active participation of staff clinicians in identifying areas of concern and finding ways to address them is also critical to meeting Magnet standards. This is the most challenging part of developing integrated EBP systems. A guiding model can help here. One model that demonstrates the integration of evidence-based practice as part of the Magnet recognition process is depicted in **Figure 1-2**. Turkel *et al.* (2005) laid out the five steps of integrating EBP into daily practice:

Step 1: Establish a foundation for EBP.

Step 2: Identify areas of concern.

Step 3: Create internal expertise.

Step 4: Implement evidence-based practice.

Step 5: Contribute to research evidence.

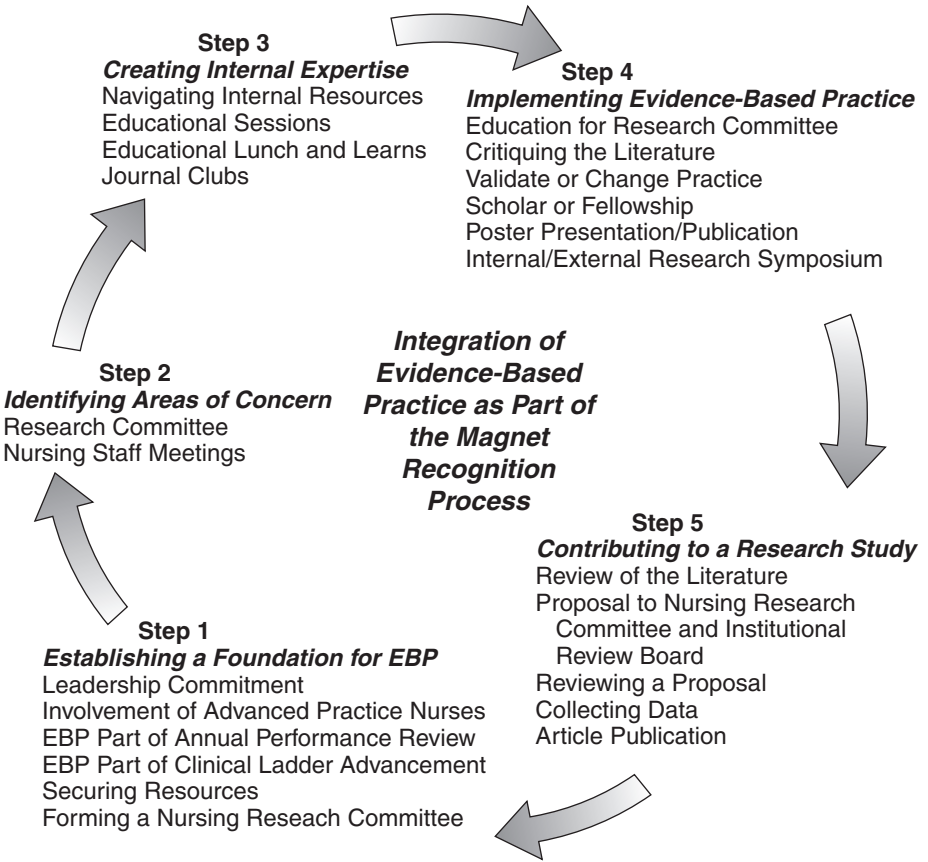
Requiring the integration of evidence into practice has increased the amount of research generated in practice settings. Closson (2005) found clear differences in virtually all indices of evidence-based practice in Magnet facilities when compared to non-Magnet facilities. Collaboration with academic researchers, established mechanisms for research study review, use of findings in practice, resources, and cultural promotion of EBP were all stronger in Magnet than in non-Magnet settings.

### Box 1-9 Sacred Cows and Evidence Eagles

**Sacred Cow:** Instilling 5 to 10 ml of normal saline before endotracheal suctioning improves oxygenation and removal of secretions by thinning them and stimulating coughing to move secretions out of the lungs.

**Evidence Eagle:** Oxygen saturation is significantly lower with instillation of saline than with no instillation of saline. When saline was used, returns to baseline oxygenation levels did not occur until 3 to 5 minutes after finishing the suctioning procedure.

**Figure 1-2 Integration of EBP and Magnet Standards**



Source: Reprinted with permission from Turkel, M., Reidinger, G., Ferket, K., & Reno, K. (2005). An essential component of the Magnet journey: Fostering an environment for evidence-based practice and nursing research. *Nursing Administration Quarterly*, 29(3), 254–262.

This same study also found that no single approach, structure, or system was associated with success. No standard formula can be used to integrate EBP into a professional organization; indeed, there is little agreement on what exactly constitutes an EBP initiative. The processes and systems must mesh with those of the organization, and each will be unique. That said, there are some questions that can be expected of Magnet surveyors, and thoughtful reflection can help an organization’s leader determine how they have designed systems to address the issues. Appendix A has a list of potential questions

from Magnet surveyors regarding EBP implementation, and Appendix B a list of documents that should be ready for onsite review.

## SUMMARY

Evidence-based practice has clear advantages for the contemporary healthcare organization. While there remain many barriers to full implementation of EBP, organizations are finding creative ways to overcome them. The result is a more collaborative, open approach to judging evidence, which values scientific outcomes as well as clinical expertise and patient preferences. Basing evidence on a scientific body of knowledge is critical for the healthcare professions; integrating evidence into daily work is the challenge to be met.

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# Making the Case for Evidence-Based Practice

*Janet Houser*

## INTRODUCTION

It may seem obvious that implementing evidence-based practice (EBP) as the basis for clinical decisions is the optimal way to deliver care. Evidence-based practice is an effective, efficient means to achieve the best outcomes for patients. Yet there is no denying that implementing evidence-based practice in an organizational setting represents an investment. Time spent in group meetings, access to databases, dissemination of practice changes, and supportive materials all have an associated direct or indirect cost. Implementation of EBP without resource allocation may be possible in the short term, but sustainability of the effort requires an ongoing commitment of time, staff, and support.

It is imperative that top leadership actively support a shift to EBP and provide the resources to do so effectively. One of the demonstrated success factors for EBP is “the commitment of top leadership” (Shirey, 2006). But those who are in a position to make decisions about resource allocation may not have a clinical background or exposure to healthcare research. Patient care administrators commonly understand the importance of evidence-based care, but those in finance, information technology, and other support areas may not be familiar with the terms. As a result, it cannot be assumed that everyone in an organization will automatically recognize and support the need for evidence-based practice.

Even those who value scientific research may resist shifting to evidence-based practice. Medical staff may view care standards as restrictions aimed at limiting their autonomy. Employees who have grown accustomed to traditional approaches may feel personal ownership of them and may resist the notion that they need to change. Insurance carriers may view evidence-based

**Box 2-1 Voices from the Field**

Our organization as a whole focuses on quality patient care and solid outcomes, but like most organizations, we do not have the resources to develop new “best practices” for every question that arises. So when questions come up as to what’s the best way to do things, the organization needs to develop a system so that people can get good information on how other organizations have dealt with the same or similar issues. There remain times when you have to be creative to solve the problem.

What we’ve done is set up a system where, first, employees are not afraid to ask the question “Are we doing it the best way?” and second, we have a system to refer those questions, submit them to a council for help, prioritize the urgency of the request, and get their questions answered. We have people who are knowledgeable about how to complete good systematic reviews. We rarely flounder; we quickly get things done and get an answer. The other thing we’ve found is if you’re really focused on quality and quality outcomes, then you can demonstrate the effort put into the research as being positive for patient care and a positive bottom line. What that results in, is that we’re not having the “never events,” the consequential falls, medication errors, those things that can cost you money, can prevent you from getting reimbursed, and most importantly those events that hurt the patient.

We have been able to use evidence to demonstrate actual costs savings. Let’s talk about falls. Probably three or four years ago we had a number of falls, we did some research, and as a result we did two primary things: we changed how we assess our patients, and we put in evidence-based interventions. As part of that, we had to invest some money, particularly on the neuro unit. We used the evidence in a presentation and were successful in getting funding from the board of directors. We were also able to purchase new beds with fall prevention technology, and then, invested in a fall risk patient monitoring system.

Now, if you look at falls related to patient injury, related to extended care, whether it’s fractured hip, head injuries, or God forbid, a death, we have significantly reduced our number of consequential falls. We went 14 months without a consequential fall or related injury. On the neuro unit, their unassisted falls went nearly down to zero.

The evidence helped us look at things we hadn’t thought of ourselves. We struggled with the issue of falls and had multiple things that we’d tried before, but nothing seemed to have much of an effect until we went out and did some research. It was clear we needed to look at patient assessment. Are we categorizing our patients into the right fall risk? We found out that we were a little bit inconsistent with our assessments. We did some investigation about diagnostic tools, “What are the things that would elevate someone into a high fall risk?” So we used the computerized assessment process, and the nurse would pick the things through her assessment, and it would automatically generate a fall risk. It wasn’t subjective anymore, it was objective. Then based on that the categorization, the nurse had guidance on what could be done to prevent falls with that specific patient.

One of the things that we did find through research is that many of the falls happen in the bathroom when the patient is unassisted. Through the research we were able to confirm that we needed to focus on bathroom falls, and one of the practices we identified was the bathroom assist. It's an evidence based practice that ... well let's say ... it didn't go over great because, who wants to have someone in the bathroom with you. So we went back to our assessment and decided on bathroom assists only for high-risk patients. Because of that cascade of events we've significantly reduced unassisted falls in bathrooms. I loved it, because by using the evidence, we were able to say to the staff, "We're not just dreaming this stuff up, trying to make more work for you."

I think the main thing is, make it practical. What I've learned is, don't get too hung up on the technical side of research. I was not that fond of research because when I learned about it we got too theoretical and I couldn't see how to use it. There's a time for that in the research process, and there's people who like that aspect of it. But if you understand the general concepts and don't get too deep into it, then give the people who are passionate about EBP the time to work on the details and the processes to make it all happen, it will pay you back in improved quality, safety, service, and the financial bottom line.

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practices as more expensive in the short term and may pose questions as to their long-term return.

There is no doubt that competing demands shape the decisions of contemporary healthcare administrators. Leaders must balance the needs of multiple stakeholders in making decisions about budgeting, staffing, and care processes. It is not unreasonable to expect that a case be made for organization-wide efforts to shift care processes to evidence-based ones. Just as new programs and projects must demonstrate a return on organizational investment, clinical leaders must make a case for an investment in infrastructure that is required for evidence-based practices.

An awareness of the costs of evidence-based practice in the organizational setting can help the clinician develop a clear, empirical rationale for EBP efforts. Some of the organizational concerns associated with evidence-based practice include:

- The time for staff to meet in councils, committees, and research teams
- The opportunity costs of allocating staff time to conduct EBP when they could be working on other goals

- Direct costs such as library database access, as well as indirect costs for salaries and consultants
- Difficulty in documenting the return on investment of a shift to evidence-based practice
- Productivity losses due to staff learning new evidence-based practice changes
- Sustainability of the organizational resources needed for evidence-based practice

A wise approach is to consider any of these concerns as legitimate and plan a thoughtful response to each.

This is not to say that every organization resists the change to evidence-based practice. There are many organizations that use evidence as a basis for decisions as a matter of course. It is not uncommon—even in these organizations—to find that some changes are more readily accepted than others. At some point, nearly every champion of evidence-based practice will find the need to justify a change in systems, processes, or practice. It is at this point that building a case for evidence-based practice can help leaders and practitioners alike keep a clear head about what is—and what is not—justified as an organizational practice change.

## **IDENTIFYING THE FORUM AND THE MESSAGE**

Gaining the resources needed for an evidence-based change involves four primary steps:

1. Identifying the leadership group that can empower and provide resources for the change
2. Preparing a justification for the change that addresses the specific needs of the leadership group
3. Explaining the resources that will be needed for the change
4. Articulating an evaluation plan that will demonstrate the effectiveness of the change

### **Identifying the Leadership Group**

It is clear that support from top leadership is needed to initiate and sustain evidence-based practices in an organization. Some groups—such as the administrative council or governing board—need only know the processes that are planned, the organizational infrastructure that is proposed, and the financial and staff resources necessary for implementation. These groups can be identified by reviewing the organizational chart, the chain of command, and decision-making authority. The Chief Nursing Officer (CNO) or Vice President

of Patient Care should be consulted to determine the appropriate administrative group for initial communication and approvals.

The Chief Financial Officer (CFO) is responsible for the overall financial health of an organization. The CFO can be a powerful ally for evidence-based practice, in that they ultimately influence the investments of the organization, both internally and externally. Related organizational positions can be identified as the Budget Director or the Controller.

The Chief Information Officer (CIO) or Vice President of Information Technology is responsible for the computer systems, databases, and technology associated with information transmission within an organization. Engaging the CIO can be a boost for EBP because data and other sources of information are vital for decision making.

The Chief Medical Officer or Medical Staff President coordinates and manages communications with the medical staff, oversees adherence with medical staff bylaws, and assists with changes in medical practice. Communication with medical staff is critical to the success of evidence-based practice; winning support from medical staff is an early, important step of implementation.

Many other positions in the organization are related to clinical care, and these individuals are critical in supporting implementation of evidence-based practices. Leaders of ancillary departments such as clinical nutrition, radiology, respiratory therapy, laboratory, and other clinical areas are vital sources of evidence and advice in the change process.

A helpful exercise in determining who needs to be involved in the decision to implement evidence-based practice is to think of a complex patient and track their progress throughout the organization. Each part of the organization that is involved in the patient's care should be involved in evidence-based practice in some way.

### **Preparing a Justification for the Change**

Once the critical leaders and stakeholders have been identified, the next step of the approval process is to prepare a proposal addressing the specific concerns of each audience. By thinking of critical concerns from each leader's point of view, relevant justification can be included that "speaks" to the leader's concerns. Each organizational leader has different concerns related to EBP; the proposal needs to address a broad base of subjects. **Table 2-1** represents the various organizational leaders that need to be involved in the EBP decision and the likely information they will need to "buy into" EBP efforts.

While a proposal must address a broad array of concerns, it should be succinct, to-the-point, and clear. Beginning the request with a one-page executive summary is helpful; some administrators may need no more than an overview of the proposal to be able to endorse it. Others will want to scrutinize the detail

**Table 2-1 Issues to Address for Leadership Audiences**

<b>Leader</b>	<b>Common Issues to Address: How will EBP ...</b>
Governing Board and Chief Executive Officer	Support the organization's strategic plan Be viewed in the community Affect risks and liabilities of the organization
Chief Operations Officer	Affect the provision of patient care Affect general operations Affect productivity and staffing Increase /decrease direct and indirect costs
Chief Financial Officer	Compare to other organizational investments Demonstrate a return on investment Increase/decrease direct and indirect costs
Chief Information Officer	Change information technology requirements Rely on data from existing databases Increase demands for data retrieval and reports
Chief Medical Officer	Create demands for medical staff involvement on committees Change the way medical staff practices Affect autonomy in decision making of medical staff Change quality of patient care in the organization
Chief Nursing Officer	Affect the quality of patient care Require staff time for meetings, committees, and teams Change the policy and procedure manual related to patient care Contribute to Magnet status designation
Operational Departments	Create demands on staff Change the way current staff practice Requires staff time for meetings, committees, and teams

that follows. In any case, a lengthy, verbose proposal is unlikely to be read and carefully considered. A clear, concise, and realistic request is more likely to be read and supported.

### **Explaining the Resources that Will Be Needed for the Change**

A proposal for an EBP support system must recognize that scrutinizing and changing current practices is not free—resources are needed to initiate and

sustain the efforts. A proposal for EBP systems must thoughtfully, deliberately, and comprehensively outline the resources that will be needed to be successful in both the short term and long term. Some of the resources that should be considered in a proposal are outlined in **Table 2-2**. In particular, a facilitator must be identified and EBP made a formal part of this person's workload. Passion for EBP may motivate a facilitator to work extra hours in the short run, but is not sustainable long term unless it is recognized as a legitimate part of an individual's job (Haas, 2008).

### **Articulating an Evaluation Plan**

A proposal for implementation of a system to support EBP must recognize the need for ongoing monitoring and evaluation of the outcomes associated with the efforts. The proposal should describe the processes that will be put in place to document the achievement of stated goals. This part of the plan should also address how often progress reports will be submitted, the information that will be included in the monitoring system, and who will receive documentation of progress. Providing feedback about progress will reassure leadership that investment in the effort is worthwhile and that results achieved can be measured and appraised.

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**Table 2-2 Common Resources Needed for EBP**

<b>Category of Resource</b>	<b>Type of Resource</b>
Staff time	Leaders for EBP and/or Research Councils Clinical staff time to participate on councils, research teams Librarian time to provide support for literature searches Information technology time to retrieve reports from databases
Consultants	Research design consultants Medical staff input Magnet consultants
Information technology	Fees for literature search database access Software for statistical analysis Computers and projectors for staff development Computers for internet access
Supplies and materials	Flip charts and markers Copying and printing



## HOW TO TALK WITH GROUPS ABOUT EBP

Once a proposal has been written with a comprehensive view of the costs and benefits of evidence-based practice, it is time to talk with leaders to gain their support. A successful group presentation will focus on the benefits to be gained from evidence-based practice, coupled with a realistic evaluation of the resources needed for the effort. Organizing the presentation so that it is clear and articulate will best present the case for adoption of organization-wide EBP efforts. Some general guidelines for presenting to leadership groups follow:

*Rehearse.* Practice the presentation so that it is comfortable, to the point, and articulate.

*Know the audience.* Know the names of the people and how they like to be addressed. Physicians, for example, may prefer to be addressed as “Dr.,” while an administrator—even one with a PhD—may prefer to be addressed by name. Identify each individual’s position in the organization and know their title.

*Tailor the presentation.* Know the key issues that are generally raised by the audience and their usual concerns. Tailor the presentation to emphasize the points of greatest interest to the specific people in the room.

*Be honest.* If the answer to a question is not known, admit it. Try to find an answer and respond as soon as possible after the discussion.

*Find out how much time is allotted.* A call ahead may be necessary to know how much meeting or individual time has been set aside for the presentation. Practice the presentation with this time limit in mind. Take *no more than 75% of the time allotted*. It is impossible to listen carefully with one eye on the clock, so be sure the key message is communicated quickly. Leave time for discussion so that the meeting does not end with unanswered questions.

*Outline the presentation to lead to action.* Use an outline that is to the point but motivates an active response. When presenting the case for EBP, one can learn from a sales presentation how to motivate active support:

1. Identify the problems that exist that are potentially solvable with EBP.
2. Show how EBP can address each problem; use specific, concrete examples from the literature or from other organizations.
3. Provide a clear, concise overview of the benefits of implementing EBP in the organization.
4. Outline a realistic projection of the resources needed to implement EBP.
5. Draw a conclusion focusing on the action that is needed from the group or individual.
6. Ask specifically for the support of those attending the presentation (Johlke, 2006).

Presenting a proposal to groups of leaders is a reasonable approach to assuring that top leadership understands the benefits and costs of systems to support evidence-based practice. Group meetings, though, do not replace the need for individual, one-on-one conversations that are specific to the concerns of each organizational leader. While general principles can help structure a formal presentation, it is wise to talk individually with organizational stakeholders to ensure that they understand their role in supporting EBP.

### **How to Talk with Administrators**

Evidence-based practice brings value to an organization in a way that can be appreciated by the contemporary healthcare administrator. When talking with administrators about EBP systems, a focus on the ways that EBP improves organizations should be an early emphasis. Some of the considerations of EBP that will garner the support of administrators include:

- Evidence-based practice has been linked to improved patient outcomes and a reduction in adverse events.
- Hospitals with evidence-based practice have higher levels of employee and patient satisfaction.
- Patient safety is improved when evidence-based practice is the norm.
- Evidence-based practices have been shown to reduce short- and long-term costs and prevent costly readmissions.
- Using the latest scientific evidence for a case enhances the public's confidence in the healthcare provider's competence.

Evidence-based practices are, in some cases, required by accrediting agencies and payers; this trend will likely increase in the future.

Administrators want to ensure that patients in their care receive the highest quality care delivered by satisfied, competent employees. EBP systems can help enhance the chance that this will occur. A focus on organizational benefits, combined with a realistic appraisal of the resources necessary for implementation, can help win the support of healthcare leadership in transforming the organization.

### **How to Talk with the Chief Financial Officer**

The Chief Financial Officer is a powerful ally in new program development. Developing an infrastructure for evidence-based practice requires resources that mean costs—both direct and indirect—and the CFO can help clinical leadership ensure that they have what they need to move forward. Speaking with financial leaders requires that the clinicians look at EBP through the same lens as that of the CFO. In other words, a focus on return on investment is one that will be meaningful to financial leaders and garner their support.

When talking with the CFO, it is imperative to acknowledge that there are costs associated with EBP, and that some of these costs will not show immediate return. What is needed is an argument that recognizes the need to justify those costs, while creating an awareness of the value of investing in EBP. Some of the ways that return on investment can be demonstrated for a CFO include:

- Creating a reasonable budget for evidence-based practice systems—Identifying expected immediate and longer-range expenditures for EBP demonstrates an understanding of the financial investment that is required and an appreciation for the need to project expenditures.
- Calculating cost-benefit ratios—Cost-benefit ratios speak to the financial manager in a language they appreciate and understand. Although the calculation of a cost-benefit ratio is difficult early in EBP efforts, there are methods available to do so that are acceptable financial approaches. **Table 2-3** depicts three ways to project the cost-effectiveness of evidence-based practice efforts.
- Determining a return on investment and payback period—Return on investment is a common expectation of financial managers. Investing in a new service is expected to generate more revenue; similarly, investing in EBP is expected to generate a return at some point that is beneficial for the organization. A payback period is simply a time frame in which the organization can expect to generate a return equal to the initial investment. Both can be calculated using accepted financial methods, as depicted in **Table 2-4**.

### How to Talk with the Chief Information Officer

While the CFO will reasonably focus on the investment that is required for an EBP system, the Chief Information Officer (CIO) will focus on the technology needed to support EBP efforts. The CIO can be thought of as the person responsible for the technology that supports the aggregation and exchange of information in an organization, and as such, is a key player in EBP efforts. Information is key to making informed decisions about the effectiveness of interventions and EBP efforts.

The information needs for EBP will focus on three primary areas:

- Access to databases that enable literature searches—EBP requires the acquisition, review, and aggregation of literature-based evidence such as research studies, systematic reviews, practice guidelines, and other sources of evidence. These databases can be expensive to access and difficult to maintain. Assuring that the CIO understands the importance of investing in knowledge access is essential to a successful EBP venture.

**Table 2-3 Ways to Represent Cost/Benefit of Evidence-Based Practice**

<b>Type of Measure</b>	<b>What It Represents</b>	<b>An Example</b>	<b>Interpretation</b>
Cost/Benefit	The measurable financial costs of an intervention as a ratio to measurable financial benefits	Screening for left ventricular systolic function using the NT-ProBNP resulted in 24% increase in admissions for early treatment of heart disease in a population (Goode, 2008).	A positive number is desirable, and larger values indicate greater return on investment.
Cost/Effectiveness	The measurable financial cost differences between two treatments with the same clinical response (Rossi, 2004)	Substituting thiazides for calcium channel blockers in a hypertensive population drops the average cost per day by 33% with similar blood pressure control (Fischer, 2004).	The average cost per day multiplied by the average patient population quantifies evidence-based treatment savings.
Cost/Utility	Direct costs for an intervention as a ratio to utility, a measure of improvement in quality of life measured in quality-adjusted life years	Cochlear implant in a deaf individual has been calculated as costing \$16,999 per quality-adjusted life year, while continuous ambulatory peritoneal dialysis has a cost/utility of \$85,250.	Values less than \$20,000 are generally considered good investments while values greater than \$100,000 are less desirable (Brown, 2000).

- Exploration of data in existing repositories—Data that exist about current patient treatments is essential for investigating the appropriateness and outcomes of current practices. Data retrieval is also necessary for assuring that implementation of new evidence-based practices is successful (Simpson, 2006). Simply having data is not enough; staff will be required

**Table 2-4 Ways to Represent Return on Investment and Payback**

<b>Type of Measure</b>	<b>What It Represents</b>	<b>An Example</b>	<b>Interpretation</b>
Return on investment	Cost savings and/or increased revenue as a proportion of costs of service	Implementing an evidence based electronic medical record in an ambulatory setting resulted in cost savings that were three times the initial investment cost.	A positive return on investment is desirable.
Payback period	The amount of time that passes before a return value that equals initial investment	The electronic medical record recouped initial expenses in 16 months (Grieger, 2007).	A short payback period indicates the service is returning the initial investment more quickly.

to retrieve and report the data in a way that is meaningful and accurate. Information technology staff will be involved in either the actual retrieval of data or in training others to retrieve data. Either way, the CIO will need to be aware of the staff time involved in supporting EBP.

- Existing software for analysis—Conducting even small pilot studies requires data analysis, and it cannot be assumed that the organization owns statistical analysis software. Even if software is available, someone who is knowledgeable about its use and interpretation is required. The CIO will need to help determine which software is best for EBP purposes and to enable its purchase.

A clear commitment to EBP from the CIO is a substantial advantage in moving forward with EBP systems. It is worth the time to ensure that those involved in information technology are aware of the benefits of EBP as well as its requirements for information retrieval.

### **How to Talk with the Chief Medical Officer**

It is likely that no other group of individuals will be more affected by a shift to evidence-based practice than the medical staff. Physicians may be asked to

change their care practices, adhere to standard order sets, and support organizational efforts to reduce variations in care. All of these initiatives may be met with resistance. Even though evidence-based practice as an approach to care actually started with the medical profession, many physicians still resist changes to their traditional approaches to patient care. Some common concerns about EBP that are raised by medical staff include:

- Overwhelming patient care workloads that prevent investigating best practices
- Organizational and financial constraints in treatment protocols
- Standardized care interpreted as restriction of autonomous decision-making or “cookbook medicine”
- Patients demanding care based on advertising or publicly available information
- Overwhelming amounts of information
- Controversies and contradictions in the evidence.

Many of the concerns raised by the medical staff will be legitimate. It is difficult to deal with patients who are armed with information retrieved from Web sites and commercials that urge them to “Talk with your doctor about . . .” Current medical practices do have patient volumes that make it difficult to spend time on research and review of evidence.

Some concerns, though, are dealt with by providing good information about what EBP means. It is true that evidence-based medicine focuses on standardizing care so that it is consistent with the best available evidence. But it should be emphasized to physicians that—when the patient’s individual needs require it—procedures can be adapted to the situation at hand. Evidence based practice means reducing unnecessary and unsupported variations in practice, not limiting physician decision making.

Another way to engage medical staff support is to involve them in an evidence-based practice effort that solves a problem for them. Asking the medical staff for suggestions for EBP projects can demonstrate the value of EBP in a way that makes their lives easier and improves care for their patients.

### **Other Organizational Considerations**

Talking with key decision makers about EBP implementation is one way to ensure that sufficient resources are available so that efforts are successful in changing practice in beneficial ways. There are, however, other organizational considerations in the early stages of gaining support for EBP.

Many organizations—particularly teaching hospitals—have active research departments that manage randomized trials and other large-scale research projects. While it might make sense to ask research departments to lead the

EBP effort, in many cases it is more effective to ask staff to lead and manage EBP projects. Some of these reasons include:

- Research departments are generally overwhelmed with their own projects and have no excess capacity.
- Research departments focus on large-scale randomized trials or sophisticated designs that are relevant for EBP, but do not produce all of the evidence needed to change practice.
- Research departments often focus on studies with broad applicability, while EBP focuses on usefulness for the organization.
- Evidence-based practice and research are not synonymous; EBP requires a different set of skills than pure research.

Although the research department may not be the ideal facilitator of EBP, it does have critical skills and information to contribute to EBP efforts. Asking a representative of the research department to serve on the EBP coordinating group can provide valuable help with research appraisal and gathering information.

## SUMMARY

Making a case for evidence-based practice systems involves communication with a broad range of organizational stakeholders. A reasonable approach requires an emphasis on the benefits to be gained while recognizing that organizational resources will need to be applied for long-term success. Articulating both in a clear and accurate way will enhance the successful engagement of organizational leadership in the EBP effort.

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# Leadership and Evidence-Based Practice

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## INTRODUCTION

Leaders in an organization are responsible for establishing and preserving a culture of evidence-based practice (EBP). Without leaders who set expectations, provide support, and demonstrate commitment to an ongoing culture of evidence-based practice, it will not happen nor will it be sustained. Evidence-based practice requires that two components be in place: (1) knowledge of the advances in evidence-based clinical practices leading to better care, and (2) knowledge of the organizational strategies, and change-management practices and structures that must be in place to enable clinicians to provide evidence-based care (Shortell, Rundall, & Hsu, 2007). Research has demonstrated that culture is a contextual determinate of whether EBP is institutionalized within an organization (Stetler, Ritchie, Rycroft-Malone, Shultz, & Charns, 2009). The key leadership behaviors that were demonstrated when EBP was institutionalized were: creating a vision and sustaining it over time, role modeling by key leaders, and having strong mentors (Stetler *et al.*, 2009). Strong management practices that helped to integrate EBP throughout the organization included: implementation of strong structures, providing needed resources, a process for monitoring and feedback, and changing of formal leaders who do not demonstrate a commitment to the EBP vision (Stetler *et al.*, 2009).

## EBP IN CLINICAL PRACTICE: A HISTORY

Historically, research utilization models have identified the role the organization and its leaders play in using research in practice. The Western Interstate Commission for Higher Education (WICHE) conducted the first federally funded research utilization study in the late 1970s. The model for

implementation of research in this study linked a researcher and a clinician. This dyad implemented a research-based protocol and acted as the change agents (Kruger, Nelson & Wolanin, 1978). It became apparent from this project that it is very difficult for two staff members within an organization to implement a research-based practice change. A seminal publication from this study was published in the journal *Nursing Research* and is often required reading for masters students in clinical programs (Dracup & Brue, 1978). This research utilization project tested a protocol, based on research, for open visitation for spouses in the Intensive Care Unit (ICU). The outcome of the study is an exemplar of the status of EBP in clinical practice today: The outcomes were very positive but, even today, practice has lagged behind. ICUs where visiting hours are restricted remain the norm.

The federally funded Conduct and Utilization of Research in Nursing (CURN) project was carried out by the Michigan Nurses Association (Horsley & Crane, 1983). The investigators for the CURN project learned from the outcomes of the WICHE project. They defined research utilization as an

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**Table 3-1 A Timeline of EBP in Clinical Practice**

<b>Time Period</b>	
1970s	Western Interstate Commission for Higher Education (WICHE) was the first federally funded research utilization study.
1976	First published model for clinical evidence-based practice focused on the individual clinician's use of research to improve practice.
1983	Federally funded Conduct and Utilization of Research in Nursing (CURN) project was carried out by the Michigan Nurses Association; a revised approach based on the WICHE experience resulted in changes in a broad range of clinical practices.
1990s	EBP was implemented successfully at a few hospitals, mostly university-based. Educational materials were developed and disseminated.
2000s	A culture of EBP is a major criterion for Magnet designation.
2010	EBP is recognized widely as critical for success, as organizations put in place infrastructure, process, and expectations for clinical practice; EBP is an integrated part of Joint Commission and other accrediting agency requirements.

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organizational process rather than a process implemented by an individual nurse. They identified the importance of a research utilization committee and the need for facilitated organizational change (Horsley, Crane, & Bingle, 1978). The CURN project developed a series of clinical protocols based on research (Michigan Nurses Association, 1981, 1982). Their proactive approach worked; it is amazing that many of their protocols changed practice across the country. For example, it was the first time nurses learned that clamping indwelling urinary catheters and disconnecting the tubing during ambulation or when a specimen was needed actually increased urinary tract infections due to breakage of a closed system. This project and the research team were ahead of their time. Rogers's theory of diffusion served as the theoretical model for both the WICHE and CURN projects (Rogers, 1983). Dedicated leaders who were knowledgeable about the research utilization process were essential to successful implementation of the CURN protocols.

In the early 1970s and early 1980s, very few schools for healthcare professionals were teaching EBP, and there were no textbooks to guide education related to using research in practice. Research textbooks were written about the *conduct* of research, not its application to practice. Also absent were leadership textbooks to educate leaders about their responsibility for EBP. One acute care hospital established a research utilization committee and began to base practice on research (Goode, Lovett, Hayes, & Butcher, 1987). A series of instructional materials were produced in the late 1980s and early 1990s by this acute care hospital and were used to teach research utilization (Goode, 1987; Goode & Cipperley, 1989; Goode, Butcher, Cipperley, Exstrom, Gosh, Hayes, Lovett, & Wellendorf, 1991). This community hospital found that the successful use of research in practice was dependent on two requirements: having clinicians who want to learn new research-based interventions to improve care, and having leaders with the knowledge and the energy to sustain the work involved in basing practice on research (Butcher, 1995).

In 1976, the Stetler and Marram practitioner-oriented model was published. The authors of this model were both faculty and could not find models in the literature to guide students in learning the research utilization process. Based on their experiences, they developed and published a model. This model was focused on the individual's use of research in practice. In 2001, the model was updated to include use of research by groups as well as individuals and factors that influenced the group from a systems perspective (Stetler, 1994).

Goode and Bulechek (1992) identified several interrelated steps that were necessary for instituting research in practice within an organization. They included organizational commitment, the need for change agents, and a planned change process. The leadership from the hospital executives was identified as

essential for setting the climate to support research utilization. Organizational requirements that were identified as necessary to support research utilization included:

- Providing time and resources
- Articulating a vision
- Incorporating research utilization into the department of nursing's philosophy statement
- Integrating research use into the shared governance beliefs
- Including research utilization expectations in job descriptions (Goode & Bulechek, 1992)

The early work focused heavily on a planned change process, change theory, and leaders who were knowledgeable about instituting change in an organization. Stetler and colleagues defined evidence-based practice, modeled after the evidence-based medicine group definition. Their definition appears in **Box 3-1**.

Newhouse (2007) describes the difference between research utilization and evidence-based practice. Both use a series of processes to evaluate and integrate evidence into practice. The difference lies in the origin of the questions and the kind of evidence that is used. The research utilization process begins with publication of research. The clinician becomes aware of the research and, as an individual or member of a group, implements the research in practice. In other words, the research comes to them.

EBP starts with an action, by asking a burning clinical question that comes from practice. Nurses seek out the best evidence to answer their question instead of waiting for the research to come to them (Newhouse, 2007). The evidence involves more than research. The definition of EBP in this context includes patient preferences, clinical expertise, and other forms of evidence in addition to research.

### **Box 3-1 A Definition of Evidence-Based Practice**

Evidence-based practice deemphasizes ritual, isolated and unsystematic clinical experiences, ungrounded opinions and tradition as a basis for nursing practices—and stresses instead the use of research findings and, as appropriate, quality improvement data, other operational and evaluation data, the consensus of recognized experts, and affirmed experience to substantiate practice (Stetler, Brunell, Giuliano, Morsi, Prince, & Newell-Stokes, 1998, p. 8).

## THE ROLE OF THE INDIVIDUAL

It is very difficult for individuals within an organization to implement research findings on their own. There has been a change in thinking about the role and responsibility of the individual clinician. While professionals are expected to use evidence in practice, there is recognition of the organizational and contextual factors that facilitate or inhibit the use of evidence (Rycroft-Malone, 2008). The context of the organization (support, resources, culture, and leadership) must be in place for individuals to implement evidence-based practice. However, it is extremely important for organizations to be able to hire professionals who support and demonstrate a commitment to evidence-based practice. Clinicians who become *evidence-based* clinicians have a commitment to excellent patient care. They want to apply the current best evidence when caring for their patients. Today, undergraduate and graduate educational programs prepare students to be evidence users. The organization depends on them to ask compelling clinical questions.

If clinicians integrate EBP concepts into their thinking and practice, they become informal leaders at the point of care and help establish the organizational culture. It is important for leaders to recognize individuals who participate in EBP committees and projects and individuals who mentor others. This recognition by leadership gives a clear message that EBP is highly valued within the organization.

## CREATING THE CONTEXT—SYSTEM DEVELOPMENT

Professional healthcare providers practice in organizations or systems. Only those organizations that have organizational leadership promoting EBP, and infrastructures that support EBP will be successful in its integration (Newhouse, 2007). Context is the setting in which EBP takes place. Context is defined as including leadership, culture, and evaluation (McCormick, Kitson, Harvey, Rycroft-Malone, Titchen & Seers, 2002). Top clinical leadership in the organization must be knowledgeable about EBP and lead the staff in creating and implementing structures and processes that will make evidence-based practice an expectation. This can be accomplished in any size of organization. Nurses in a small rural community hospital implemented evidence-based practice through the leadership of the Nurse Executive and a committed research utilization committee (Butcher, 1995). Goals were set and a philosophy of basing practice on research was implemented. The organization was selected to participate in the Research Utilization–Nursing (RUN) Study. This community hospital was selected from a pool of more than 200 clinical sites as one of the top 16 sites in the US for successful implementation of research

in practice (Horsley, Barnard, & Krueger, 1986). This culture was sustained in the organization for nearly 10 years. With changes in leadership, the emphasis on evidence-based practice dwindled. This is a true case study of the effect of leadership on sustaining EBP.

## BUILDING THE STRUCTURAL COMPONENTS

Stetler *et al.* (1998) describes the role of leadership in integrating evidence-based practice into one acute care facility. Three major activities were identified: establishing a culture of EBP, creating the capacity for organizational members to change, and sustaining through revisions in the system's infrastructure (Stetler *et al.*, 1998). Demonstration of ongoing commitment by a core group of leaders was found to be essential. In this organization the advanced practice positions were part of the leadership group and critical to development of the staff's critical thinking skills and EBP skills.

Titler and Everett (2006) identified several structural components at the University of Iowa Hospitals and Clinics hospital that were successful in sustaining an infrastructure to support EBP. They are described in **Box 3-2**.

## THE EVIDENCE BASE—WHAT DOES THE RESEARCH TELL US?

It is important to understand leadership behaviors and activities that are required to implement and sustain EBP within an organization. Gifford, Davies, Edwards, & Graham (2006) studied the leadership behaviors and strategies that were present in organizations that were able to implement and sustain evidence-based clinical practice guidelines when compared to those that did not. Leaders and clinical resource staff played a strong role in enabling and sustaining guideline adoption. The leadership strategies appear in **Box 3-3**.

### Box 3-2 Structural Components for EBP

- A vision and mission that clearly state the importance of EBP
- A governance structure that includes EBP expectations in committee functions
- Job descriptions and performance evaluation standards that spell out expectations for EBP
- An organizational model of EBP used to answer EBP questions
- Educational programs that foster learning of essential skills and knowledge
- Advanced practice providers involved in EBP efforts
- Education for all clinical leaders that defines their role in fostering an EBP culture

### Box 3-3 Leadership Strategies for EBP

- Facilitation of individual staff to use EBP
- Creating a positive milieu of best practices
- Influencing organizational structures and process
- Providing support and resources
- Being visible and accessible
- Communicating well
- Reinforcing goals and philosophy
- Influencing change
- Role modeling commitment
- Ensuring education, policies, and appraisals reinforce guideline use
- Monitoring clinical outcomes
- Supporting clinical champions (Gifford *et al.*, 2006)

Cummings, Midodzi, Hayduk, & Wallin (2007) tested a theoretical model of organizational influences that predict research utilization by clinicians. The findings support that context matters. Organizations characterized by a positive culture, good leadership, and positive performance feedback reported significantly more research utilization and staff development, while lowering rates of adverse events (Cummings *et al.*, 2007).

Gifford, Davies, Edward, Griffin, & Lybannon (2007) completed an integrative review of the literature to describe leadership activities that influence use of research evidence and to identify interventions aimed at supporting research use in practice. Eight quantitative studies and four qualitative studies met the inclusion criteria for the integrative review. In the qualitative studies, organizational hierarchy was perceived to be a constraint to managers' ability to influence EBP. Managers identified that they lacked strategies to provide support and overcome organizational barriers. One study found low management priority, performance appraisals that lacked professional development, inadequate policies, limited knowledge, and time as obstacles. Role modeling and valuing research facilitated research use. The quantitative studies indicated administrative support such as allocation of resources and strategic goals to support research use as important to EBP. Role modeling, consultation, and guidance were identified as support structures. A quality monitoring system also influenced use of research evidence (Gifford *et al.*, 2007).

Sredl's (2008) qualitative study asked clinical executives to comment on their perceptions of evidence-based practice and any additional comments they might offer regarding problems with global implementation. Most clinical executives thought evidence-based practice was a good idea but they were unsure



how to implement it. An exemplar from the study indicated that the executive did not see EBP itself as difficult but the culture change and process of getting there to be difficult (Sredl, 2008).

Little is known about the specific contextual factors that support the successful institutionalization of EBP. Stetler, Ritchie, Rycroft-Malone, Schultz, & Charns (2007, 2009) used a mixed-method explanatory case study to explore context in terms of the presence or absence of multiple contextual factors and strategic approaches that are required for the institutionalization of EBP.

Leadership was found to be a key driver of embedding and integrating EBP into the fabric of the organization. Experienced clinicians used deliberative interventions and strategies to successfully implement and institutionalize EBP. Priority given to EBP at the successful hospital was found in verbal communications and recurrent EBP language in key documents (vision, mission, performance expectations), and there was a continuous record of EBP projects and research (Stetler *et al.*, 2009). Multiple formal and informal leaders were engaged in EBP. The successful model had a “pervasive, integrated presence of EBP versus an isolated presence” (Stetler, 2009, p. 2). This was the first study to document through research methods an organization that has a pervasive culture of evidence-based practice.

## INFLUENCE OF EXTERNAL FORCES

### Magnet Hospital Standards

The seminal research and subsequent development of the Magnet Recognition Program by the American Nurses Credentialing Center (ANCC) more than two decades ago recognizes healthcare organizations that demonstrate nursing excellence. Magnet designation represents excellent patient care and clinical outcomes, a supportive and innovative workplace, and development, dissemination, and enculturation of EBP (Drenkard, 2009). With the evolution from the original Magnet structure to the new Magnet model, not only is there an imperative to create an environment that uses evidence in professional practice, there is an expectation that Magnet organizations will serve to develop nursing knowledge. The 2008 Magnet Model (<http://www.nursecredentialing.org/Magnet/NewMagnetModel.aspx>) places strong emphasis on transformational leadership, EBP, innovation, evolving technology, and the evaluation of outcomes. This structural mandate for Magnet or aspiring Magnet hospitals influences the approach taken to provide leaders with clear expectations. **Box 3-4** represents the definition of EBP in the Magnet implementation manual.

While Magnet requirements focus primarily on nursing practice and environments, it is important for leaders to engage all disciplines in attaining and

### Box 3-4 Magnet Recognition Manual Definition of EBP

EBP is a science-to-service model of engagement of critical thinking to apply research-based evidence (scientific knowledge) and practice-based evidence (art of nursing) within the context of patient values to deliver quality, cost-sensitive care. . . . Providers are engaged in data collection, analysis, and synthesis to inform practice. Leaders in Magnet organizations must ensure that the staff is engaged in EBP (ANCC Application Manual, 2008, p. 2).

sustaining Magnet designation. Many hospitals have included multiple disciplines in practice councils. Understanding that relationships and teamwork are foundational to employee satisfaction in any hospital profession, it is important that evidence-based practice is advanced through multidisciplinary teams that further enhance collaboration and teamwork. The Magnet concepts and model elements related to EBP pertain to how all clinical professionals should practice and need not be exclusive to nursing. The richness of multiple clinical disciplines interrelating and using and creating evidence is valuable to the hospital and is essential to achieving the desired cost and clinical outcomes for patients.

#### Academic Preparation of Leaders

All professionals with advanced degrees are expected to use research findings in their practice. Because research evidence does not exist for every patient situation, there is also a need to *conduct* research to validate whether innovative practices are effective. Both EBP and the conduct of research are enabled when organizational leaders with advanced degrees understand that part of their role is to support the conduct of research and the use of research in practice. Access to doctorally prepared professionals equipped to generate new knowledge related to the most effective practices is important. When doctoral staff is not available in the organization, consultation can be obtained from doctorally prepared faculty who are interested in using the organizational environment as a laboratory for testing interventions. Leaders who are doctorally prepared and have preparation for the testing of established and new practices are important, so the most effective model for staff and patient outcomes can be determined (Melnik & Fineout-Overholt, 2005). The presence of these individuals is only the first step in creating the context for EBP. They must also lead the organization to ensure that evidence-based thinking is part of the genetic structure (Malloch, 2009).

### **The Electronic Medical Record**

There are few healthcare organizations that are not on a quest to establish fully-integrated electronic medical records (EMRs). The United States government stimulus plan announced in May 2009 has now accelerated the process of achieving meaningful use of an EMR. The organization can qualify for Medicare bonuses that help cover the costs of their technology investment under the Health Information Technology stimulus plan (Government Health IT, 2009). The use of an EMR is another example of an external force that supports EBP. An EMR is the technological infrastructure that, through its clinical *design*, incorporates best evidence and through its clinical *use* enhances access to data that support EBP and improves patient care (Geibert, 2009). Clinical leaders should be highly involved in the selection, design, and implementation of the information technology (IT) system so that evidence-based clinical protocols are embedded in the EMR.

## **SUSTAINABILITY**

### **Mandate for Change and Innovation**

Crow suggests that “the best gift we can give to the next generation is the ability to effectively deal with rapid and unrelenting change” (Crow, 2006, p. 236). The truth of this statement rests in our actions; are leaders capable of using evidence-based practice as the impetus for innovation? In addition to leaders who recommend change, leaders must have the ability to lead change through innovation. They must have an understanding of the current evidence and practice and must be able to envision and drive what is needed by navigating systems and people through the vagaries of our complex healthcare world (Porter-O’Grady & Malloch, 2009). Leaders who have the ability to position their organization to thrive must see evidence-based practice as their window to the future, continuously evaluating how they are currently doing and how they could be better. Leaders must have both personal knowledge of EBP and the ability to mentor and coach individuals so they are effective members of collaborative teams that use evidence as a way to improve patient care.

### **Embedding EBP**

There are multiple elements of the hospital system that can define, communicate, and support an EBP culture. In hospitals that are novices in EBP, this embedding can be instructional and supportive as individuals learn. These elements include philosophy and vision, strategic plans, required human resource documents, education, and quality improvement programs. Through the use of these operational tools, the concept and application of EBP become part of the culture.

### Box 3-5 Case in Point: Structural Support for EBP

Kathy Oman (2008) describes structural components that are in place at the University of Colorado Hospital that support a strong culture for evidence-based practice. Formal continuing education courses in a three-part series are offered three times a year and include:

- EBP Boot Camp
- A collaborative library session taught by the medical librarians
- An intermediate course focusing on how evidence is used in organizational change
- The relationship between EBP and clinical decision making
- An overview of the research process

The hospital holds an annual research conference in which staff can present their EBP projects and outcomes.

Computer access to the Internet and search engines is available on each unit/clinic. Journal Clubs are very common at the University of Colorado Hospital and serve as an excellent forum for teaching (Hagman & Krugman, 2003). A yearly research competency is required for all staff. Demonstrated competency in EBP is required for advancement in the clinical ladder. Examples of the ways to document competency include:

- Attending a research or evidence-based practice grand rounds and completing a posttest
- Reading and critiquing an article
- Attending a journal club

Completion of this competency is assessed by the manager at the yearly performance evaluation.

For several years, the University of Colorado has required policies and procedures to be evidence-based. The policy and procedure committee is now starting to list the evidence sources and grade them. The organization has EBP expectations outlined in job descriptions and evaluations for staff and leadership. Mentors are available for novice researchers.

New graduates participate in a 1-year residency program, and they are required to do an EBP project (Goode *et al.*, 2010). The residents are mentored and given the support needed for completing these projects. This gives a clear message of the expectations for practicing in an organization with a culture of EBP.

### ***Philosophy and Vision***

Philosophy and vision statements are an opportunity to clearly state the value of EBP for the organization (Titler & Everett, 2006). Incorporating EBP language as part of the organizational beliefs and future state can be a powerful way to set expectations.

### ***Strategic Plans***

Strategic plans enable recommendations to be translated into action. A typical strategic plan would include four primary elements (Grace, 2008) discussed in more detail in **Table 3-2**.

- An environmental scan
- Identification of strengths and opportunities
- Establishment of strategic direction
- Development of goals and objectives

A plan is most helpful when it is practical. Including tactics, a timeline, and assigning clear responsibility can help provide consistent communication and guidance. Some examples of potential elements of the plan include:

- Developing the structure for EBP
- Identifying leadership for councils or committees
- Establishing roles for advanced practice consultants
- Developing a staff development plan
- Procuring the necessary resources such as library services or conference attendance

### ***Human Resource Documents***

Hospital regulatory bodies establish requirements for human resource (HR) documents such as job descriptions and performance evaluations. It is essential that clinicians are involved in development and revision of these documents so that professional expectations for EBP are woven throughout. Requirements for EBP are part of these professional accountabilities and may include explicit requirements such as participation in quality studies, improvement teams, or research activities. Most practitioners should have a requirement to use research findings in their daily practice.

Many hospitals have clinical advancement programs that define required elements that allow a clinician to advance within a clinical role (as opposed to advancing by taking a formal leadership role). These programs are another opportunity to establish accountability for EBP.

### ***Educational Programming***

There are multiple opportunities for educational offerings that support the knowledge and use of EBP. Some of the most common formats are orientation, workshops, and institutes for focused audiences. A presentation on EBP should be a scheduled presentation in all clinical orientation sessions. The content could vary depending upon whether the audience is a group of new graduates or a group of experienced clinicians. The presenter should be one who can de-

**Table 3-2 Elements of the Strategic Plan**

<b>Stage</b>	<b>Description</b>	<b>Outcome</b>
Environmental scan	Information is gathered from external and internal stakeholders Baseline data are collected Basic resource assessment is conducted	Articulation of environmental forces at work Baseline assessment of performance and employee attitudes Baseline understanding of available resources
Identification of strengths and opportunities	Self-reflection leading to an identification of internal strengths Opportunities revealed by the environmental scan	List of strengths and areas of potential improvement List of opportunities internally and externally
Establishment of strategic direction	Inclusive discussion of potential direction Prioritization of opportunities based on preestablished criteria	Prioritized list of potential goals
Development of goals and objectives	Overarching goals for EBP practice developed Objectives operationalize goals into achievable outcomes	A set of goals and operational objectives

scribe EBP, organizational expectations, and applications that have occurred within the organization.

Workshops provide education and hands-on application of EBP. Examples of various workshops include abstract writing for conference presentations, poster and podium presentations for research conferences, and writing for publication. Where there is opportunity to expand the workshop beyond hospital walls, the content and collegiality also expand to inspire collaboration in future research or practice endeavors.

Institutes are effective in providing focused knowledge of EBP with specific objectives for how individuals might apply EBP in their practice setting. Institutes are usually multi-day programs tailored to the participant's specific needs and are helpful in healthcare systems when large initiatives must be advanced through multiple hospitals.

## **Partnerships**

The monumental job of bringing new thinking into practice is made easier when networks are established with others. Within the healthcare community, there are multiple partners that can support and sustain EBP. Examples of these external partners are community experts, those who award small grants, and vendors.

### ***Collaboration and Consortiums***

The most valuable partnerships are the formal networks that are created between hospitals and community experts found in academic institutions that provide graduate education. These partnerships take on many forms and fulfill multiple needs. These institutions can support tiered education on EBP tailored to each group of participants, such as executives, managers, and clinical staff (Gifford *et al.*, 2007). They can also provide research consultation. The hospital can potentially serve as the needed laboratory for academic-based researchers. Likely these are colleges or universities that also have students within the hospital. The presence of students raises the accountability of clinicians to practice using best evidence.

On a larger scale, there is potential for multiple hospitals and multiple universities to come together to form a research consortium guided by mutual interests. Rural and community hospitals can be geographically challenged when forming academic partnerships. There are strong examples of how these hospitals have overcome these challenges through use of Web technology for conferencing and access to library services (Burns, Dudjak, & Greenhouse, 2009).

### ***Small Grants***

Leaders should also explore grant opportunities. Some hospitals have a small grants program to support research and EBP projects. Many small local foundations exist to improve the health of their communities; others exist to advance research. Evaluation of grant-making agencies can identify those who share the same goals as the healthcare organizations and find opportunities for both the agency and hospital to mutually benefit from a partnership that will enhance evidence-based care.

### ***Vendor Support***

Many vendors are in search of reputable environments to test their wares. Often vendors bring along a broad base of published research that complements the work of existing research councils. There can be a negative connotation based on a belief that vendors are biased toward their own product, but as

long as the parties enter the partnership with full awareness of this potential, both parties can benefit. One example of such a partnership is the use of institutional intellectual capital in the design of new software that can support EBP.

### **The Marriage of EBP with Quality and Safety Programs**

One of the greatest responsibilities of organizational leaders is to ensure delivery of quality safe care. This cannot be done without embracing evidence-based practice. The 2003 Institute of Medicine (IOM) Health Professions Report challenges clinical professions to educate graduates so they are prepared to deliver patient-centered care as a member of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics (IOM, 2003). The Quality and Safety Education in Nursing (QSEN) competencies address the need to prepare nurses to continuously improve the quality and safety of the healthcare systems in which they work (Cronenwett, 2007).

The quality and safety focus in health care has served to introduce evidence to clinicians in user-friendly forms. Some common structural examples of EBP are use of intensivists, adequate nurse staffing, and closed-loop medication administration. Process examples include protocols for the prevention of ventilator associated pneumonia, prevention of central line associated blood stream infections, and protocols addressing various acute disease states such as congestive heart failure, pneumonia, and acute myocardial infarction. The implementation of these evidence-based structures and processes was often prescriptive or directive, coming from quality departments to clinicians as “things they must do.” The appropriate shift to support an EBP culture is for quality departments to reverse the process with a move from directing to serving.

Clinician accountability includes learning what is best practice from multiple sources of evidence, implementing the practice, and measuring outcomes to determine if they are effective. A clinician leader is primarily tasked with implementing care or practices and could be better served by quality teams who provide support in gathering the best practice evidence, measuring outcomes, and providing venues for ongoing evaluation of care. An example of a popular venue for evaluation and improvement of care is the concept of multidisciplinary clinical effectiveness teams convened to collaborate on achieving quality and safe care for patients. The old thinking of risk management should give way to risk prevention achieved through critical review of structures and processes of care, incorporation of new evidence, and implementation of practices through those accountable for their outcomes. By incorporating clinical managers in collaboration with practitioners to address quality of care through implementing practice changes based on evidence, and evaluating those changes for patient and staff outcomes, we will have our model for the



future (Titler & Everett, 2006). Leaders play a significant role in setting the expectation for this shift to stakeholder involvement as part of the quality and safety culture.

## SUMMARY

One of the most important elements for successful implementation of EBP is to have key leaders who are skilled at implementing change. It is also evident that there is a group of contextual elements that leaders must ensure are present to support and sustain EBP in an organization. Research supports the need for multilevel leadership to successfully implement EBP in an organization. Organizations who take seriously their role in delivering quality safe care will select leaders and staff who value the need for continuously improving care based on new knowledge.

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# Preparing and Sustaining Staff Knowledge about EBP

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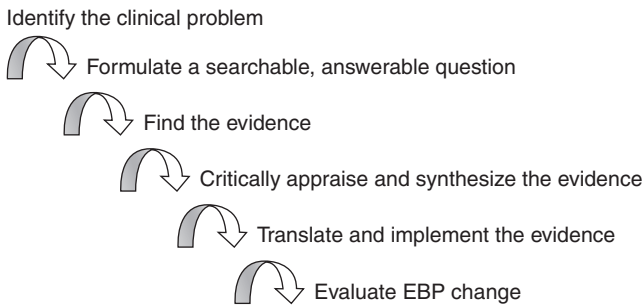
## INTRODUCTION

Health care professionals come to the work environment with a wide variety of experiences with and education about evidence-based practice (EBP). The organization will most likely need to offer some basic orientation to EBP concepts and the essentials of their EBP program. It will also be important to provide ongoing education for staff who do not have current knowledge about EBP and its importance in clinical care.

## NEW EMPLOYEE ORIENTATION

An organization's EBP culture may be described and conveyed to new employees as early as the first day of employment. It is critically important to include a thorough introduction to the EBP program during orientation in order to demonstrate the value the organization places on EBP. An introduction to EBP presented during orientation may begin with background information to help define the concept of EBP and may include statements such as the following:

- Clinical practice based on scientific evidence promotes positive patient outcomes.
- Positive attitudes and involvement in research activities correlate positively with clinicians' intent to implement research findings in practice.
- Supportive research environments attract clinical professionals who share a similar philosophy to positively influence the research culture and patient care.

**Figure 4-1 Steps in EBP Process**

Next, the EBP process may be discussed, beginning with identification of a clinical problem through evaluation of the EBP change. **Figure 4-1** is a nice visual to use with this discussion.

Some organizations have EBP practice expectations that vary depending upon the practice level of each individual employee. These expectations may be presented during orientation to give the new employee a clear understanding of performance expectations related to EBP.

It may also be pertinent to describe the EBP resources available in an organization. Does the organization have an EBP or Research Council or Committee? What are the key functions of such groups and who are the members? Discuss ways in which EBP or research projects are disseminated to others throughout the institution such as through a newsletter, an annual symposium, or journal clubs. Inform orientees of additional EBP educational offerings they may wish to take advantage of in the future.

An EBP orientation session may close with sharing examples of research and EBP projects that have been conducted within the organization to inspire and motivate new employees to consider conducting projects of their own in the future.

## EDUCATIONAL STRATEGIES AND RESOURCES

Given the variety in educational preparation of professional staff, and the inconsistent inclusion of EBP content in health sciences programs, the baseline knowledge that the clinical staff have about EBP is also variable. More recent graduates from the health sciences professions will have had EBP content in their educational programs, but the majority of the workforce probably did not. Conducting a readiness assessment of the staff's knowledge, skills,

and attitudes might be a logical first step to planning an educational strategy. There are many existing tools that can be used or modified for this assessment (Upton, Funk, & Fink, 2006). Information from this assessment will help determine how the educational strategy should be implemented. The decision about who to educate and when will need to be factored into the plan. **Table 4-1** describes some of the advantages and challenges with various educational strategies.

**Table 4-1 EBP Educational Considerations**

<b>Educational Approach</b>	<b>Advantages</b>	<b>Disadvantages</b>
Provide comprehensive education to all professional staff over a short time period	Creates a solid knowledge foundation Participants begin to understand and talk the same language Facilitates goal setting and program development	Expensive Resource intensive Application may be delayed if it's not "in time" training; knowledge may be lost
Train the trainers or "champions"	Less expensive Less resource intensive Consistent with other training initiatives	Need commitment from trainers/champions More time needed to deliver the education "Dilutes" the impact of the culture change Resources needed for trainers or champions to continue informal educational efforts Potential for inconsistency with multiple instructors
Sequential approach: everyone gets baseline overview; champions get more in-depth education	Not quite as expensive as training everyone More consistent information can be provided Moves the culture toward embracing EBP	Occurs over longer period of time Resources needed for trainers/champions to continue educational efforts Potential for inconsistency with multiple instructors

## INTRODUCTORY EBP EDUCATION

Planning the content of the educational offerings again depends on the needs of the clinical staff and the resources available at the organization. A 1-day retreat or a series of seminars or classes may be planned. In either format many organizations provide content that follows the steps of the EBP process:

- Formulating the clinical question
  - Searching for the best evidence
  - Critical appraisal of the evidence
  - Integrating the evidence, clinical experience, and patient preferences into practice
  - Evaluating the outcome
- (Burns, 2009; Hockenberry, 2007)

Another innovative strategy described by Pipe *et al.* (2008), is to pair direct care providers with clinical nurse specialists, research-experienced staff, or librarians during a series of EBP seminars designed to address a specific clinical question and provide guidance through the EBP process. The outcomes of the seminars include clinical application of the EBP process, role modeling the use of EBP principles, and creation of a nurturing environment where EBP is understood and used.

## READING AND APPRAISING RESEARCH FOR EVIDENCE-BASED PRACTICE

Reading research as evidence requires that the healthcare professional have a basic understanding of research processes and be able to apply that understanding to the critical appraisal of individual studies. The appraisal process involves determining if the journal, authors, and publication process are credible. Key issues in assessing credibility include:

- Does the author have the appropriate clinical and educational credentials for the research study? If not, have team members been recruited that have the requisite knowledge and skill? Teams give strength to a research project by providing diversity of perspectives and enlarging the expertise that is accessible to the team members.
- Is there evidence of a conflict of interest that may introduce bias into the study? For example, does the financial sponsor of the study have something to gain by positive or negative results? Sponsors may unintentionally impose expectations on a study and a researcher that may introduce bias into the study. Does the author or authors have an association with any of the entities in the test? If the authors are employed by an agency

being tested in the study, then researcher bias may be a potential influence on the interpretation of data or the selective reporting of findings.

- Is the journal bias-free? In other words, does the publication have anything to gain by publishing positive or negative results? The publication should be one that has an external editorial board and a cadre of reviewers that are not associated financially with the publication. The names and credentials of the editorial board should be accessible in the publication.
- Has the research study undergone blind peer review? Blind peer review enables a critical appraisal of the research study by a neutral party that is not influenced by the stature (or lack of it) of the authors.
- Has the study been published within a reasonable time frame? Health care has a rapidly changing clinical environment, and studies that are delayed in getting to publication may be outdated before they reach print. Many journals note the date on which a manuscript was received and the length of time until it was reviewed and accepted. This enables the reader to determine if the information in the study is contemporary or subject to historical effects.

Reading research—much like any clinical skill—becomes easier with practice. Use of a checklist or other tool makes the process consistent and provides guidance in appraisal. An example of an appraisal tool appears in Appendix C. As a practicing professional reads, studies, and engages in research projects, the process becomes more efficient and informative. Evaluation that may initially require a great deal of focus and effort eventually becomes second nature. As the appraisal of research becomes part of the clinician's routine, the ability to select studies for application to practice assures that their practice is based on sound evidence.

## **ADVANCED EBP CONTENT**

As the staff become more familiar with EBP principles, additional education will need to be offered to promote continued use and development of their EBP skills. An innovative strategy that has been used at the University of Colorado is offering an EBP Boot Camp. This 1-day seminar is designed to build on baseline knowledge about EBP and to encourage the development of a unit-based project to implement new evidence into practice. The boot camp includes the following content in short 15–30 minute sessions with a 3-hour hands-on, facilitated library-based search session:

- Overview of EBP
- EBP models



- Journal Clubs
- Synthesizing evidence
- Evidence-based policy and procedures
- EBP outcomes
- Committing to EBP (project identification)
- Searching for the evidence

Some educational content may lend itself to online instructional techniques. Consider Web-based instruction, modules within learning management systems (LMS), and podcasts as alternative avenues for staff education.

In addition to educational seminars or classes, it is important to provide resources that support EBP education. An EBP toolkit is one mechanism that has been developed to educate clinicians about the steps, the resources they have, and who in the organization is involved in implementing practice changes (Schulman, 2008). To maximize accessibility, the toolkit can be placed on the organization's Web site, and while it may be very basic initially, elements can be added over time to create a comprehensive resource. **Table 4-2** includes some examples of content for the toolkit.

Depending on the internal resources of the organization, the education strategy may require partnering with an academic institution, contracting with consultants, or sending staff outside the organization for educational offerings. Partnering with an academic institution is not limited to geographic proximity as it has been in the past. The Internet and Web-based conferencing make this important partnership increasingly possible (Burns, 2009).

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**Table 4-2 Components of an EBP Toolkit**

Element	Examples
Resources	Organizational model and definition of EBP Clinical resources: Links to EBP Web sites Links to national guidelines and specialty professional organization Web sites Human resources: Research Nurse Scientist or Program Coordinator Contact information for library with hours of availability
Policies and Procedures (P&P)	Electronic links to organizational policies Flowchart for how to develop and revise P&P Level of evidence system for rating strength of evidence Examples of reference citations required for P&P

**Table 4-2 Components of an EBP Toolkit (*continued*)**

<b>Element</b>	<b>Examples</b>
EBP and Research Projects	<p>Contact information for resources who help with EBP/ research</p> <p>Description of committees or councils with oversight or involvement in EBP and research that should be informed of projects; include chairs and contact information</p> <p>Worksheets to facilitate the development of clinical questions and literature reviews</p> <p>Journal club resources:</p> <ul style="list-style-type: none"> <li>Journal article critical appraisal guidelines</li> <li>Information about conducting a journal club</li> <li>Resources and contact information for journal club facilitators</li> <li>List of strategies for facilitating practice change within the organization*</li> </ul> <p>Guidelines for determining what types of projects require Institutional Review Board (IRB) approval*</p> <p>Sources and contact information for statistical support*</p> <p>Templates for PowerPoint presentations for in-services or meetings*</p> <p>Posters*:</p> <ul style="list-style-type: none"> <li>Instructions, templates, and examples for developing posters</li> <li>Information about cost and possible funding</li> <li>Instructions for printing the poster</li> <li>Instructions for applying for continuing education credits</li> </ul>
Dissemination	<p>List of on-going EBP projects and contact information for project leads</p> <p>Examples of EBP and research activity that may be used as exemplars for performance appraisals or clinical ladder reviews*</p> <p>Dates for internal venues where EBP and research projects can be shared*</p> <p>Postings of Calls for Abstracts for regional and national conferences*</p>

\* Identifies advanced elements that could be added to the initial toolkit

Adapted from Schulman, C. S. (2008). Strategies for starting a successful evidence-based practice program. *AACN Advanced Critical Care*, 19(3), 301–306.

## RESEARCH CONTENT

As clinical staff become more proficient and skilled in the EBP process, it may be necessary to provide more education about the research process. Pipe *et al.* (2008) describe a two-part initiative, Nursing Research 101 and 201, offered to their clinical staff, tailored to meet a variety of learning needs. The unique aspect of this program is that the Nursing Research 101 1-hour sessions began with a formal presentation by a nurse researcher with expertise on the topic, followed by a clinician who was conducting research and could relate a personal and “real-world” perspective about the topic. Suggested content is included in **Table 4-3**.

Highlighting the evidence-based practice work being done in the organization is an essential aspect of a comprehensive educational program. This can be as simple as writing about the projects in the organization’s newsletter or other communication tool or can be more formal, as in holding EBP symposia. A symposium can be accomplished at any size institution. Craig Hospital, a 78-bed spinal cord/head injury rehabilitation facility, is organizing their fifth annual hospital-based symposium in 2010. Details about this program are included in **Box 4-1** “Voices from the Field.”

With the necessary resources and organizational support, the local symposia can grow into regional or national programs. The University of Colorado Hospital Research and EBP Symposium is an example of this growth; the first

**Table 4-3 Suggested Content for a Research Educational Series**

Session	Topic Area
1. What’s in It for Me?	Emphasizes the benefits of EBP to professional practice; the differences between EBP and research
2. Research Overview	Purpose, literature review, methodology, data analysis; aligning the research strategy with the realities of the clinical setting
3. Searching the Literature	Purpose of conducting a literature review, with real-time demonstration
4. Research Designs	Quantitative, qualitative designs, use of theory to guide research, instrument selection, data collection pitfalls
5. Research Article Critique & Journal Club	Critically read a research article, evaluate its merits, assign level of evidence as a group exercise

symposium, called a Research Fair, was held in 1989 and has expanded over 21 years into a multidisciplinary symposium with multiple local sponsors and nationally recognized speakers. A time line of this symposium is featured in **Box 4-2**.

## **INTRODUCING THE GRADUATE NURSE TO EVIDENCE-BASED PRACTICE**

The University of Colorado Hospital (UCH) conducts a 1-year nurse residency program for all new graduate nurses hired into the institution. Their postbaccalaureate nurse residency program curriculum is delivered through 4-hour learning sessions held once a month over the course of the nurse resident's 1st year of practice.

### **Box 4-1 Voices from the Field**

#### **Craig Hospital Annual Research Symposium**

In 2005, Craig Hospital, a 78-bed spinal cord/traumatic brain injury rehabilitation center in Englewood, Colorado, held its first Research Symposium. This event was offered through a partnership between the nursing department and the long established and active research department to provide a forum for showcasing unit-based quality improvement and evidence-based practice projects being conducted at the hospital. Strategically it also aligned with the hospital's preparation of their Magnet Hospital application.

Currently in its 4th year, the symposium is held in the hospital gymnasium, which is the only location large enough to accommodate the poster displays and an audience of 60–80 attendees. Clinical staff select keynote presentations to attend and are encouraged to view the poster presentations throughout the day. In 2009 there were three keynote speakers presenting research or EBP projects they had completed. “How to” breakout sessions were offered on writing an abstract, reviewing the literature, creating a PowerPoint presentation, and creating a poster. Craig “credit” (internal continuing education) is awarded to the nurses who attend. The posters are displayed for a few days after the symposium for weekend and night shift staff to view.

The symposium is an excellent venue for first-time presenters to experience the professional reward of sharing their work with colleagues outside their hospital unit. The hospital foundation supports the cost of box lunches and door prizes for attendees. The attendance has grown over the 4 years the symposium has been held, and there is potential for continued growth. This modest yet highly effective symposium is a successful endeavor to highlight the excellent projects being conducted and to spread enthusiasm for EBP. Our advice for anyone who might be considering a similar event: “Start with where you are and let it grow.”

Jeanine Rundquist RN, MSN, CRRN & Connie Pardee RN, PhD

### **Box 4-2 University of Colorado Hospital Research and EBP Symposium Timeline**

- 1989: First “Research Fair” offered at University of Colorado Hospital (UCH) 1-day event sponsored by the UCH Research Committee; held at hospital; local College of Nursing speakers; UCH focused podium and poster presentations.
- 1992: Director of Research hired at UCH.
- 1993: Administrative support for conference planning and registration activities supplied; Call for Abstracts initiated.
- 1994: Name changed from Research Fair to Research Symposium; began broader outreach for abstracts and presentations.
- 1995: Began inviting nationally recognized keynote speakers: Nancy Fugate-Woods.
- 1998: Research Nurse Scientist (RNS) role created at UCH, formal symposium planning committee established, chaired by RNS.
- 1999: Last symposium held on hospital campus; program included 2 keynote speakers, 8 podium presentations, panel presentation, 17 poster presentations.
- 2000: Moved to off-site hotel; received enough abstracts to warrant two concurrent breakout sessions in the morning and afternoon; name changed to Rocky Mountain Interdisciplinary Research Symposium.
- 2001: Second day of Pre-Conference Workshops (3) added to event; second Research Nurse Scientist hired, RNS’s co-chair planning committee; collaboration with University of Colorado Denver, College of Nursing, Physical Therapy Program and the VA Medical Center established; three concurrent breakout sessions presented.
- 2002: Cocktail Reception and Poster session added to evening of Pre-Conference Day.
- 2003: Sigma Theta Tau International, Alpha Kappa-at-Large Chapter and Kaiser Permanente become co-sponsors.
- 2005: Denver Health Medical Center becomes co-sponsor; additional concurrent breakout session added to morning agenda.
- 2006: Fourth pre-conference session added.
- 2007: The Children’s Hospital becomes co-sponsor; sponsorship and collaboration status established; additional concurrent breakout session added—four offered in both morning and afternoon sessions.
- 2009: Third Research Nurse Scientist hired; program includes 2 keynote speakers; 32 podium presentations, 34 poster presenters.
- 2010: Program includes 2 keynote speakers (one international); 28 podium presentations, 56 poster presenters.

The Commission on Collegiate Nursing Education (CCNE) recently published the *Standards for Accreditation of Post-Baccalaureate Nurse Residency Programs* (April 2008). These standards were designed to ensure the quality and integrity of nurse residency programs. While accreditation is a voluntary process, the benefits may include: (1) providing the program an opportunity to promote program quality; (2) establishing goals for program improvement; (3) distinguishing accredited programs from other programs that appear to be similar; and (4) permitting accredited programs to seek reimbursement funds in the future from the Center for Medicare and Medicaid Services (CMS). The University of Colorado Hospital was the nation's first residency program to initiate and obtain accreditation.

While in the Nurse Residency Program at the University of Colorado Hospital, nurse residents are exposed to evidence-based practice throughout their residency program year. Their first formal class on the topic occurs during month 6 and is a full 8-hour course. The content presented is above and beyond that presented in their initial hospital orientation. The course is coordinated by one of the hospital's research nurse scientists. The EBP course faculty include the Chief Nursing Officer (CNO), the Director of the Department of Professional Resources and two of the research nurse scientists, all PhD prepared nurses who hold faculty appointments at the University of Colorado Denver, College of Nursing. The course includes content related to conducting EBP studies and utilizing evidence to improve patient care. Multiple examples of how EBP has been used within the hospital and in health care at large to improve patient outcomes are presented. The nurse residents learn the process of taking an initiative, conducting a FOCUS-PDCA quality improvement project to explore the problem or the topic to be researched, gathering data, revising a policy, and evaluating the outcome. The nurse residents are introduced to the databases and publications they might use as resources, and discuss at length how to recognize valid research articles from peer-reviewed professional journals. EBP resources for the resident are presented including the EBP council, journal clubs, the EBP Champions Committee with a champion representative from each unit, quarterly research grand rounds, the quarterly EBP newsletter, and the hospital's three research nurse scientists.

Next, evidence-based practice as it applies to patient care units and the hospital at large is discussed in detail. The CNO asks each resident to identify an evidence-based practice that is occurring on their clinical units to stimulate a lively discussion in which residents learn about evidence-based practices that are occurring throughout the hospital. Using actual examples from the hospital, the CNO covers how EBP changes are implemented at the bedside, as well as how EBP is reflected in the hospital's Core Measures and the National Database of Nursing Quality Indicators (NDNQI) outcomes. An example agenda for the EBP class is provided in **Table 4-4**.

**Table 4-4 EBP: Beyond the Basics Agenda**

<b>Content</b>	<b>Time Frame</b>
Registration and Welcome	15 min
Class Overview	5 min
University of Colorado Hospital Evidence-Based Practice Structure	55 min
Break	15 min
Outcomes: How Evidence is Used	1 hr 15 min
Evidence-Based Practice: Process	45 min
Criteria for Graduate Nurse Residency Program Final Project	15 min
Lunch	1 hr
How To: Revise a Policy/Procedure, Run a Journal Club, Create a Poster	30 min
Small Group Breakout and Library Search Session	2.5 hours
Course Wrap Up and Evaluation	30 min

The nurse resident's EBP project required for completion of the residency program is also introduced at this time. In 2005 UCH implemented a required Nurse Residency Evidence-Based Practice program completion project. The residents' final project requires a literature review on a research question of their choice, for which they may work independently or in small groups. The residents are encouraged but not required to collect data, and are given a choice of how to disseminate the findings. Residents may choose to organize and hold a journal club for their unit; revise a policy or procedure; or they may present a poster on the unit. Each of these projects is overseen by a resident facilitator that the residents may utilize for guidance, resource contacts, and other assistance as needed. Residents also have the opportunity to present their research at the hospital's Annual Research and EBP Symposium held in Denver each spring.

During month 11 of the program, the nurse residents meet again for a 2-hour EBP workshop. By this time, their EBP final project topics have been chosen and most projects are well underway. During this session residents provide a brief project progress report to the residency coordinator and their peers. There is time available to share project concerns, access resources in the computer laboratory, and assemble posters for final dissemination. The residents

learn about professionalism and poster expectations during the initial workshop, and these expectations are reiterated at this final workshop. The residency coordinator reviews multiple past projects completed by residents that went on to presentation at regional and national conferences in order to encourage residents to consider their projects as meaningful contributions to the nursing community worthy of widespread dissemination. For example, at the Spring 2009 University Health System Consortium meeting, two UCH residents were selected through a competitive process to display their EBP final residency program project posters; one of those residents was awarded second place for the overall best poster.

Nurse residents and all clinical nurses at UCH must also complete an annual research competency required by the UEXCEL professional practice program. This requirement helps them appreciate the hospital's strong commitment to evidence-based practice and the need to continually advance their knowledge in this area to improve healthcare quality. Residents sustain evidence-based practice in their work as demonstrated by the projects they undertake to advance in UEXCEL. For example, a former nurse resident conducted a research study to determine the most accurate method for temperature measurement in the Post Anesthesia Care Unit. She presented her study results as a poster at the UCH Regional Multi-disciplinary Research and Evidence-Based Practice Symposium, and was awarded Outstanding Scientific Merit recognition for her work, competing against poster presenters from throughout the region.

## **MAINTAINING AND UPDATING KNOWLEDGE AND SKILLS**

Organizations with a professional practice model or clinical ladder program may consider including EBP expectations in the various levels of the performance standards. The practice expectations can be basic at the entry level and increase with advancement. Yearly performance appraisals can be designed to assess the professional's ability to meet the standards. **Table 4-5** is an example of a nursing professional practice model and EBP expectations.

Yearly skill labs that test and maintain clinical skill competency are commonplace in hospital nursing structure. Testing and teaching EBP skills in the form of a yearly competency are equally important and send the notable message that EBP skills are as important as clinical skills (Oman, 2008). An organization's research and EBP council may be the appropriate group to organize this annual competency. One approach is to focus on one aspect of EBP and provide education and learning assessment activities for that skill. For example, provide a demonstration of searching for the evidence in PubMed in the form of a grand rounds presentation or through a self-learning module. It is challenging to find a format that is accessible to the entire professional staff,



**Table 4-5 University of Colorado Hospital Professional Practice Model EBP Expectations**

<b>Level I</b>	<b>Level II</b>	<b>Level III</b>	<b>Level IV</b>
Orients to the Practice Outcomes Research manual and UCH quality model as resources	Knowledgeable about Practice Outcomes Manual Learns how to access on unit/clinic or on Professional Resources Web site	Acts as co-leader, or strong collaborative partner in a FOCUS- PDCA project Leads a journal club	Takes the Evidence-Based Practice: Beyond the Basics class Acts as leader of one evidence-based or quality project
Enrolled in Evidence-Based Practice Course as part of residency curriculum	Completes annual outcomes competency	Facilitates all aspects of process, including short CE application	Conducts review of literature and facilitates group analysis, discussion
Completes annual outcomes competency	Participates in one journal club	Takes Introduction to Evidence-Based Practice Course	Communicates outcomes/ findings of project by formal presentation: (symposium, poster, report to staff)

but with creativity and resources, it can be done. Some other topics that may be considered include:

- Reading and critiquing research articles
- Participating in a journal club
- PICO: Asking the clinical question
- Evidence-based policy and procedure
- EBP Jeopardy

It is important to keep topics relevant to clinical practice and applicable to a variety of professionals. Depending on the nature and size of the organization, the annual competency may need to be in multiple formats and remain accessible for months to allow the clinical staff to complete it.

## **MOTIVATING PROFESSIONAL STAFF**

Creating a culture that values and rewards EBP is a critical step in implementing an effective and sustainable EBP program. Clinicians need to see organizational leaders using evidence in their own practice and promoting clinical staff to do so also. When people in organizational leadership roles “walk the talk,” it sends a positive message about the importance and value of EBP. Highlighting successful practice initiatives that resulted from EBP is another motivational technique. Healthcare practitioners want to make the best clinical decisions to promote the best patient outcomes and will value knowing of their colleagues’ accomplishments.

Education is not sufficient to embed EBP into the practice environment. For EBP to become mainstream in the organization, the culture must support EBP, and practitioners must have the authority to change practice. Mentors and role models need to be accessible to facilitate change. Mentors may include research professionals, clinical nurse specialists, or champions of change. Champions of change are staff who promote EBP in their clinical areas. The role of facilitation with the champions of change model is a significant strategy in successful EBP implementation (Rycroft-Malone *et al.*, 2004).

## **PROFESSIONAL RECOGNITION FOR EBP**

It takes a great deal of effort, persistence, and patience to make practice changes based on evidence. Practitioners need to be recognized for their efforts. This recognition may take many forms, including:

- Journal publication of the project
- Presentation of projects at local, national, or international EBP conferences; financial support to attend

- Acknowledgement from professional organizations that have recognition programs for excellence in EBP (e.g., Sigma Theta Tau International)
- Poster presentations of projects on the clinical unit or at hospital-based recognition events (e.g., Hospital Week or Nurses' Week)
- Career advancement opportunities through the clinical ladder or professional practice program
- Awarding release or administrative time from patient care duties for EBP activities (Oman, 2008)

Recognition by peers and administrators is an important aspect of organizational structure that supports and strengthens an EBP environment (Titler, 2006).

## SUMMARY

Preparing and sustaining staff knowledge about EBP is an ongoing process. It starts with EBP content in new employee orientation to set the tone for the culture of the organization and the importance of EBP. Continuing education efforts are necessary to keep the momentum going and build on the initial orientation process. Learning to read and appraise research evidence is an essential skill that will be an important component of the continuing education program. As the staff build their EBP skills, adding advanced content and specific research content will be a logical progression of content. Introducing the graduate nurse to EBP early in their clinical orientation is also a key aspect of the education program. Finally, maintaining and sustaining the knowledge acquisition and motivating professional staff to practice from an evidence base will help establish a sound foundation of evidence-based practice.

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# Developing a Structure for Evidence-Based Practice

*Kathleen S. Oman*

## INTRODUCTION

It is well known that nurses and other healthcare professionals who feel supported by their organization's leadership team are more likely to question and make changes in their practice to benefit patient care (Fink *et al.*, 2005; Pratikoff *et al.*, 2005). It is not enough to have an organizational culture that focuses on awareness of evidence-based practice (EBP); a process or structure must be in place to help clinicians translate or use evidence in practice (Newhouse, 2007). Institutions that are effective in empowering clinicians have built a foundation that facilitates processes for engaging clinicians to do this work. Essential elements required to sustain a research and EBP program include: a clinical researcher or team/council dedicated to the vision of promoting research; an infrastructure with sufficient resources to sustain the program; and a chief nursing officer and other organizational leaders who actively value decisions based on the best evidence (Gawlinski, 2008).

Organizational leaders will likely need a strategic plan to successfully develop and implement an evidence-based practice program (Newhouse *et al.*, 2007). Chapter 3 provides detail about this important step in the process. An assessment of the institution's readiness to engage in research and EBP should be included in the strategic plan.

## EBP OR RESEARCH COUNCIL

One of the traditional steps an organization undertakes in developing a structure to support EBP is the creation of a council. Councils and committees are inherent in health services organizations and are essential to organize the work and function of the institution. The research or EBP council will create

a forum where interested professionals can discuss areas of interest, coordinate EBP activities such as journal clubs, and receive educational enrichment about research and EBP (Turkel, 2005). Council members can take the lead in answering burning clinical questions, which over time will engage clinicians to become involved in the research and EBP process. Council members also empower clinical staff to think about research through mentoring and educational roles.

Naming the council, defining what it will do, and delineating membership should be done early in the development. Defining the scope and activity of the council will naturally lead to naming it. The organizational goals, defined in the strategic plan, will help define the council scope and activity.

What do you name the council? Traditional choices usually include Research Council, EBP Council, or Research & EBP (or EBP & Research) Council. Which is best for your organization? Some questions to consider include:

- What resources are available to the organization? Are there in-house individuals with research or EBP expertise? Are there local experts that can be brought in as consultants?
- Will conducting research be a priority, either initially or in the future?
- What is the educational preparation of the clinical staff? Do most nurses hold baccalaureate degrees in which research and/or EBP might have been part of their education? Or is the workforce mainly associate degree prepared with little or no educational content about research or EBP?

**Table 5-1** describes options for naming the council with pros and cons associated with each.

Naming the council has implications for organizational resources. As noted in Table 5-1, human resources will vary depending on the focus of the council. There are technology and fiscal implications as well. It takes time and resources to develop a council and to support staff to attend council meetings and participate in activities; administrative support is essential. Conducting research requires infrastructure support in terms of statistical database and analysis software, text and journal resources, and design and statistical consultants. The financial support can be provided by the organization (intramural funding) or outside agencies (extramural grant funding) but it needs to be considered in the planning. Fostering EBP initiatives requires that clinicians have access to updated evidence, via computers in the clinical areas with connections to electronic databases and search engines, or on-site librarians to facilitate collection of research and other forms of evidence. It is important to think through the implications of naming the council with intended activities and resources in mind.

**Table 5-1 Considerations in Naming the EBP Coordinating Council**

<b>Council Name</b>	<b>Pros</b>	<b>Cons</b>	<b>Comments</b>
Research Council	Implies strong focus on conduct and utilization of research There is more common understanding of the term Research than EBP	Clinicians may be intimidated by the name alone May need a separate EBP council or a subgroup of the council to accomplish EBP activities/work Confusion that EBP means conducting research	Need mentor(s) prepared with research expertise to chair the council and oversee research activities
EBP Council	More “user friendly” to nurses and clinical staff	Deemphasizes the role of research Inconsistency in how individuals define and conceptualize EBP May lose credibility with medical staff or clinical research focused staff	
Combined name (either Research & EBP or EBP & Research)	Broad and comprehensive focus Allows for growth as resources and expertise grow	Not enough focus Encompasses too much Organization may not have resources for both activities	

**COUNCIL COMPOSITION AND MEMBERS**

Institutions in the early stages of creating a research or EBP council may decide to start with a predominately nurse member council. It feels safe to begin a new enterprise with familiar colleagues we know and have sound working relationships with. Over time, the council will want to consider members from other disciplines. Just as clinical practice is complex and care decisions require input from many sources and perspectives, so do research and EBP



questions. Most organizations are diverse enough to include a variety of disciplines in the council membership.

### **Nursing**

Having a nurse leader or facilitator who holds a graduate degree and has experience with research is important. This person may need to be a consultant from outside the hospital or perhaps a faculty member from the local School of Nursing. Establishing liaisons with nursing faculty provides the expertise needed in the council and offers faculty access to the clinical setting for their studies and the opportunity to mentor staff (Hedges, 2006).

When selecting council members, it is advantageous to consider nurses who are interested in research and/or EBP who may be opinion leaders or champions of change for the developing process. While the initial inclination may be to appoint nurses with advanced degrees, in order to foster continued learning and professional growth, nurses with a variety of educational backgrounds should be considered for membership. Nurses from different levels of the organization, such as managers, directors, educators, and clinical nurses will bring together clear research questions and knowledge of the resources available for carrying out projects (Meyers, 2006). Advance practice nurses are especially important members of evidence-based practice councils as they are usually engaged in evaluating and using current research evidence in their practice routinely.

### **Nonnursing**

Other members could include professionals from Pharmacy, Social Work, Physical and/or Occupational Therapies. Personnel from the organization's Quality Department are especially key members, as is a health sciences librarian. If the organization has a research department, a member of that department will be an important council member. Collaborative community members may be considered based on availability. These members would include faculty from the local School of Nursing or professional staff from area hospitals.

## **MEMBERSHIP TERMS**

Council term limits should be established. Members need enough time on the council to learn about research and EBP and become champions for the process, but in order to reach a critical mass of champions throughout the organization, new members are essential. A 3-year term may be an

ideal time frame for membership, and having staggered terms would enable continuity.

## COUNCIL CHARTER

### Purpose and Philosophy

A philosophy or mission statement provides the framework and articulates the expectations that all nurses and healthcare professional staff will practice using the best evidence. It also reinforces that various committees—e.g., policies and procedures or clinical practices—will use evidence and sound research to make practice changes.

An example of the University of Colorado Hospital's Research and Evidence-Based Practice (R&EBP) Council and Champions' purpose and philosophy may be found in **Box 5-1**.

### Box 5-1 Purpose and Philosophy Example

#### UCH Research & EBP (R&EBP) Council Purpose and Philosophy

##### Purpose

The purpose of the Research and Evidence-Based Practice (R&EBP) Council is to provide education, mentorship, and leadership through the research and evidence-based practice process. We strive to improve the quality of patient care by conducting research, promoting evidence-based practice (EBP) initiatives, and translating research and evidence into best practices for optimal patient outcomes.

##### Philosophy

1. Evidence-based practice is the foundation for clinical practice at University of Colorado Hospital.
2. Incorporating the current best evidence into clinical decision making will positively impact patient outcomes.
3. The R&EBP Council values the process of examining and supporting research conducted at University of Colorado Hospital.
4. Research at University of Colorado Hospital must adhere to moral, ethical, and legal principles governing research activities.
5. Multidisciplinary contributions and collaborative research are valued and encouraged.
6. Research is integral to clinical practice, education, and evaluation.
7. Evidence-based practice and research utilization allow nurses and other healthcare professionals to challenge traditional ways of thinking and practicing.
8. The process of mentoring and educating is valued.

The purpose of the council is to provide education, mentorship, and leadership through research and evidence-based practice processes to improve the quality of patient care. Selecting an organizational EBP model is instrumental in developing a structure for EBP. Chapter 6 contains detailed content about this process.

Key functions of the council will vary greatly from one institution to another and are dependant on both the scope of the council and institutional resources. The University of Colorado Hospital's research council is fairly comprehensive in scope and has the following functions: Mentorship, Dissemination, Protocol Review, and Education. Examples of some activities involved in these key functions are found in **Table 5-2**.

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**Table 5-2 Council Key Functions**

<b>Key Function</b>	<b>Activity</b>
Mentorship	Provide a formal process to develop and oversee research and evidence-based practice initiatives Assist with grant applications and reviews Consult on abstract writing, poster, and podium presentations Provide support for writing for publication Develop and assist EBP champions in their role as unit-based liaisons
Protocol review	Assist with the design phase of a study or EBP project Assist with IRB submission
Dissemination	Publish quarterly EBP Newsletter Conduct annual nursing research competency Develop intranet EBP/research resources Distribute calls for abstracts and grant opportunities Promote and foster unit-based journal club activity Encourage the critical analysis of research reports (EBP Champions) Present at New Hire Orientation on Research and EBP
Education	Participate in coordinating and sponsoring yearly EBP Nursing Grand Rounds Provide education and enrichment to the EBP council and champions Provide courses in EBP and Clinical Research

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## **RELATIONSHIP OF EBP COUNCIL WITH STANDING COMMITTEES/COUNCILS**

The EBP council should not exist in isolation. The more interaction this council has with other councils or committees is a good indication of how well research and EBP have been integrated into the organizational culture.

It is also important for research and EBP to be incorporated into other hospital councils/committees. The organization's commitment to research and EBP are reflected in the practice documents that guide patient care (Gawlinski, 2008). These documents, usually policies, procedures, and practice guidelines, must be written to reflect practices based on research and other forms of evidence. The clinical practice committee (or whatever it might be called in the organization) should have a strong relationship with the EBP council. Shared membership with the clinical practice council might be beneficial while the EBP council is getting started. Shared membership will help establish mutual goals and a common understanding of how EBP can be incorporated into practice. Other methods to facilitate incorporation of EBP principles and relationships into other committees/councils include the following:

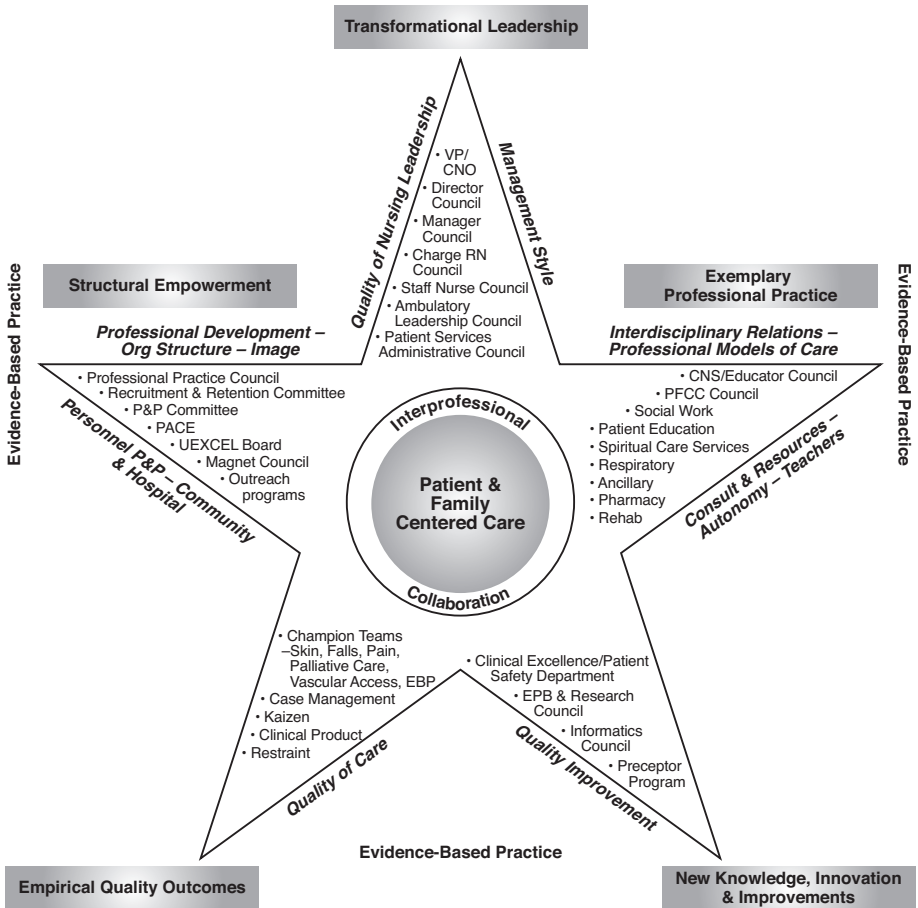
- Individual councils can develop a yearly evidence-based practice goal.
- EBP can be a regular agenda item and be operationalized with quarterly journal club activity with the topic specific to the nature of the council.
- The Leadership Council can allocate support and resources for EBP.
- The Education Council can support and/or plan continuing education activities about EBP.
- The Quality Council can work closely with the EBP council to determine organizational priorities and establish shared work.

## **STEERING COMMITTEE**

Communication between the various councils and committees is a challenge in many complex healthcare organizations. A traditional model to facilitate this interaction is a shared leadership committee, composed of chairs from the various hospital councils, that meets routinely to share information and have input to organizational issues. This group may also be called "Professional Practice Council," "Shared Governance," or "Coordinating Council."

The following diagram depicts the UCH shared leadership committee structure. The shared leadership council is directed by the chief nursing officer and meets quarterly. Members provide updates about their council's mission, activities, and future initiatives and receive input from other members to help set organizational priorities and shared goals.

**Figure 5-1 Shared Leadership Model**



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**RELATIONSHIP OF EBP COUNCIL WITH NURSING UNITS**

Engaging clinicians in EBP can be the most challenging aspect of the program but is unquestionably the most important. It is essential to develop a culture of inquiry that encourages practitioners to ask the burning clinical question, have the skills and resources to find the answers, and incorporate the evidence into practice. One successful method for creating this culture of inquiry is through the Champions of Change Model (Titler & Everett, 2001). Change champions

are practitioners from the local group who continually promote the new idea. Clinical Nurse Specialists, Nurse Educators, or clinical experts mentor staff nurses to be ambassadors of change, which begins by examining the evidence, their current practice, and outcomes. When staff nurses examine evidence, they become *engaged*, *believe* the evidence is credible, and see *positive impacts* on patient care outcomes and *clinical relevance* (Oman & Fink, 2009).

Champions of Change groups facilitate change by demonstrating innovator qualities. They become knowledgeable about the evidence of a particular practice change through enrichment. They change policies and procedures, revise documentation forms based on the evidence, and disseminate information/change to their peers through education or by coordinating a journal club. They participate in examining outcomes by participating in audits and product reviews. They continually monitor their progress. This process empowers the staff and enables them to develop credibility and authority with other disciplines.

Champions of Change groups may be organized by clinically relevant topics such as skin, pain, falls, palliative care, vascular access devices, and evidence-based practice. The champions groups, composed of direct care providers, should be led by a clinical nurse specialist and/or a research nurse scientist. The champions groups usually meet monthly to explore the evidence related to their problem or focus.

Evidence-based practice champions can begin by focusing on facilitating EBP on their units. EBP champions need specialized education about evidence-based practice with emphasis on searching for the literature and critical review of research. Journal clubs are an excellent strategy to enhance EBP activities on the patient care units, and EBP champions can be mentored into facilitating this activity.

At the University of Colorado Hospital, the EBP champions are responsible for implementing unit-based journal clubs. They are also involved in hospital-wide EBP projects. Some of their work has included a review of the literature on pet therapy with a recommendation to nursing leadership to institute a pet visitation program, and a critical review of how to revise or write evidence-based policy and procedures. They have been most recently involved in a hospital-wide initiative to decrease catheter-associated UTIs. The champions have reviewed the literature, provided input to the intervention, and are active in the training and competency portion of the intervention.

## SUMMARY

Developing a structure for evidence-based practice involves creating an EBP council and articulating the philosophy and scope of its activities.

Interprofessional membership is ideal, and members should come from many levels in the organization. Clearly describing how the EBP council relates and interacts with other standing committees or councils will help integrate evidence-based practice concepts throughout the organization.

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# Guiding Principles for Evidence-Based Practice

*Cynthia A. Oster*

## INTRODUCTION

Evidence-based practice (EBP) has cultural and organizational implications that are vital for its success. The structure for integrated relationships is as important as the clinical processes related to establishing evidence in practice (Malloch & Porter-O'Grady, 2006). The commitment of an organization and every individual practitioner within the organization in making EBP the format for clinical decision making is important to the delivery of effective health care. Development of a clear understanding of the elements of EBP and the implications they have for professional practice and effective patient care is imperative to an organization's success.

## DEFINING EVIDENCE-BASED PRACTICE FOR AN ORGANIZATION

If EBP is to work and be sustained, it requires commitment at every level of the organization (Porter-O'Grady, 2006). Ideally, organizational commitment to EBP is reflected in its mission, vision, and values statements, and the definition of EBP is congruent with the cultural norms of the institution. A written philosophy that recognizes EBP as a central tenet and a definition of EBP that is reflective of organizational culture can accelerate the acculturation of EBP within an organization.

Organizational culture is the personality of an organization and is reflected in the organization's mission, vision, and values. Culture is a difficult concept to express, but everyone knows when they sense it. "Culture as a concept is thus an abstraction but its behavior and attitudinal consequences are very concrete indeed" (Schein, 2004, p. 8). Fostering EBP requires commitment at all levels within an organization, including strong infrastructure, leadership,



and resource allocation. An organizational culture that places EBP as a central mission can hasten the integration of evidence-based practice as the format for clinical decision making.

## **WRITING A MISSION STATEMENT FOR EBP**

An articulated mission statement provides the framework and conveys the expectation that all nurses and healthcare professional staff will practice using the best evidence. It also reinforces that various committees will use evidence and sound research to make practice changes. The mission statement answers “why” questions: Why do we need EBP? Why is EBP important? Why is EBP vital to the success of the organization?

The mission statement defines the fundamental purpose of an organization and describes why an organization exists. Establishing a culture of evidence-based practice necessitates that organizational leaders are involved in mission statement development (Newhouse, Dearholt, Poe, Pugh, & White, 2007). A mission statement provides and articulates a framework for evidence-based practice over time as objectives are achieved. The mission statement should speak to the lifelong learning needed for evidence-based practice and a spirit of inquiry of staff. The mission statement should also address a work environment that demands and supports nurse accountability for practice and decision making. Lastly, the mission statement needs to include the goal of improving patient care outcomes through evidence-based clinical and administrative decision making.

A vision statement defines the desired future state of an organization in terms of its fundamental objectives. Vision is a long-term view of the organization; it is a statement about what the organization wants to become. The vision statement should resonate with all members and make them feel part of something bigger than themselves. A vision should stretch the organization’s capabilities and image of itself. A vision for evidence-based practice may include increasing the ability of staff to provide evidence-based care, increasing their involvement in clinical research, or facilitating clinical research within the organization.

Values are shared beliefs among the stakeholders of an organization. Values are what drive an organization’s culture and priorities. Values are traits or qualities that represent an individual’s highest priorities and are deeply held driving forces that describe how the organization will value its customers, suppliers, and the internal community. Values—also known as core or governing values—define how people want to behave with each other in the organization. Values reflective of an evidence-based organizational culture may include respect, integrity, and excellence.

## **Selecting and Incorporating Definitions**

Evidence-based practice requires a clinician to incorporate scientific evidence when making clinical decisions rather than relying solely on experience, advice of colleagues, or intuition. Selecting definitions of EBP is an effective way of assuring a consistent understanding of what evidence-based practice is for the clinician.

Many organizations use medically-based definitions of EBP, as its implementation in clinical practice may be considered a by-product of the evidence-based medicine movement (Closs & Cheater, 1999). More than one definition for evidence-based nursing practice has emerged from the literature. Melnyk and Fineout-Overholt (2005) define evidence-based practice as a problem-solving approach to clinical care that incorporates use of current best evidence from well-designed studies, a clinician's expertise, and patient values and preferences. Goode and Piedalue (1999) define EBP as explicit and judicious decision making about healthcare delivery for individuals or groups of patients based on the consensus of the most relevant and supported evidence derived from theory-driven research and data-based information to respond to consumers' preferences and societal expectations.

Disciplines beyond nursing and medicine have defined evidence-based practice within the context of the nature of their practice. "Evidence-based physical therapy practice is 'open and thoughtful clinical decision-making' about the management of a patient/client that integrates the 'best available evidence with clinical judgment' and the patient/client's preferences and values, and that further considers the larger social context in which physical therapy services are provided, to optimize patient/client outcomes and quality of life" (Jewell, 2008, p. 8). Etminan and colleagues (1998) have defined evidence-based pharmacotherapy as an approach to decision making whereby the clinician appraises the scientific evidence and its strength in support of his/her therapeutic decisions.

The definition of evidence-based practice may vary among disciplines; however, there are four tenets that are common to each discipline's definition. The four tenets include a problem-solving approach to clinical decision making, best research evidence, clinical expertise, and patient values.

## **A Strategy to Define Evidence-Based Practice**

Thematic analysis is a strategy to define evidence-based practice within an organization. "Themes are not single anecdotes, but rather recurring meanings that appear woven throughout all the data that are collected" (Houser, 2008, p. 524). This approach is highly inductive, meaning that the themes emerge from data and involve discovering commonalities, variations, and relationships within data (Polit & Beck, 2008). Often the collection of data and thematic

### **Box 6-1 A Method for Generating a Definition of EBP Through Thematic Analysis**

A group of associates, led by a knowledgeable facilitator, can define evidence-based practice using the strategy of thematic analysis. The first step is to assemble a group of associates and review selected definitions of evidence-based practice. Definitions are presented, and key concepts within each definition are discussed and clarified. The next step is the identification of key words or concepts that group members would like to see in the organization's definition of evidence-based practice. Every associate in the group is provided a pen, a pack of Post-It notes, and instructed to write one word on a single note that reflects a concept the group member would like to have in the organization's specific definition of evidence-based practice. Often members identify more than one concept. This activity takes about 10 minutes. Next, a group member is asked to place each individual concept or word on a flip chart or wall. The associate is asked to explain the word if other members need clarification. The next associate in the group does likewise until all members of the group have had the opportunity to place their key concepts on the flip chart. Duplicates are then eliminated leaving only nonrepetitive key concepts. Concepts may include, but are not limited to: judicious, systematic, unbiased, theory-driven, explicit, conscientious, dissemination, and uptake. The facilitator then assists the group members with grouping similar words together and identifying themes. Themes may include finding evidence, appraising evidence, aggregating evidence, or effective clinical practices. The themes form the basis for the organization's definition of evidence-based practice. The facilitator generates a definition based on the themes, goes back to the group to make sure the definition fits, and then the group continues to refine the definition as needed.

analysis take place simultaneously. The search for themes can be facilitated by the use of charting devices, such as flow charts, timelines, or flip charts. Identification of themes is not an orderly linear process as iteration is almost always necessary. Iteration means deriving themes from material, going back to the material with the themes in mind to determine if the material really fits, and then refining the themes as needed. A practical approach to conducting a thematic analysis to develop a definition of EBP is presented in **Box 6-1**.

### **IDENTIFYING OBJECTIVES FOR EVIDENCE-BASED PRACTICE**

Change to evidence-based practice can be daunting for an organization and its individual staff. "Among the important elements that must be present for change to be accomplished successfully are vision, belief, strategic planning, action, persistence and patience" (Melynk, 2005, p. 444). The goals or objectives

of the institution must be congruent with mission, vision, and values to base practice on evidence. Strategic and developmental objectives should be aligned with the organizational mission. Misaligned objectives or goals will not enable clinicians to integrate EBP concepts into their daily routines and practices.

### **Strategic Objectives**

Strategic planning is a continuous and systematic process in which people make decisions about intended future outcomes, how outcomes are to be accomplished, and how success is to be measured and evaluated. A component of the strategic planning process is writing strategic objectives. Strategic objectives are written statements that describe an intended outcome. Goals are clearly articulated and measurable. Goals address intended changes, improvements, and challenges to be addressed within a given period of time. The strategic objectives for EBP should be realized in order for a healthcare organization to remain competitive in a complex and ever-changing healthcare environment. Strategic objectives must be congruent with the mission, vision and values of the organization. The objectives should be challenging enough to facilitate growth but not so challenging that people will get frustrated by an inability to reach them (Melnyk, 2005).

Strategic objectives help create a culture of EBP. These objectives provide organizational leaders the sturdy foundation on which to create a culture of clinical inquiry and continual learning for administrative decisions and clinical practice (Schulman, 2008). Strategic objectives could include planning for the provision of fiscal and human resources needed for the work of EBP; provision for access to clinical information 24 hours a day; acquisition of qualified personnel to support EBP work; or integration of EBP into performance review.

### **Developmental Objectives**

Developmental objectives are written statements describing how individuals should acquire the skills needed to conduct evidence-based practice. Developmental objectives encompass affective objectives (changing attitudes), psychomotor objectives (improving skills), and cognitive objectives (increasing knowledge). Objectives may be developed at the organization, team, or individual levels. Objectives may be addressed at one level when they should be addressed at another level. For example, in some situations it may be easier to address behavior through the team rather than through the individual. On the other hand, sometimes it may be easier to address knowledge or cognitive development through the individual rather than through the entire organization.

Developmental objectives for evidence-based practice encompass higher-order thinking skills. Needs assessment is a systematic method for making

inferences about the learning and development needs of an organization. Conducting a needs assessment determines and addresses *needs*, or “gaps” between current organizational knowledge about EBP and a desired level of organizational knowledge about EBP. The developmental needs assessment should include questions such as:

- Are there individuals who have EBP knowledge and skills?
- Can individuals construct a searchable, answerable question?
- Can individuals communicate how to search for relevant evidence?
- Do they know how to critically appraise all levels of evidence?
- Can they coach other practitioners in evaluating outcomes based on evidence?

Answers to these questions assist in identifying developmental objectives required to fill the “gaps” in organizational knowledge about EBP. Educational forums, staff meetings, and one-on-one conversations provide opportunities for nurses to learn and ask questions about EBP.

## **SELECTING AN ORGANIZATIONAL EVIDENCE-BASED PRACTICE MODEL**

According to Balas and Boren (2000), it takes an average of 17 years to translate research findings into clinical practice. How to move good evidence into clinical practice to optimize patient outcomes is conceptualized through EBP models. These models can assist clinicians in moving evidence toward actual implementation in a specific practice setting. This section describes a process to prescriptively evaluate and select an EBP clinical model.

### **Summary of Key Evidence-Based Practice Models**

Various models for EBP have been developed and are often very different from each other. Each has advantages and disadvantages that make them more useful in some organizations than in others. Common elements in most models include a process that identifies practice questions and reviews current research, best evidence, existing clinical practice and practice guidelines, and other available data such as quality outcome data, national standards, and benchmark data (Goode & Piedalue, 1999). Additionally, evidence-based practice models often include an organized process to systematically implement and continually evaluate the effectiveness of practice change over time. **Table 6-1** describes specific steps/phases and key concepts that selected evidence-based practice models use to guide the process, as well as strengths and limitations.

The ACE Star Model of Knowledge Transformation is a model for understanding the cycles, nature, and characteristics of knowledge that are utilized

**Table 6-1 Selected Evidence-Based Practice Models**

<b>Model</b>	<b>Key Focus/ Emphasis</b>	<b>Key Concepts</b>	<b>Steps/Stages</b>	<b>Strengths</b>	<b>Limitations</b>
ACE Star Model of Knowledge Transformation (Stevens, 2004)	Knowledge transformation—the conversion of research findings from primary research results, through a series of stages and forms, to impact on health outcomes by way of EB care.” (www.acestar.ethscsa.edu/Learn_model.htm)	Knowledge form	Knowledge discovery Evidence summary Translation of evidence into practice recommendations Integration into practice evaluation	Inclusive of familiar processes Emphasizes unique aspects of EBP Simple in nature	Does not discuss use of nonresearch evidence Less prescriptive than others
Colorado Patient-Centered Interprofessional Evidence-Based Practice Model (Goode, 2009)	Organizational model with a patient-centered inter-professional emphasis	Facilitation mentorship Leadership Organizational support	Patient at the center or core Conduct search for valid and current research Assess patient’s values, preferences and experiences Conduct search of additional sources of nonresearch evidence if research base insufficient Inform patient of research evidence Patient ultimate decision maker	Identifies eight additional sources of nonresearch evidence Tools available for implementation	Stages of model not clearly identified Assumes linkage between practice setting and university/college of nursing Assumes practice environment with nurse scientists

(continues)

**Table 6-1 Selected Evidence-Based Practice Models (Continued)**

<b>Model</b>	<b>Key Focus/ Emphasis</b>	<b>Key Concepts</b>	<b>Steps/Stages</b>	<b>Strengths</b>	<b>Limitations</b>
Iowa Model of Evidence-Based Practice to Promote Quality Care (Titler, 1994; Titler <i>et al.</i> , 2001)	Organizational process focusing on organizational use of research	Triggers to improve practice	<p>Trigger: Problem or knowledge Organizational priority?</p> <p>Team formation</p> <p>Gather evidence</p> <p>Critique and synthesize research/evidence base</p> <p>Sufficient research base?</p> <p>Pilot practice change</p> <p>Decision?</p> <p>Widespread implementation with continual monitoring and analysis of structure, process, and outcome data</p> <p>Dissemination of results</p>	<p>Intuitive design</p> <p>Easily understood by clinicians with varying degrees of experience</p> <p>“Triggers” prompt users to evaluate current clinical and administrative practices</p> <p>Interdisciplinary in nature</p> <p>Evaluation component</p> <p>Used in multiple academic and clinical settings</p> <p>Promotes conducting research when evidence lacking</p>	<p>Infrastructure to support research must involve every level of organization</p> <p>Lack of critique and synthesis guidelines</p> <p>Assumes groups or teams available</p> <p>Organizational perspective may not work for individuals in non-acute settings or working alone</p> <p>No guideline for application</p>

Johns Hopkins Nursing Evidence-Based Practice Model and Guidelines (Newhouse <i>et al.</i> , 2005; Newhouse <i>et al.</i> , 2007)	Organizational process focusing on nursing decisions about practice, education, and research	Nursing practice Nursing education Nursing research	Practice question Evidence Translation: Plan, implement, evaluate, and communicate	Three phase "PET" process Tools available for scientific evaluation Includes evaluation of nonresearch evidence Acknowledges influence of internal and external factors Logical structure	Requires linkage between practice setting and university/college of nursing Assumes groups or teams are available
PARIHS Framework —Promoting Action on Research Implementation in Health Services (Kitson, Harvey, & McCormack, 1998; Rycroft-Malone <i>et al.</i> , 2002).	Organizational model emphasizing context as central importance in effective EBP	Evidence Context Facilitation	Critically appraise evidence Thoroughly understand practice arena before implementing a change Make a strategic plan for facilitation of any practice change from development through implementation and evaluation SI = $f(\text{ECF})$ SI = Successful Implementation $f$ = function of E = Evidence C = Context F = Facilitation	Multidimensional framework Identifies an ideal position to achieve successful implementation	Abstractness Assumes core dimensions are both causally and linearly related to one another No guideline for application

(continues)



**Table 6-1 Selected Evidence-Based Practice Models (Continued)**

Model	Key Focus/ Emphasis	Key Concepts	Steps/Stages	Strengths	Limitations
Rosswurm and Larrabee Model of Evidence-Based Practice (Rosswurm & Larrabee, 1999)	Organizational process focusing on EBP, research utilization, and change theory	Evidence-based practice Research utilization Standardized language Change theory	Assess need for change in practice Link problem interventions and outcomes Synthesize best evidence Design practice change Implement and evaluate change in practice Integrate and maintain	Guides practitioners through the entire process of EBP Understandable to clinicians as similar to nursing process and performance improvement methods	Model appears to cease with Step 6
Stetler Model of Research Utilization to Facilitate Evidence-Based Practice (Stetler, 1994; Stetler, 2001)	Individual practitioner or individuals operating as a group focus	Knowledge utilization Critical thinking Research utilization Evidence-based practice	Preparation Validation Comparative evaluation/ Decision making Translation/Application evaluation	Prescriptive approach with each phase detail Promotes use of both internal and external evidence Focus on critical thinking	Assumes individual practitioner is knowledgeable and skilled Complexity may make it difficult for some to interpret and use

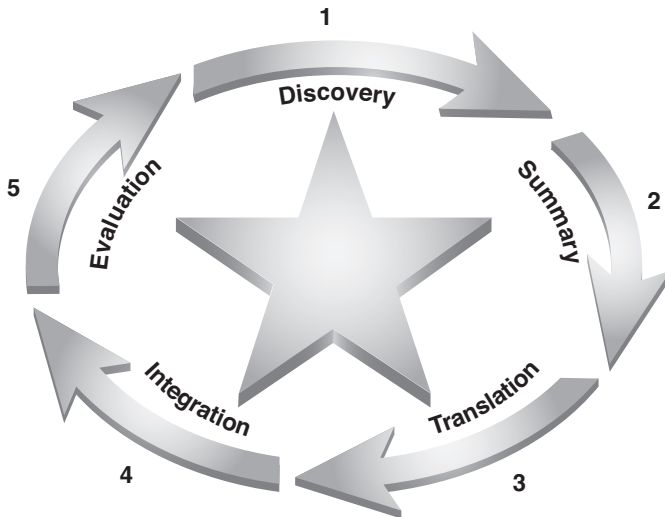
<p>Focus on the individual practitioner</p> <p>Formal organization may or may not be involved</p>	<p>Not used in multiple settings</p> <p>Scientific nature is not focal point</p>
<p>Trinity Evidence-Based Practice Model (Vratney &amp; Shriver, 2007)</p>	<p>Model visually describes a framework for EBP as a starting point</p> <p>Recognizes the "art" of EBP</p> <p>Demonstrates how to grow EBP while weeding out the barriers</p>
<p>Organizational model focusing on clinical excellence and quality patient care</p>	<p>Breaking ground</p> <p>Planting seeds</p> <p>Sprouting up</p> <p>Showering of education</p> <p>Heating things up</p> <p>Branching out</p> <p>Bearing fruit</p>
<p>Leadership</p> <p>Enthusiasm</p> <p>Mentorship</p> <p>Clinical inquiry</p> <p>Reflective practice</p>	<p>Leadership</p> <p>Enthusiasm</p> <p>Mentorship</p> <p>Clinical inquiry</p> <p>Reflective practice</p>

in various aspects of evidence-based practice (Stevens, 2004). The model is depicted in **Figure 6.1**. The simple five-point star model depicts various forms of knowledge in a relative sequence; research evidence is moved through several cycles, combined with other knowledge and integrated into practice. The stages of knowledge transformation are:

1. Knowledge discovery
2. Evidence summary
3. Translation into practice recommendations
4. Integration into practice
5. Evaluation

The goal is “*knowledge transformation*—the conversion of research findings from primary research results, through a series of stages and forms, to impact on health outcomes by way of evidence-based care” (Stevens, 2004, retrieved on 07/01/09 from [http://www.acestar.uthsca.edu/Learn\\_model.htm](http://www.acestar.uthsca.edu/Learn_model.htm)). The model is simple in nature, includes familiar processes, and emphasizes unique aspects of evidence-based practice; however, the model does not account for the use of nonresearch evidence.

**Figure 6-1 The ACE Star Model of Knowledge Transformation**



Reprinted with permission from Stevens, K. R. (2004). ACE Star Model of EBP: Knowledge transformation. The University of Texas Health Science Center at San Antonio: Academic Center for Evidence-Based Practice.

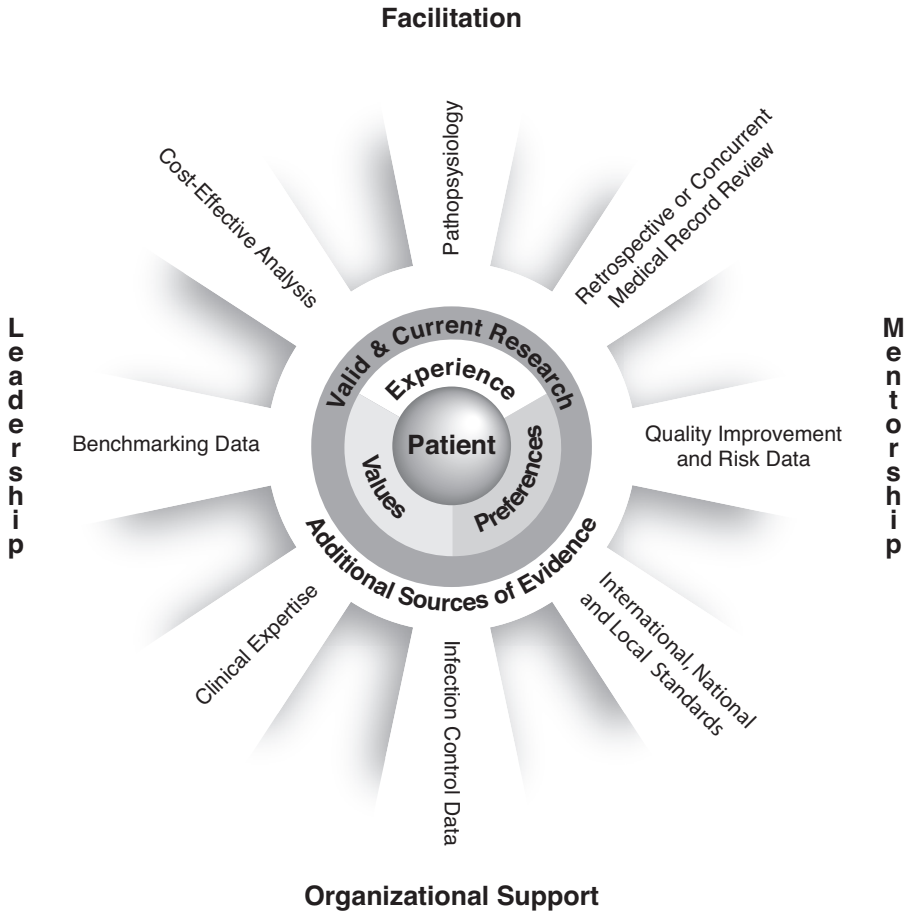
The Colorado Patient-Centered Interprofessional Evidence-Based Practice Model has as its focus the effects of EBP on patients (Goode, 2009). The patient is the center or core of the model. The patient is the ultimate decision maker based upon their preferences, values and experience. In order to help the patient make an informed decision, it is critical to present the most accurate data and information. In order to do this, the practitioner begins with a literature search to identify the most current and valid research related to the topic. Practitioners then use research as the basis for clinical decision making whenever there is an adequate research base to inform and guide clinical practice. If there is not an adequate research base, eight additional sources of evidence can supplement evidence obtained from research. Together these provide the best evidence available to help the patient make an informed decision. The Colorado Model is framed by the four concepts of facilitation, mentorship, leadership, and organizational support. Each is essential to embedding research into practice. The model is depicted in **Figure 6.2**.

This organizational model relies on a formal relationship between a university medical center and a college of nursing to provide resources needed to successfully implement and sustain EBP. In addition, the model assumes that the practice environment contains skilled nurse scientists or nurse specialists to function as consultants and facilitators. A small community hospital may have access to neither. The strength of the Colorado Model resides in the specific identification of both research and nonresearch as sources of evidence. Eight specific sources of nonresearch evidence are attached to the research core in order to supplement evidence found in research or when research is not available. The goal is to provide the best available evidence to inform and guide clinical decision making and practice.

The Iowa Model of Evidence-Based Practice to Promote Quality Care was originally developed to serve as a guide for nurses and other healthcare providers to use research findings for improvement of patient care (Titler *et al.*, 2001). The model (shown in **Figure 6.3**) describes the infrastructure needed to support EBP and links quality improvement and research utilization. The infrastructure necessitates involvement at every level of the organization, from the chief nursing officer to front-line clinicians. The clinical nurse specialist plays an important role as facilitator and is critical for implementation and sustainment of evidence-based practices. The concept of problem- and knowledge-focused “triggers” of EBP is unique. The triggers act as catalysts for nurses to think critically about clinical and operational efficiency and effectiveness and to seek scientific knowledge for use in decision making (Titler *et al.*, 2001).

Three decision points within the model facilitate practice changes. Two decision points are made within an organizational context, while the third asks the practitioner to ponder whether evidence is sufficient. If this last decision

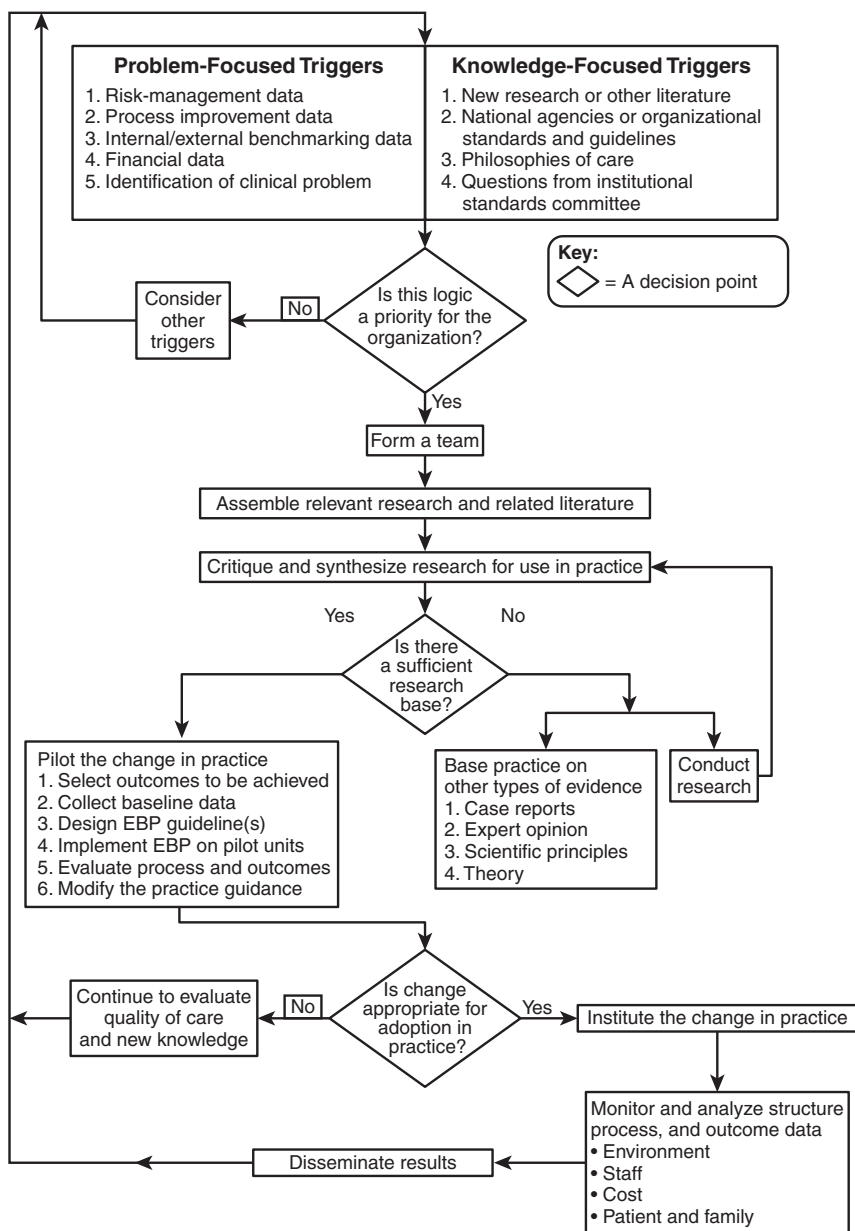
**Figure 6-2 The Colorado Patient-Centered Interprofessional Evidence-Based Practice Model**



Reprinted with permission from University of Colorado Hospital.

is “no,” then a research study may need to be conducted or other types of evidence sought. The Iowa Model is intuitive in nature and easily understood by clinicians with varying degrees of experience. In addition, this interdisciplinary model has been used in a number of academic and clinical settings and promotes clinical research. Implementation of the model in some settings may be challenging, such as a setting where a clinician works alone. Another challenge is provision of resources. Clinicians must be given the education and time to be

Figure 6-3 Iowa Model of Evidence-Based Practice to Promote Quality Care

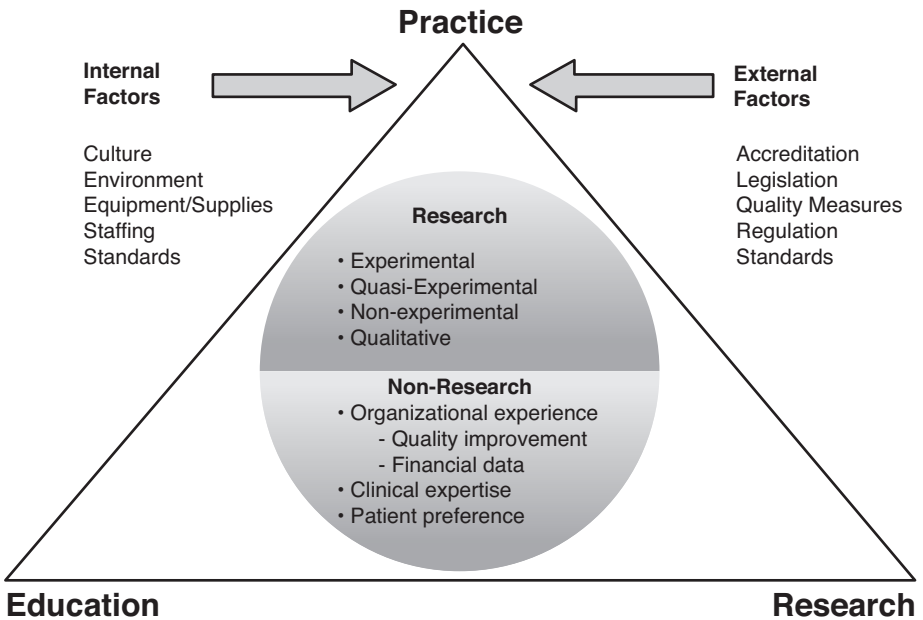


Reprinted with permission from LoBiondo and Haber, (2006). *Nursing research: Methods and critical appraisal for evidence-based practice*. (6th ed.), p. 444, St. Louis: Mosby, Inc.

involved in EBP for this model to be successful. The model provides no guidelines for critique and synthesis; however, utilization of the Iowa Model provides a strong message to the organization about its role in the support of EBP.

The Johns Hopkins Nursing Evidence-Based Practice Model was developed as a collaborative effort between the Johns Hopkins Hospital and the Johns Hopkins University School of Nursing. The model and accompanying guidelines were developed in response to a nursing leadership strategic initiative. “The model incorporates the use of ‘best available’ evidence as the core component necessary for making decisions that affect professional nursing in the domains of nursing practice, education and research” (Newhouse *et al.*, 2005, p. 36). The EBP guidelines stress a multidisciplinary approach and reflect the “PET” process, an acronym for practice question, evidence, and translation (Newhouse *et al.*, 2007). The model appears in **Figure 6.4**. The model and guidelines provide clinicians with the structure and tools necessary to acquire EBP knowledge and skills, implement EBP changes in practice and foster a stimulating practice

**Figure 6-4 The Johns Hopkins Model of EBP**

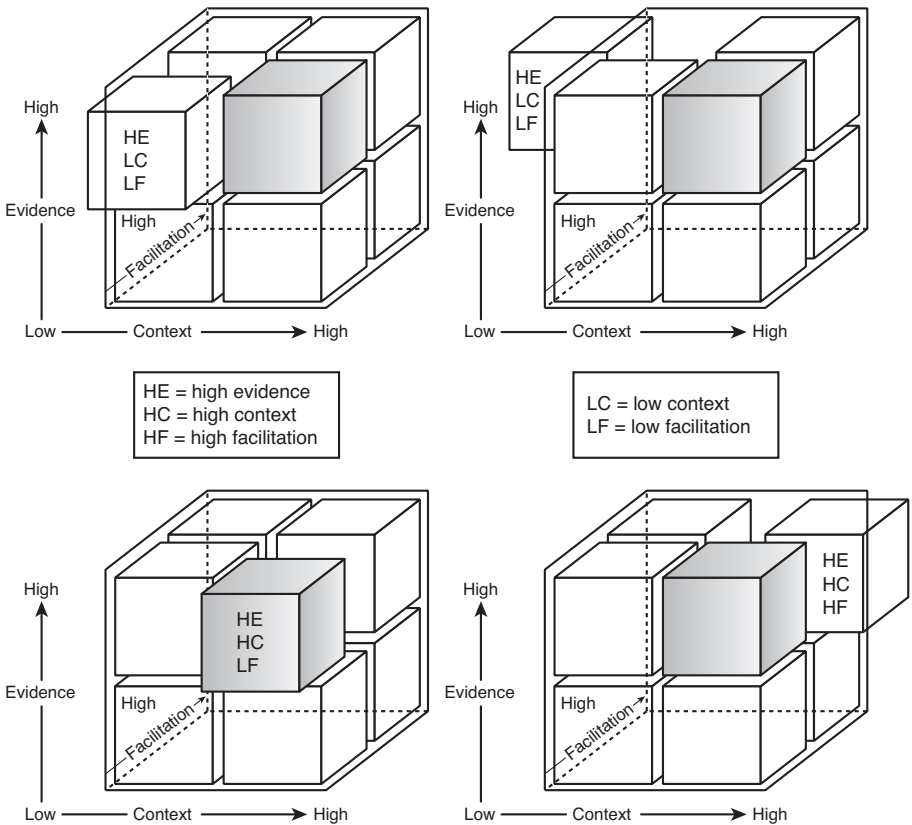


Reprinted with permission from Newhouse, R., Dearholt, S., Poe, S., Pugh, L., & White, K. (2007). Organizational change strategies for evidence-based practice. *Journal of Nursing Administration*, 37(12), 552–557.

environment (Newhouse, 2005; Newhouse, 2007). However, there is an assumption of linkage between an academic nursing school and a hospital.

Promoting Action on Research Implementation in Health Services (PARIHS) is a model that aids in the understanding of three key elements of EBP: evidence, context, and facilitation (Kitson, Harvey, & McCormack, 1998; Rycroft-Malone *et al.*, 2002). The nature of evidence used, the quality of the context to cope with change and the type of facilitation needed to ensure successful change influence research implementation (Cummings *et al.*, 2007). This multidimensional model, depicted in **Figure 6.5**, was developed in an attempt

**Figure 6-5 Promoting Action on Research Implementation in Health Services (PARIHS)**



Reprinted with permission from Kitson, A., Harvey, G., & McCormack, B. (1998). Enabling the implementation of evidence-based practice: A conceptual framework. *Quality in Health Care, 7*, 149–158.

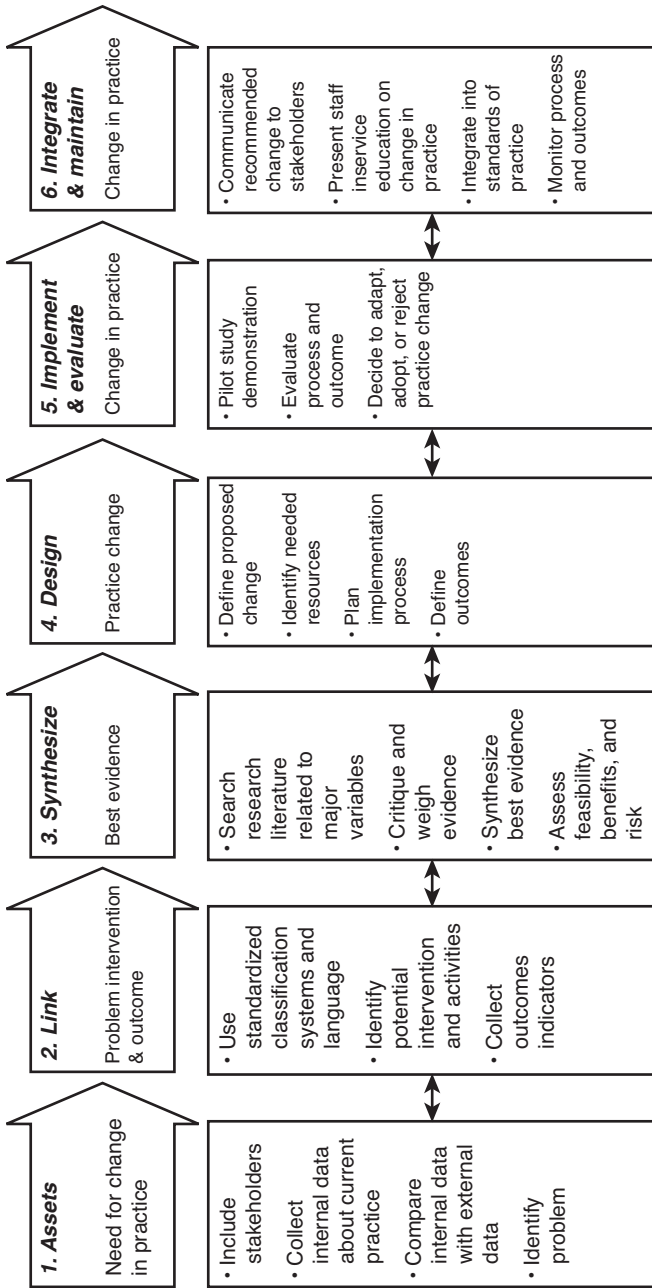


to represent the complexity of the change process involved in implementing EBP. The framework suggests that successful implementation of EBP can be explained by a function of the relationship among the three elements of EBP. These elements have a dynamic simultaneous relationship, and each is positioned on a “high” to “low” continuum. The most successful implementation occurs when the evidence is scientifically robust and matches professional consensus and patient needs (“high” evidence); the context is receptive to change with sympathetic cultures, strong leadership, and appropriate monitoring and feedback systems (“high” context); and there is appropriate facilitation of change with input from skilled external and internal facilitators (“high” facilitation). This model provides a theoretical explanation of EBP; however, the multidimensionality and abstractness of the model may make implementation difficult for staff with varying levels of experience. Finally, the model remains largely untested, hence there is not an evidence base to discount or refine it (Kitson *et al.*, 2008).

Rosswurm and Larrabee’s Model of Evidence-Based Practice is a six-step model for change derived from theoretical and research literature related to evidence-based practice, research utilization, and change theory (Rosswurm & Larrabee, 1999). The model aims to integrate EBP into a care delivery system by guiding practitioners through the entire process of changing to evidence-based practice, beginning with the assessment of the need for the change and ending with the integration of an evidence-based protocol. The process to assess the need for change begins when practitioners collect internal data and compare it to external data. The problem is then linked with standardized interventions and outcomes. The selected interventions and outcomes are refined; the best evidence is synthesized and then combined with clinical judgment and contextual data. A protocol, procedure, or standard is developed with sufficient evidence. Pilot implementation requires both processes and clinical outcomes to be evaluated. Finally, integration and maintenance of the protocol, procedure, or standard is driven by theoretical change strategies. This model guides practitioners through the entire process of EBP and is understandable to clinicians, as the model is similar to the nursing process and performance improvement methods. The model appears in **Figure 6.6**.

Stetler’s Model of Research Utilization to Facilitate Evidence-Based Practice provides explicit direction for both individuals and individuals operating within groups responsible for research utilization and EBP (Stetler, 1994; Stetler, 2001). The first section of the model is composed of a traditional graphic that describes the five phases: preparation, validation, evaluation/decision making, translation/application, and evaluation. Clinicians complete these phases to arrive at the best quality decision and outcome. The second section contains clarifying information and options for each phase. All

Figure 6-6 Rosswurm and Larrabee's Model of Evidence-Based Practice



Reprinted with permission from Rosswurm, M. A., & Larrabee, J. H. (1999). A model for change to evidence-based practice. *Image: Journal of Nursing Scholarship*, 31(4), 317–322.

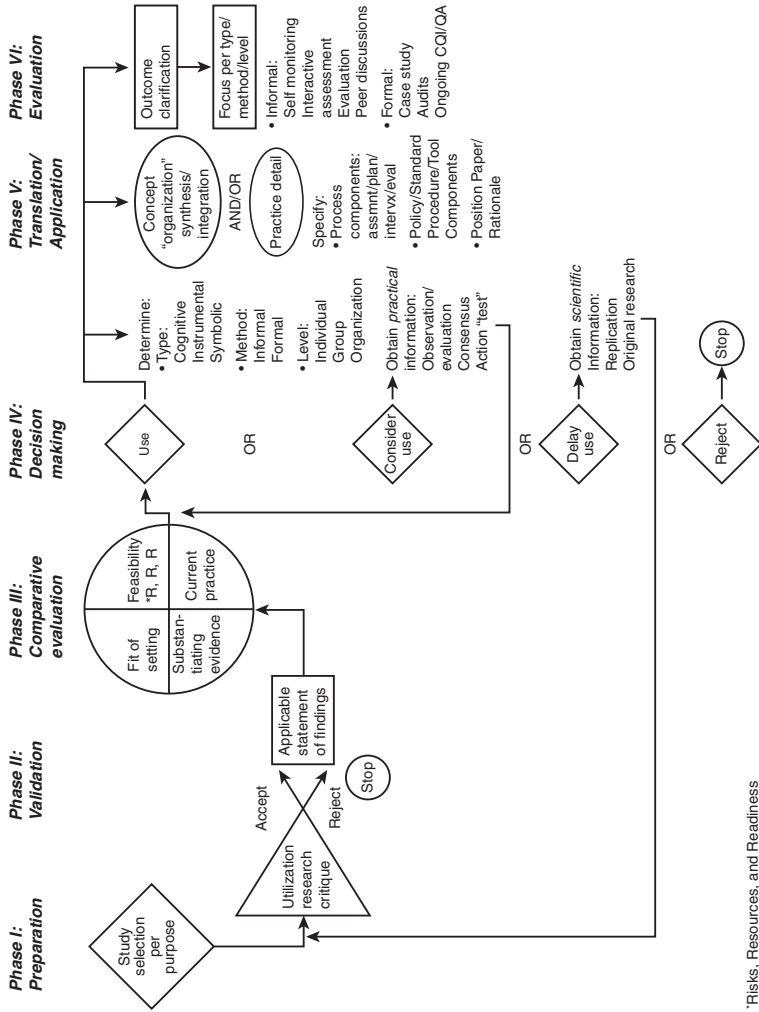
phases apply to individuals or individuals operating as a group. The preparatory phase is specific regarding the need for clarity of purpose and the potential significance of internal and external evidence. The model directs users to be conscious of the types of research to be sought, selected for review, and then critiqued. The decision to change practice includes the concepts of substantiating the evidence and feasibility, along with fit of setting and current practice. The translation/application phase focuses on the how-to's of implementation of the synthesized findings or recommendations. The final phase or outcome of the model is evaluation of the use of evidence (Fineout-Overholt *et al.*, 2005). The Stetler model appears in **Figure 6.7**. The model uses a prescriptive approach that incorporates both internal and external evidence. Critical thinking is crucial on the part of the clinician to successfully use this model; however, the Stetler Model is complex and may be difficult for some clinicians to interpret and use.

The Trinity Evidence-Based Practice Model focuses more on the “art” of EBP, including how to overcome barriers, rather than the scientific nature of EBP (Vratney & Shriver, 2007). **Figure 6.8** depicts the Trinity model. The literature identifies barriers to implementing EBP; however, most EBP models do not provide ways to overcome these barriers. The Trinity EBP Model is a visual conceptual model, using the visual analogy of a rooted tree, for growing evidence-based practice that works through barriers to encourage EBP implementation. The practice environment strives to become rooted in clinical research to evolve into evidence-based practice. EBP is nourished through education and thrives through leadership, enthusiasm, mentorship, clinical inquiry, and reflective practice. EBP ambassadors branch out to each department to grow EBP activities. The fruits of this model are quality patient care and outcomes, empowerment of staff, and professional growth. This model was designed at Trinity Regional Medical Center, Fort Dodge, Iowa, to inspire nursing staff, most with associate degrees and little formal education of research or EBP concepts, to an evidence-based practice environment. The Trinity EBP Model visually describes a framework for EBP as a starting point and may be a model that nonacademic affiliated facilities would find helpful. Staff often find that it illustrates the concepts of EBP in an understandable and inspirational way.

### **Evaluating Evidence-Based Practice Models**

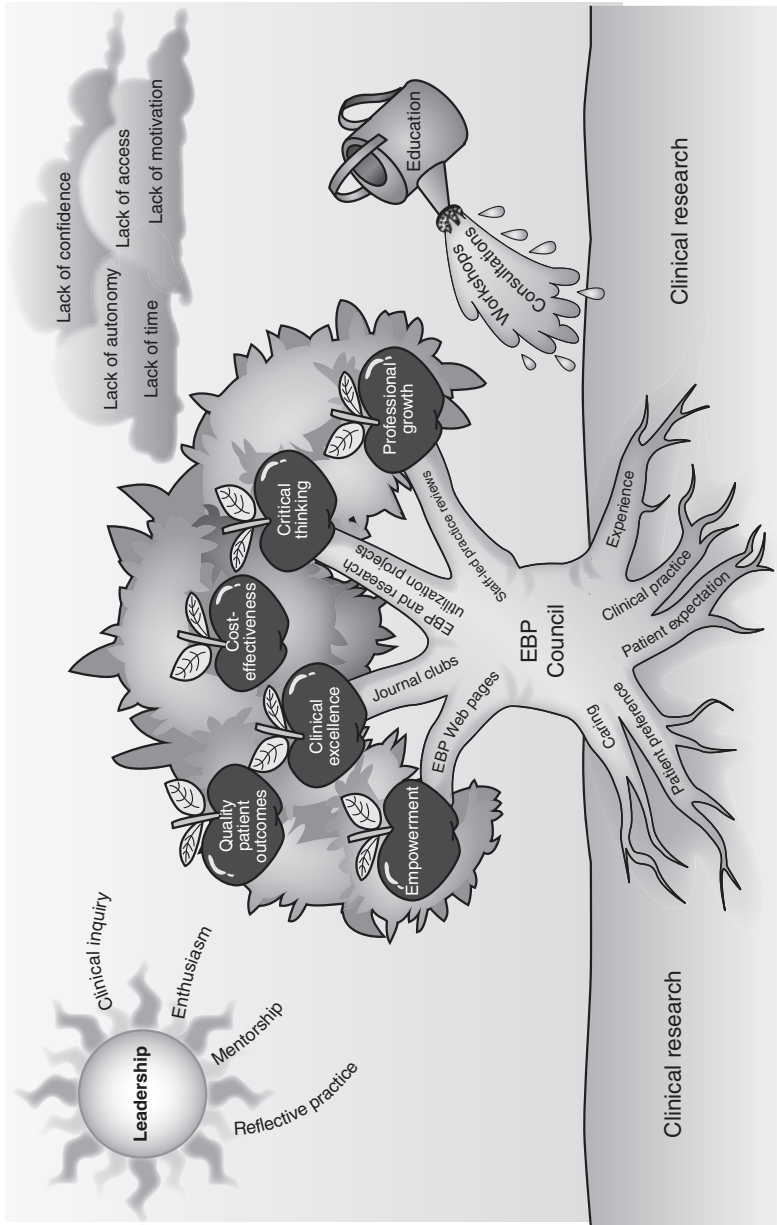
Models are helpful guides to evaluating practice and implementing EBP because they provide the framework to evaluate current practice and systematically move toward change in healthcare practice. An organization should carefully evaluate and adopt an EBP model or framework that fits within their organizational culture. An important step in evaluating and selecting an EBP

Figure 6-7 Stetler's Model of Research Utilization to Facilitate Evidence-Based Practice



\*Risks, Resources, and Readiness

Figure 6-8 Trinity Evidence-Based Practice Model



Reprinted with permission from Vratnay, A., & Shriver, D. (2007). A conceptual model for growing evidence-based practice. *Nursing Administration Quarterly*, 31(2), 162.

model is to establish a forum in which presentations and discussions can occur about various models, their advantages and disadvantages, and their applicability to organizational needs. According to Gawlinski (2008), possible strategies include:

- Using an existing research committee in which selection of an EBP model is added to annual goals and activities
- Forming an EBP council with an initial task of selecting an EBP model
- Appointment of a task force charged with selecting an EBP model
- Use of an educational event to increase knowledge about EBP models
- Facilitating the selection of a model appropriate for the organization
- Using a focus group process to select an EBP model consistent with the philosophy, vision, and mission of the organization

The key is to be thoughtful and systematic during the EBP model evaluation and selection process. The initial task is to identify a group and its membership that is responsible for evaluating and selecting EBP models to be considered. Models selected for evaluation can be identified through a review of the literature or simply on the basis of group members' knowledge of EBP models. Less-experienced group members can be paired with more experienced group members to form small work teams, with each team assigned a presentation to present details of a model. Presentations can include information on the history and development of the model, any revisions, overall concepts in the model, the process and flow of the model, as well as publications describing how the model guided changes in practice. Following each presentation, the group may want to review an example of how the EBP model can be applied in a realistic practice scenario that requires consideration of a practice change. "Criteria for evaluating the applicability of the EBP model should include clarity of the EBP model concepts and diagrammatic representation, applicability of the EBP model to clinical practice issues for diverse patient care situations in the institution, ease and user-friendliness of the EBP model, and the ability of the EBP model to provide direction for all phases of the EBP process" (Gawlinski, 2008, p. 294).

An evaluation tool should be used by every member of the group to evaluate each model. A structured evaluation process is a methodology that allows less experienced team members to learn about EBP models and to actively participate in the evaluation process. **Figure 6.9** includes evaluation criteria to appraise the appropriateness of EBP models for an organization. Administration of a prescriptive evaluation tool provides a structure to systematically compare and contrast model ratings, strengths, weaknesses, and potential adoption by an institution. Linking the EBP model to clinical practice is clear

**Figure 6-9 Evaluation Criteria for Organizational EBP Model Selection**

*Purpose of Project:* Evaluation and selection of an EBP model for the Nursing Department of Ronald Reagan University of California, Los Angeles Medical Center.

1. Search, retrieve, and synthesize the current literature describing EBP models to help staff nurses use EBP concepts and apply them in clinical practice.
2. Recommend the adoption of a specific EBP model for use by UCLA nurses.

**Scoring system: 0 = not present; +1 = present/yes; +2 = highly present/yes**

Criteria	Models						
1. Concepts and organization of model are clear and concise							
2. Diagrammatic representation of the model allows quick assimilation of concepts and organizes the steps in the process of EBP changes							
3. The model is comprehensive from beginning stages through implementation and evaluation of outcomes							
4. The model is easy to use when concepts are applied to direct EBP changes and practice issues in clinical settings							
5. The model is general and can be applied to various populations of patients, EBP projects, and department initiatives and programs							
6. The model can be easily applied to typical practice issues as evidenced with practice scenario or in published literature							
<b>Total</b>							
	<b>Comments</b>						
EBP Model:	Strengths: Weaknesses:						
EBP Model:	Strengths: Weaknesses:						
EBP Model:	Strengths: Weaknesses:						
EBP Model:	Strengths: Weaknesses:						
EBP Model:	Strengths: Weaknesses:						

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when the clinical practice scenario is used. The final evaluation and selection of an EBP model should consider:

1. The fit and feasibility of the model with the vision, mission, and values of the organization
2. The educational background, leadership, experience, and practice needs of the clinical staff
3. The presence of any partnerships or collaborations for the EBP initiative, such as a health sciences center or university
4. The culture and environment of the organization
5. The accessibility and availability of credible sources of knowledge (Newhouse, Dearholt, Poe, Pugh, & White, 2007)

## SUMMARY

Commitment at every level of the organization is required if evidence-based practice is to work and be sustained. Placing EBP as a central mission can hasten the integration of EBP as the format for administrative and clinical decision making. Adopting an EBP model assists organizations to better focus limited fiscal and personnel resources on critical EBP activities. This chapter describes processes for defining EBP and selecting a model aligned with organizational mission, vision, and values that fit a practice setting to guide EBP efforts. An effective EBP and clinical research program engages clinicians, improves patients' lives and forges a professional legacy for all who participate.

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# Determining Resources Available for EBP

*Janet Houser*

## INTRODUCTION

Much like any organizational investment, successful implementation of evidence-based practice (EBP) requires that a variety of resources be available if success is to be expected. Just as a clinical program can not be expected to provide high quality services to patients without supplies, materials, and staff, evidence-based practice requires the commitment of support both in the beginning and over time. While a few highly motivated individuals may be able to start an EBP system, it will falter over time without organizational recognition of the time, effort, and resources that are needed for sustainability.

## ASSESSING ORGANIZATIONAL READINESS

An assessment of organizational readiness and resources is helpful at any time in identifying drivers and barriers to evidence-based practice, but it is an essential exercise in the beginning stages. This requires an understanding of the kinds of support that must be in place for EPB success. The resources that are needed range from the symbolic (e.g., an explicit commitment of resources from the executive staff) to the concrete (e.g., access to research databases).

### Conducting a Force Field Analysis

A key aspect of organizational readiness is a culture of awareness of the need for EBP. A sincere appreciation of the importance of evidence-based practices on the part of clinical and medical staff makes the implementation of EBP a much easier proposition. When the culture of the organization is such that clinicians are encouraged to question existing practices and to search for evidence as a basis for solving problems, then a shift to EBP may require

only logistical support, such as time for staff to meet, access to databases, and educational programs. On the other hand, when the organization focuses on the status quo and clinicians have personal ownership of the current status of practice, then EBP implementation is much more difficult.

A force field analysis can be a helpful tool for assessing organizational readiness. If the culture is not one supportive of questioning practices, substantial change is required in both organizational systems and individual attitudes. Systems change is most successful if it is a conscious, strategic effort rather than one left to chance (Bozak, 2003). There are a variety of reactions to change, but rarely is the response one of indifference. Indeed, the less visible the cultural resistance to EBP, the more resistance there may be to change. A force field analysis provides a structure for understanding individual behaviors during times of change and can suggest ways to improve the chance of successful change through an awareness of the forces that may be at work.

Often considered the father of change theory, Kurt Lewin (1975) believed that all change is the result of certain forces in an environment. He identified two dynamic, yet opposing, forces that may impact the change process. Driving forces move individuals toward change, and restraining forces hold them back. When restraining forces exceed driving ones, then change is unlikely to occur without a great deal of effort. The reverse is also true—when driving forces exceed their restraining counterparts, then organizational change becomes more likely. The act of conducting a force field analysis helps determine what the organizational drivers and restraints may be. A strategy for cultural change, then, is focused on maximizing driving forces while systematically minimizing restraints.

Driving forces are often external in nature and are more frequently objective. Restraining forces are commonly internal in nature and may be covert and subjective. To conduct a force field analysis, a group leader solicits quantitative and qualitative feedback about the forces that are pushing toward change and those holding the organization back. Often, the driving forces are objective (“Evidence-based practices are more efficient”) and restraining forces are subjective (“Dislike reading research”). An example of a typical force field analysis appears in **Table 7-1**.

A planned change process can be facilitated with a force field analysis. Organizational strategies are designed to enhance drivers (e.g., encouraging a culture of questioning the status quo) and reduce restraining factors (e.g., making database searches convenient to access). When the drivers exceed the restraining forces, the organization can expect a change to happen.

Explicitly identifying the forces at work can help build a culture that is supportive of evidence-based practice, providing the single most important resource for EBP efforts—individual commitment.

**Table 7-1 A Typical Force Field Analysis for a National Shift to the Metric System**

<b>A National Shift to the Metric System</b>	
<b>Driving Forces</b>	<b>Restraining Forces</b>
International compliance	Long-term history in the US
Fewer errors	Would need lots of retraining
Easier to calculate in base ten	Hard to convert from English to metric
Already used in science and medicine	Didn't learn it in school
Cost-effective globally	More time-consuming to learn

### **Assessing Current Organizational Resources**

An organization may be ready for evidence-based practice, but without the concrete resources required for finding, appraising, and aggregating evidence, efforts will falter. A formal appraisal of organizational resources that are available for EBP is an appropriate way to determine where additional investment of time, materials, or money may be needed. A checklist of organizational resources appears in Appendix D.

An important point, however, is that organizational readiness is a process, not a point-in-time event. If evidence-based practice implementation is delayed until all of the resources that are needed are available—then it is unlikely to ever begin at all. It is the rare organization that has everything it needs to initiate and sustain an EBP system. Although there is no doubt that having ample resources will expedite the process, systems can begin to introduce small, focused initiatives that will demonstrate the value of EBP (Melnyk, 2005). Initial efforts that may be small but that solve real problems for clinicians, are a good way to start EBP when resources are in short supply. These smaller projects may be doable without major investment of resources, and yet will demonstrate the viability and usefulness of EBP systems, generating enthusiasm and supporting a cultural shift.

At some point, however, EBP systems will falter if they are dependent upon the generous nature of volunteers working “on a shoestring.” Small projects may translate into value for individuals, but it takes many small projects to add up to major shifts in organizational outcomes. At some point—likely within the first few years of an EBP effort—organizational resources must be applied for sustainability.

## THE CRITICAL FOUNDATION: LEADERSHIP SUPPORT

It is an organizational reality that cultural shift is possible only when leadership is committed to it. Evidence-based practice is no exception. In order for resources to be allocated to any systems change, leadership must be committed to both symbolic and concrete support. A cultural shift to evidence as a basis for practice can only occur if leaders plan for and provide the organizational structures necessary for its maintenance (Newhouse, 2007).

The leadership team must value evidence as a basis for practices throughout the organization—including those in management, operations, staff development, human resources, and other organizational departments. Clinical processes are often the primary focus of EBP, when in fact evidence is helpful in virtually every aspect of an organization's operations. Questioning practices in all aspects of the organization and its processes is one way that leadership can both model and visibly support a cultural shift to EBP.

Leadership can provide support for EBP by recognizing its potential for supporting the strategic direction of the organization. Making evidence-based practice a prominent part of the strategic plan demonstrates the role that evidence plays in the organization's vision of its future and its focus on quality. The Chief Executive Officer makes a valuable contribution to EBP efforts by vocalizing support for the work done by EBP councils and by valuing their output.

The contribution of clinical leadership cannot be underestimated. The Chief Operating Officer, Chief Nursing Officer, and other key clinical leaders reflect their commitment in the emphasis placed on EBP by developing a supportive infrastructure. The value of evidence-based practices should be evident in the orientation of new employees, job descriptions, performance expectations, and the allocation of staff time. Concrete resources for EBP must be incorporated into operating budgets. Support from leadership of the medical staff is also critical for success.

Both formal and informal leaders are important in supporting EBP. Informal leaders often possess a great deal of influence in motivating cultural shift. These informal "opinion leaders" in the organization should be identified early and their support cultivated. They can provide a critical source of support for changing staff attitudes and communicating organizational goals.

The leaders (both formal and informal) involved in the EBP effort need to exhibit skill sets that will support a culture of evidence-based practice. These essential skills include:

- Competency in understanding practice
- Enthusiasm for searching for evidence
- Ability to communicate a global and future vision
- Capacity to communicate the positive outcomes of the new practice environment (MacRobert, 2008)

Without critical leadership commitment, EBP efforts will weaken and fade. The value of leadership commitment to cultural change and resource allocation cannot be underestimated. One of the ways leadership demonstrates its commitment is by providing the educational resources that are necessary to achieve a viable organizational focus on finding, appraising, and using evidence.

## **STAFF DEVELOPMENT RESOURCES**

Resources for staff development are critical to the success of EBP efforts. Staff development and continuing education are needed to initiate and sustain EBP and to “move” evidence-based practice to all organizational employees. McKenna (2004) found that fewer than 20% of the professional clinical staff in a primary care setting had formal education in the conduct of research. When it has been experienced by clinicians, education about the conduct and appraisal of research as evidence for practice may be a remote memory, and may not have been valued when it was presented. It cannot be assumed that all clinical professionals are adept at critically reviewing research studies and applying results appropriately to practice.

It is impossible to overestimate the importance of upfront EBP education. The hospital-wide education campaign serves a dual role in initiating and sustaining evidence-based practice systems. Initial education generates excitement for EBP and equips staff with the skills and tools they need to participate effectively in evaluating evidence, leading research teams, and informing clinical practice (The Advisory Board Company, 2005).

This initial education, though, need not be lengthy and detailed for every clinician. The most effective EBP education is customized to the staff's varying levels of familiarity with EBP. It may be inadvisable to attempt to educate every staff member on all of the intricacies of building evidence-based practices at once. Some staff may need only a brief introduction to the importance of EBP and the processes available for asking and answering clinical questions. Others—particularly those who will be participating in formal organizational EBP councils, committees, or teams—may need in-depth education in research appraisal, study design, and the development of practice guidelines.

Staff development resources are undoubtedly needed at the initiation of an EBP system. Plans for continuing education access and refresher courses should also be part of the strategic staff development plan. Staff turnover, varying levels of usage, and new developments all require an ongoing commitment to education of staff in EBP processes and the dissemination of practice guidelines (Baumbusch, 2008).

The content of staff development may vary, but all staff need some basic level of understanding of evidence-based practice. **Table 7-2** depicts the



**Table 7-2 Educational Resources Needed for EBP**

<b>Resource</b>	<b>Use/Application</b>
Research mentors	Guide and mentor novice researchers in design and implementation
Books and other print resources	Reference on units and in meetings
Evaluation tools	Support efficiency in critical appraisal of evidence
Journal clubs	Practice evaluating research studies in a group setting
Workshops	In-depth training of EBP council and staff mentors; overview/introduction for all staff
Advanced Practitioners (DPT, PharmD, APRN)	Consulting in application of evidence in practice
Fellowships	Opportunity to pursue research projects under a mentor's guidance and with workload release

common educational resources that are needed for clinicians to achieve proficiency in evidence-based practice. The goal is to equip staff at all levels with the skills they need to lead or participate in projects to bring evidence to bedside practice.

Staff development requires resources for staff educator time to plan, develop, and carry out educational programs. Clinicians must be provided the time to attend and/or participate in educational sessions. Resources are needed for educational supplies, resource books and other reference materials. Space must be provided for meetings and educational sessions.

However, while staff development is a critical part of EBP implementation, knowledge is necessary, but not sufficient, for successful EBP implementation. The organization must supply the resources that are needed by staff to find, appraise, and use evidence.

## **REAL-TIME RESOURCES**

A variety of resources must be available to staff on an ongoing, demand basis in order to assure a timely answer to a clinical question. When clinicians are presented with a clinical problem they cannot solve with accessible evidence, research shows they most often turn to colleagues—who may not be the best source of current evidence. In a study by Spenceley (2008), more than 80% of nurses identified their most common source of evidence as “colleagues.” Given

this organizational reality, a critical resource is the establishment of a group of EBP specialists that are available, credible, and approachable. Some of the key EBP specialists that can support clinical staff in their search for evidence may include individuals with expertise in:

- Developing research questions
- Designing focused research studies
- Statistical analysis and measurement
- Appraising research and assigning levels of evidence
- Developing practice guidelines based on evidence
- Writing grants for research studies

Clerical support is also necessary for an efficient evidence-based practice system. Documentation of efforts, maintaining records of meetings and council proceedings, and developing communication materials are all needed for evidence-based practice systems.

In particular, people who are available to help with devising database search strategies, carrying out literature searches, and accessing the full text of research studies are invaluable in evidence-based practice.

## **RESOURCES FOR SEARCHING FOR EVIDENCE**

Technological advances in the capacity to search databases of information are the primary reason evidence-based practice has become practical. While research has been contributing knowledge to the clinical professions for hundreds of years, it has been only recently that the bedside clinician has had access to it. Technology and accompanying access to the Internet and to databases is an essential resource for EBP.

That is not to say that extensive investment is necessary for EBP practice. Leasures (2008) found that 83% of the clinicians in her study had access to the Internet. Most of them used Pubmed to find evidence, and nearly half had access to Medline. The Cumulative Index to Allied Health Literature (CINHAL) was also available to one in five of the respondents. These findings are promising for the future use of evidence-based practices.

Still, in the same study, 34% did not know if they had access to evidence-based technology. One in five reported that they read no hardcopy journals, and none reported routinely reading research journals. A focus on availability and accessibility are nearly equal in importance.

For example, Leasure (2008) suggested using desktop icons linked to literature search engines on point-of-care computers. Clinical staff were trained in how to create folders and bookmarks for favorite sites. This application of technology makes evidence available at the time it's needed—when clinical problems are found at the bedside.

Training in the use of electronic indexes and other sources of evidence is imperative, but creative methods of providing training can be employed. Desktop tutorials delivered conveniently on unit computers help guide a search process. Folders can be created for tools for appraising literature, such as checklists, decision algorithms, and worksheets.

### **Informatics Specialists**

Informatics Specialists (ISs) are essential resources for building and sustaining an EBP program. Specifically, Nursing Informatics Specialists (NISs) contribute a unique perspective that combines their clinical background with information technology to fully integrate the practice initiatives or changes into the electronic medical record (EMR) and other automated systems. Development of evidence-based practice is dependent upon the capture, retrieval, and analysis of clinical data in electronic patient care records. Data elements must be standardized to ensure the quality and reliability of information. The impact of having integrated informatics specialists involved in the clinical work groups engaged in EBP includes the ability to facilitate computerization and organization of information for more efficient data collection and analysis. The IS personnel are usually involved with the following aspects of an EBP initiative:

- Determining correct diagnostic, intervention, and outcome terms using standardized language
- Developing preprinted orders that reflect new standards of practice
- Creating electronic evidence-based nursing care plans
- Building documentation elements to capture data based on evidence-based protocols
- Creating reports to monitor impact of EBP

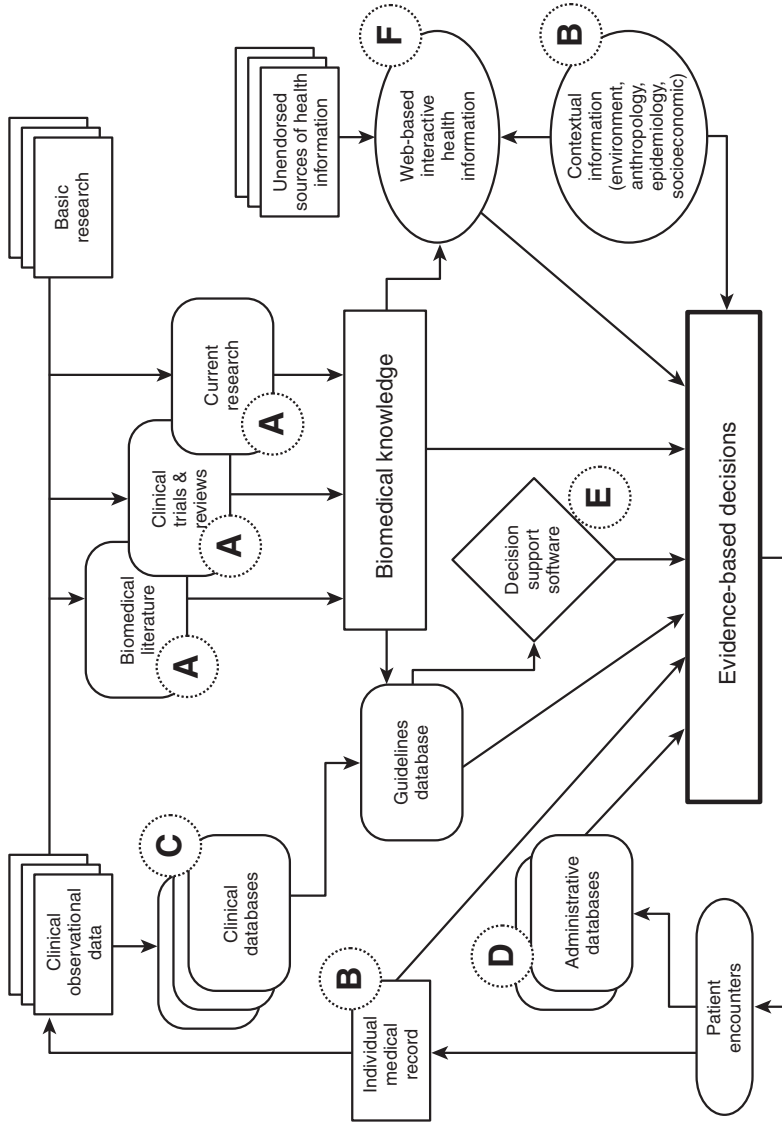
While the role of the NIS is becoming more conventional in healthcare settings, not all organizations will have an NIS available to work with clinical staff. In this situation, an organizational plan and budget for an NIS consultant will be an important aspect of the overall EBP program.

### **Other Uses of Technology**

Other uses of technology in EBP include the collection and analysis of performance data. Contemporary healthcare information systems can capture, transform, and maintain data in a variety of ways as raw data, processed data, or knowledge. Rodriques (2000) identified six major application areas that provide support for evidence-based practice:

- Reference databases
- Contextual and case-specific information
- Clinical data repositories

Figure 7-1 A Schematic of the Integration of EBP with Technology



Reprinted with permission from Rodrigues, R. (2000). Information systems: The key to evidence-based health practice. *Bulletin of the World Health Organization*, 78(11), 1344–1351.

- Administrative data repositories
- Decision support software
- Internet-based interactive health information

The integration of technology with evidence-based practice is not a simple process. Multiple sources of evidence are retrieved from a variety of sources. Results are sometimes conflicting, or difficult to sort through. The complexity of the integration of technology with EBP is reflected in the model (Figure 7-1) described in the Bulletin of the World Health Organization (2000).

Other sources of evidence for practice include quality data, utilization management, financial indicators, and other internal and external data. Access to the electronic health record enables the retrieval of clinical data for studies and to gauge the effect of evidence-based changes. Benchmark data can be a powerful motivator; understanding internal performance can help guide the search for evidence.

Research studies require data management and statistical expertise. These may be provided internally or may require access to an external consultant. Statistical analysis software is also required to generate evidence for practice. Common statistical analysis packages are listed in Table 7-3.

**Table 7-3 Software for Statistical Analysis**

Software	Useful for...
Excel	Basic descriptive statistics and graphic displays Has an “add in” which, when manually enabled, adds a basic statistical analysis set to the toolbar
SPSS	Statistical Package for the Social Sciences, one of the most common statistical analysis software packages Will accomplish the most common statistical analyses and some that are more specialized
Mini-Tab	Simple-to-use software that conducts most common statistical analyses Also useful for quality analysis
Stata	Integrated statistical package that provides tools for data analysis, data management, and graphics Includes both fundamental and advanced statistical analytic capability Particularly strong choice when working with large data sets
SAS	Statistical Analysis Software is a powerful and adaptable package that will do most common and specialized statistical analysis Requires manually writing instructions for each test, so does require a high level of statistical skill

**Figure 7-2 Appraisal Support Tool in the Form of a Bookmark**

<p><b>Credibility:</b></p> <ul style="list-style-type: none"> <li>• Author credentials</li> <li>• Credibility of publication</li> <li>• No evidence of conflict of interest</li> </ul> <p><b>Validity:</b></p> <ul style="list-style-type: none"> <li>• Research question has PICO elements</li> <li>• Clear design matches the question</li> <li>• Extraneous variables controlled</li> <li>• Instrument reliability and validity (&gt;.7)</li> <li>• Sampling procedure (key: randomness)</li> <li>• Sample size/power (&gt;80%)</li> <li>• Results reported clearly</li> <li>• Evidence of significance (<math>p &lt; .05</math>)</li> </ul> <p><b>Generalizability:</b></p> <ul style="list-style-type: none"> <li>• Sample represents similar patients</li> <li>• Setting is similar</li> </ul> <p><b>Elements of a research question:</b></p> <p>P: Population I: Intervention or trait of Interest C: Comparison group or time O: Outcome of interest</p> <p><b>Evaluating a research opportunity:</b></p> <p>F: Feasible I: Interesting N: Novel E: Ethical R: Relevant</p> <p><b>Linking Evidence to Practice:</b></p> <p>Level I: Required Level II: Recommended Level III: Recommended Level IV: Optional</p>	<p><b>Level I Evidence:</b> Multiple studies reported as meta-analysis, systematic review, or integrative review, or an evidence-based practice guideline</p> <p>Well designed studies with large sample sizes and/or large effect sizes</p> <p><b>Level II Evidence:</b> Evidence from at least one well designed randomized trial</p> <p>Single randomized trials with small samples</p> <p>Single studies with small to moderate effect sizes</p> <p><b>Level III Evidence:</b> <i>IIIA:</i> Evidence from well designed trials without randomization</p> <p><i>IIIB:</i> Evidence from studies of intact groups</p> <p>Ex post facto and causal-comparative studies</p> <p>Case/Control or cohort studies</p> <p><i>IIIC:</i> Evidence obtained from time series with and without an intervention</p> <p>Single experimental or quasi-experimental studies with dramatic effect sizes</p> <p><b>Level IV Evidence:</b> Evidence from expert panels</p> <p>Systematic reviews of descriptive studies</p> <p>Case series and uncontrolled studies</p>
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## PRACTICAL RESOURCES

Technology creates tremendous opportunity for communicating the importance of EBP and linking resources to the clinical staff. However, there are other, practical resources that can provide support. Development of a resource manual is helpful to guide individual practitioners in developing and answering research questions.

Craig Hospital in Denver, Colorado developed a bookmark that staff could use as a quick reference when reading research. One side depicted the Hospital's chosen evidence-leveling model, and the other a summary checklist for a research appraisal and a guide for writing research questions. **Figure 7-2** depicts the bookmark, which is widely distributed to staff with periodic in-services in its use.

A primary resource needed for EBP is money. The elements of EBP must appear in the budget and be adequate to cover the costs associated with organizing EBP systems, managing resource teams, and converting evidence into guidance for practice. **Box 7-1** reflects some of the primary budget items associated with EBP.

## SUMMARY

A variety of resources are needed for EBP. A systematic assessment of the current status can help identify the need for additional resource allocation. Leadership commitment is a critical resource, as is staff time and education. Technological tools are essential, and availability and accessibility are critical. Investing in EBP is required to assure that evidence-based practice is a sustainable process generating organizational returns.

### Box 7-1 Common Budget Items for EBP Support

1. Consultation with EBP expert
2. Designation of a facilitator and making EBP a portion of this person's workload
3. Staff development time for education
4. Developing or importing prepackaged EBP educational programs
5. Staff time to identify and articulate EBP questions
6. Staff time to develop procedures and practice guidelines based on evidence
7. Data retrieval and analysis
8. Data dissemination
9. Materials and supplies for communicating results
10. Books and reference materials (Haas, 2008)

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# Systems for Identifying EBP Opportunities

*Connie Pardee and Jeanine Rundquist*

## INTRODUCTION

Clinical practice has historically been based on experiential evidence, which is often assumed to be the best evidence. This evidence—the clinicians' expertise based on real-life experience—is only one component of the evidence-based process. EBP requires systems that fuse the bedside clinician experience with opportunities to access the research basis for practice. This requires that the organization have a systematic approach to finding and addressing evidence-based questions.

According to Schulman (2008), successful EBP programs require three components: a sturdy foundation, supportive structures, and fine details. A sturdy foundation, built with financial, material, and human resources, promotes a culture of inquiry in which clinicians are encouraged to ask questions. Experts or EBP champions assist staff in articulating questions that can be answered with evidence. They are also in a position to mentor staff through project implementation. Supportive structures include systems in place to ensure that change is successful through processes that allow fast resolution of questions. The fine details include the involvement of bedside clinicians in the many opportunities available within the organization to discuss current evidence, evaluate the evidence, and incorporate it into their practice.

These identified systems within an organization may enhance the identification of evidence-based practice opportunities. Communication linkages with organizational departments provide opportunities for clinicians to learn more about evidence-based practice and incorporate it into their daily practice. Whether the organization is university based, a community hospital, or a small rural organization, all have opportunities to enhance a culture of inquiry.

## COMMUNICATION PROCESSES WITHIN THE ORGANIZATION

A beginning step is to determine existing communication processes within the organization. Is the organizational communication style oral or written? Do employees receive information via word of mouth or through formal methods such as staff meetings, newsletters, or email? An understanding of how clinicians communicate with other clinicians and receive information is a crucial first step in the assessment of EBP opportunities within the organization.

Incorporating EBP into existing communication channels is vital to the success of EBP implementation. Assess the flow of verbal communication. Does it flow up, down, and horizontal, or is it hierarchical? Can a group of clinicians make a clinical practice decision, or do they need to seek permission? Crow (2006) identified multichannel, multidirectional communication as key to the integration of EBP within an organization. Leaders should take advantage of every opportunity to discuss EBP through written and verbal communication wherever clinicians are gathered. Leaders model EBP communication by seeking solutions based on evidence and guiding clinicians in that process. It is often easier to supply a solution; the real challenge lies in encouraging clinicians to *search* for answers and communicate the evidence.

If there is formal written communication, such as a newsletter, information about EBP may be provided in the form of questions, education about the selected organizational EBP model, and current projects. Consider a column devoted to clinical questions where the EBP champion identifies whether the question requires an evidence-based review and mentors the clinician in that process. A suggestion box in the clinical departments provides the basis for the newsletter. Timely inclusion of the ideas in the suggestion box is essential to engage clinicians in the process. An inexpensive method of capturing ideas is to provide sticky notes in the clinical areas so clinicians can quickly write down ideas, questions, or issues (Granger, 2008). For enculturation of EBP into practice, the method of communication must be easy and convenient, with timely responses to make the program successful.

Organizations with access to the Internet, an intranet, or email can utilize these communication methods for EBP. Resources for EBP are readily available on the Internet. Internal resources can be developed, and links to EBP Internet resources can be provided on an intranet. Starting an EBP blog, creating a Facebook page, or starting intranet discussion groups provide mechanisms for discussion of ideas, particularly for Generation X and Y individuals, who are tuned in to technological communication. Access to email allows clinicians the ease of submitting ideas, questions, or issues to managers, peers, or committees responsible for EBP.

## LINKAGES WITH OTHER ORGANIZATIONAL DEPARTMENTS AND GROUPS

EBP opportunities can be found within a multitude of organizational groups. The *board of directors* has oversight for the organization's success, including developing the strategic plan, mission, and vision and assuring fiscal stewardship. The use of evidence in decision-making at the board level sets the organizational tone for EBP, which is then modeled for senior leadership. Cost/benefit analysis of interventions and evaluation of patient outcomes are other examples of evidence utilized by the board for assessment and planning for the organization. Having clinicians on the board of directors provides a bidirectional link to incorporating evidence into clinical practice. Through the work of the board of directors, the culture is set for EBP in the organization.

The *executive team* is charged with implementing the strategic plan, identifying measurable outcomes and evaluating the objectives within the plan. The EBP process is modeled by the executive team through decision making based on evidence. EBP opportunities arise from the strategic plan implementation, as each objective within the plan is evaluated via the current evidence available, and action plans are established.

Groups responsible for oversight of *quality improvement* or program evaluation may provide numerous opportunities for EBP. These groups can vary in size, composition, and function. Small organizations may have an overall organizational quality plan with a few individuals responsible for oversight. Larger organizations may have unit-based quality committees that integrate with overall organizational quality plans.

Data gathered in quality initiatives is evidence on which to base decisions for patient care and program evaluation. Quality data identifies excellent patient outcomes or areas for improvement in programs and patient care services. Quality data that demonstrates less than desired patient outcomes leads the way for evidence-based practice changes, while data reflecting excellence should be disseminated to other clinicians for replication. Outcome data is

### Box 8-1 Case in Point: Board Use of Evidence

The board of directors identified a need in the community for additional maternal child services and planned to open a new unit to meet that need. The decision to make the change was based on evidence from a community survey. The change in services provided an ideal opportunity to develop evidence-based policies and procedures to open the new maternal child unit. The board identified a leader for the project and asked for monthly updates to the planning.

### Box 8-2 Case in Point: Executive Use of Evidence

The executive team conducted a cost/benefit analysis for opening the new maternal child unit. This analysis included the cost of remodeling an existing unit, hiring a new director, and clinicians to staff the unit. This evidence was supplied to the board of directors along with an estimate of numbers of births per month and demographic characteristics of the population that would be served.

vital for evaluation of existing programs and services. Without outcome data, it is impossible to determine whether there is value in these programs. Assumptions are easily made that outcomes are as desired, but without measurement those assumptions may be erroneous.

*Medical staff* generally have oversight for patient management in organizations, directly through the Medical Director position or indirectly through policy and procedure approval. This often involves creating and implementing practice standards, protocols, or decision algorithms. Assurance that guides for practices are based on evidence is one method of implementing EBP. References are easily included with practice standards. For practice guidelines without references, the opportunity exists to conduct the review of the evidence to ensure current evidence is the basis for such guides.

*Departmental groups* have oversight for monitoring patient outcomes for their specialty area. This is an example of evidence generated from the unit itself. Evidence is necessary to justify departmental budgets and clinical decision making. Successful patient outcomes provide a solid defense for budget planning or evidence to support additional resources to improve patient outcomes. The clinicians may intuitively know what is needed for patient care; however, without the evidence to support that intuition, their voices may go unheard. Clinicians can easily identify EBP opportunities within their department or service line by asking themselves several questions:

- What are the expected outcomes for this group of patients?
- Why did unexpected patient outcomes occur?

### Box 8-3 Case in Point: Clinical Applications

A high rate of healthcare-associated pressure ulcers was noted in the ICU. Staff queried how they could reduce the ulcers and conducted a systematic literature review. They found evidence regarding turning patients, mattresses, and skin assessments. The staff wrote a protocol based on the evidence found in the literature. The changes were implemented through staff education, and data were collected with the 6-month outcome of a reduction in healthcare-associated pressure ulcers.

**Box 8-4 Case in Point: Using Evidence to Guide Care**

A physician wrote an order for administration of an intravenous medication to a patient on a medical-surgical unit. The registered nurse and pharmacist determined the order was not in line with the standards of practice for this particular unit. The policy required that patients on the medication be continuously monitored due to the high occurrence of cardiac rhythm changes found in multiple research studies. This unit did not have cardiac monitoring capabilities. The clinicians discussed the order with the ordering physician and referred to the evidence cited in the policy. The physician changed the order to a different delivery method.

- How could we have prevented any poor outcomes from happening?
- What evidence is there to support the efficacy of existing practice?
- What evidence is there to support a change in practice?

*Safety management* groups are responsible for risk management and patient and staff safety. Safety includes facilities planning, fire evacuation plans, and emergency response. In smaller organizations, this monitoring may be included in the overall quality improvement or department-specific monitoring. EBP opportunities exist within the framework of safety management. Some examples of safety-related questions are:

- What unit layout provides the most efficient work flow?
- What evacuation plan provides the best opportunity for safe evacuation?
- Does a rapid response team improve patient outcomes and prevent cardiac or respiratory arrest?

**Box 8-5 Case in Point: Using Evidence to Guide Process Change**

The local community hospital was noticing an increase in cardiac resuscitation (Code Blue) calls, and the intensive care unit was always full. An interdisciplinary team met to discuss the issue. One clinician volunteered to conduct a literature review. The literature review revealed that many organizations were implementing rapid response teams and finding a decrease in Code Blue calls and transfers to intensive care. The team evaluated the literature and determined their organization could implement a similar team, utilizing existing staff with Advanced Cardiac Life Support certification. The team gathered the data on numbers of Code Blue calls for the past year, transfers to intensive care, and census for each unit. This data served as a baseline measurement to determine whether the implementation of the rapid response team would demonstrate a decrease in Code Blue calls and transfers to intensive care.

*Policy committees* must ensure that standards for patient care are based on evidence. EBP opportunities exist with reviews of the literature to query whether organizational policy and practice is in alignment with current evidence. If policy and practice is not aligned with current evidence, the clinicians weigh the evidence with clinical expertise and patient preferences to determine whether a change in practice is necessary. Clinicians evaluate the quality of the evidence and the study's similarity to their patient population to determine the appropriateness for their setting.

Each policy should have a list of the evidence used to support it, and the reference list should be documented in the policy manual, including publication dates. This assists in monitoring whether the evidence is current or a new literature review is needed.

Structures in the organization for shared decision making or *shared governance* are likely candidates for oversight of EBP initiatives. Shared governance provides the framework for making EBP the rule rather than the exception (Crow, 2006). Shared governance structures, such as councils or committees, have oversight for their unit. Clinicians use these structures for sharing ideas and determining the need for evidence. As practice changes are suggested, the shared governance group determines whether that practice change is in alignment with the current available evidence.

*Research-focused groups* within the organization may be conducting literature reviews, completing research projects, or collaborating with academic institutions. An internal research group can assist in determining whether a clinical question is an evidence-based project or a research study. If internal resources are available to conduct research, this group may conduct the study or collaborate with an academic institution to conduct the study. Collaboration

### Box 8-6 Voices from the Field

The best thing about our nursing policy committee is that the long-term assumptions, 'the way we've always done it,' are questioned. As new nurses come into the field, they are trained to not accept the way it is and challenge those assumptions. Completing the literature review ensures patient care is appropriately delivered based on evidence and not old assumptions.

Chris Hogan RN BSN CRRN

Some clinical practices stay the same unless we specifically review the policy and realize it is outdated or not in compliance with the evidence. This prompts us to review not only our policies but our products and determine the best product choices for quality patient care.

Laurie Wing RN BSN

between researchers and clinicians can produce a multitude of clinically relevant EBP or research ideas. Determining the prioritization of such ideas is done through a literature review. The answer to the clinician's question may be in the existing literature, and if so, an EBP project will assist in determining the fit of the evidence in the organization. If no answer is found in the literature, the research group may assist in designing a research study.

An *ethics committee* is charged with reviewing ethical issues in the organization. This organizational group can identify EBP opportunities through review of clinical situations or ethical concerns from patients, families, or staff. The ethics committee utilizes evidence to support decision making while honoring patient preferences.

### **Evaluating the Linkages in Your Organization**

Identifying existing organizational structures that utilize evidence is a helpful step in implementing EBP. After identifying the structures, ask these questions:

- Are there bedside clinicians on these committees or groups? If not, why not?
- What leadership support exists within each structure?
- Are clinicians expected to be involved in organizational groups?
- What communication processes exist to get questions from the group to the EBP council?
- What feedback loops exist to get answers back to the organizational group?

Within each existing structure there is likely a champion for EBP. These champions are the "go to" people. Capitalize on their enthusiasm and expertise to develop EBP opportunities into studies. If there are no champions identified, provide ongoing education on EBP to develop a champion group. Advanced practice nurses are a strong resource and are likely to be knowledgeable about EBP and research.

## **PROCESSES FOR HELPING CLINICIANS RECOGNIZE OPPORTUNITIES**

Clinicians are involved in many daily patient care processes that present opportunities for integrating evidence into practice. Capitalizing on these routine activities eases the transition to EBP without an abrupt culture shift. Leadership is critical to role model this change in behavior by addressing EBP at every opportunity. Seeking evidence to incorporate into practice begins with developing a culture of inquiry. Clinicians are encouraged to question the rationale and validity of the care they provide. Any place where clinicians are



gathered discussing patient care provides an opportunity to introduce EBP. Regular staff meetings can include a time for clinical questions to be raised and the model for EBP to be discussed. An EBP expert may be a special guest at some meetings to facilitate discussion of how to seek evidence to address clinical questions.

Initially education on EBP can be presented at staff meetings; eventually, staff will raise clinical questions as they feel more comfortable with the EBP process. A performance “dashboard” provides a forum for making the data available for review with follow-up discussion to further introduce evidence into practice. The dashboard contains data relevant to quality issues, patient and staff satisfaction, and unit performance.

Daily patient rounds are key opportunities for incorporating evidence into practice. This process often includes interdisciplinary discussion of care that broadens the evidence to several disciplines.

Another opportunity to integrate evidence into practice relates to problems on the unit. The question should always be asked whether the problem is a process issue or something that can be resolved by reviewing the evidence. Clinicians need to be aware that evidence is available to support changes in processes or professional practice, as well as patient care issues.

Opportunities for evidence-based practice abound; putting multiple identification processes in place magnifies those opportunities for clinicians to better articulate them.

### **Framing the EBP Question**

Once an issue has been identified that can potentially be addressed with evidence, a formal EBP question is constructed. The elements of an EBP question include:

**P**—What is the population that is of interest? The population may be defined by age groups, diagnoses, or type of unit. A narrow population limits generalizability; a broadly defined one results in generic recommendations. Determining the population appropriately requires thoughtful consideration of who will benefit most from the evidence that is generated.

**I**—What is the intervention that is being tested? The intervention or phenomenon of interest should be clearly articulated.

**C**—What is the intervention being tested against? A comparison is necessary to answer the question, “So what?” If no comparison is made, then the only conclusion that can be drawn is that an intervention is better than nothing. The most common comparison is standard or existing practice, but in some cases, two alternative treatments may be the comparison under study.

**O**—What is the outcome of interest? The key issue is the expected outcome. What is expected to improve, change, or differ as a result of the intervention?

**Box 8-7 Case in Point: Collaborating with Research Groups**

Given a recent increase in flu in the area, the clinicians in the post-anesthesia care unit were questioning whether to allow families in the recovery room. The group asked the research committee to assist them with a research study. The research committee provided support beginning with a literature review, and epidemiological data from the Centers for Disease Control. The research department helped the clinicians get in touch with the local health department to determine the recommended protocol. The clinicians found an answer to their question using the available public health data and research results. The team was able to implement a change in practice to resolve the issue without conducting a research study.

The clinician should be guided in constructing the question using the PICO format. Writing PICO questions is slow and awkward at first, but becomes an easier task with practice. Writing several PICO questions in a team setting can help clinicians gain comfort with articulating the evidence-based practice question in a way that focuses the inquiry appropriately.

**Processes for Classifying EBP Questions**

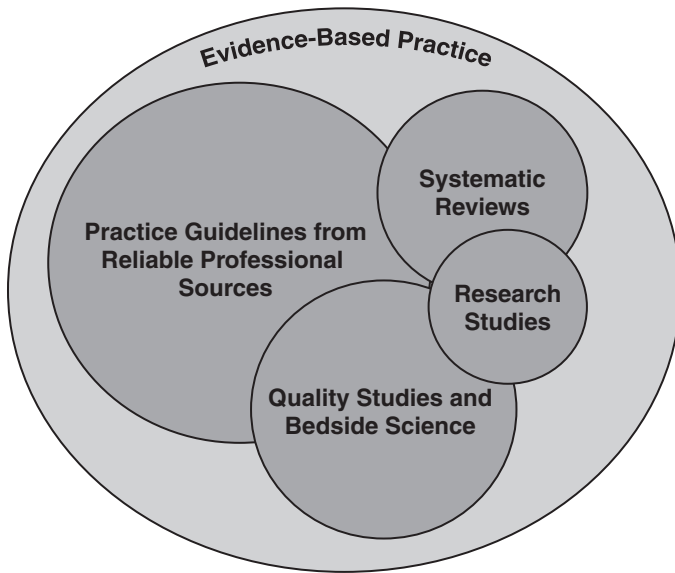
Once an appropriate EBP question has been written, then the method for answering the question should be identified. Questions can be answered in several ways, depending upon the state of existing knowledge about the problem. Not every EBP question requires a research study. In fact, an efficient EBP council will design and implement research studies only when a gap exists

**Box 8-8 Case in Point: Writing a PICO Question**

A circulating nurse in the neurosurgical suite notices that patients who are positioned using egg-crate padding seem to get more pressure ulcers on their chins than those who are positioned on gel padding. An EBP mentor walks the clinician through identifying the key elements of a question:

- P—Population: Adults undergoing laminectomy
- I—Intervention: Gel padding for the chin
- C—Comparison: Egg crate padding for the chin
- O—Outcome: Pressure ulcers on the chin

The final question is: in adult patients undergoing laminectomy, do patients who have chin padding with gel material have fewer pressure ulcers than those who have egg crate padding?

**Figure 8-1** Classifications of the Means to Answer EBP Questions

in the current knowledge, and no evidence is available. Otherwise—existing practice guidelines, quality studies, and systematic reviews can all provide valid answers to evidence-based practice questions.

The efficient organization relies on existing research and evidence whenever possible. **Figure 8-1** shows the ways that evidence-based practice questions can be answered in an organizational setting. When a question has been articulated, it should be classified as to the likely manner in which it will most efficiently be answered. This process usually follows an initial search for literature, research, or an existing practice guideline.

Clinical questions can be classified into four broad categories:

- Questions addressed with an existing *practice guideline*—If an existing guideline exists, then the EBP council needs to determine if it is of acceptable quality, and if the population addressed by the guideline is similar to that of the organization.
- Questions addressed by a *quality study*—Process issues and questions that are of primarily internal interest may be more appropriate for quality studies.

- Questions addressed by *systematic review*—A systematic review is appropriate when a great deal of research literature already exists that can answer the question.
- Questions that will become *research studies*—Research studies should only be conducted when none of the previous three study types is possible. Research is labor-intensive and difficult to do, and should be reserved for those questions that cannot be answered any other way.

It may be that a question can be classified into more than one type of study. For example, a clinician wonders why patients with a specific surgical procedure have a higher incidence of falls postoperatively. The answer might come from systematic literature review combined with quality data on falls for the organization and an internal research study to determine the efficacy of an intervention. An example of a decision algorithm appears in **Figure 8-2**. The algorithm directs the clinician to the resources within the organization for answering an evidence-based question.

## TOOLS FOR PRIORITIZING EBP OPPORTUNITIES

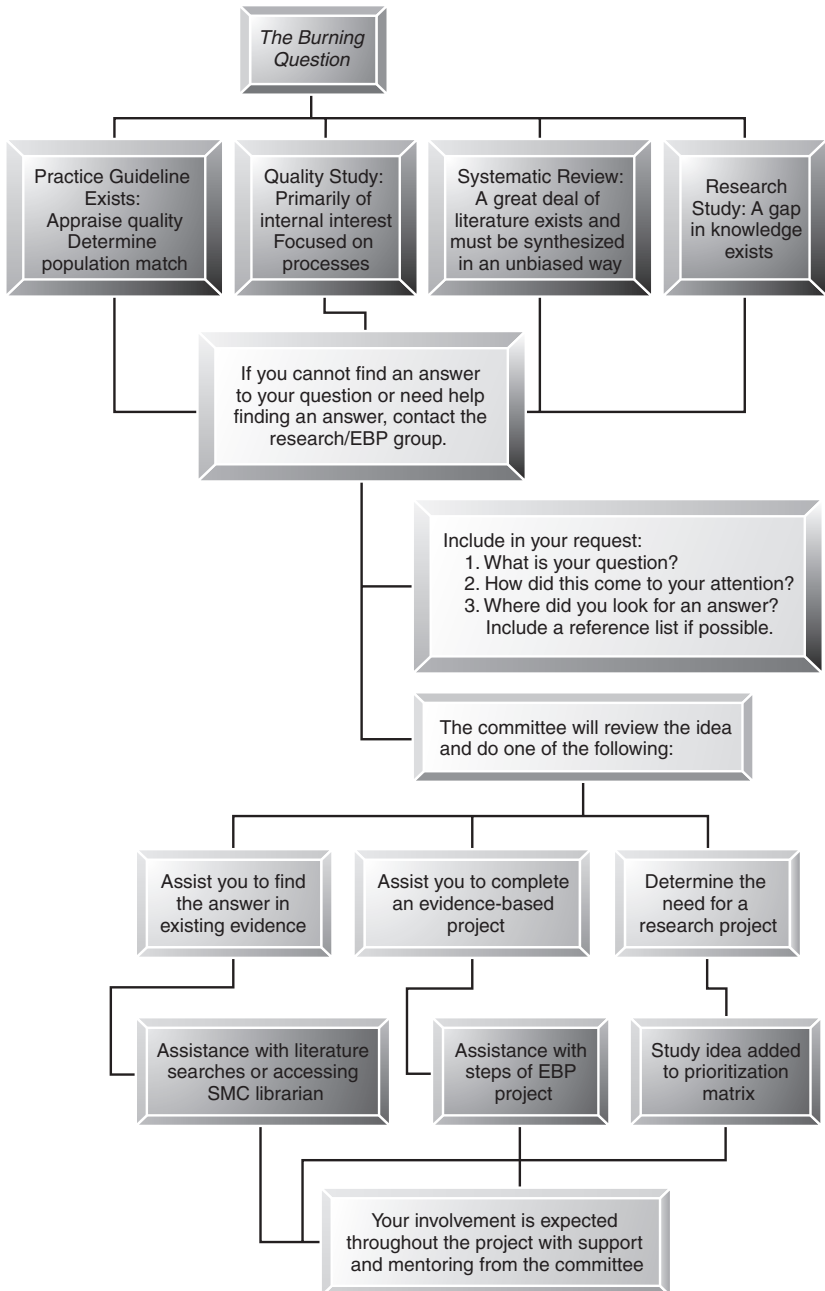
Developing a culture of inquiry rapidly leads to an inundation of ideas for EBP. Since leadership wants to encourage clinician interest and involvement in EBP, a system needs to be developed to prioritize ideas, so that clinicians do not become frustrated with delayed action on their questions. Prioritization focuses on issues that are of the most benefit to the highest priority group of patients.

Some of the elements considered when prioritizing EBP questions include:

- Cost/benefit of the intervention
- Feasibility of the study
- Novelty of the question
- Ethical considerations in answering the question
- Urgency of the problem
- Clinical relevance
- Breadth of applicability
- Regulatory or accreditation considerations
- Organizational strategy or goal
- Mission basis

Each organization should determine the elements that it should consider when prioritizing EBP opportunities. An example of a classification and prioritization matrix appears in Appendix E.

**Figure 8-2 Evidence-Based Question Decision Algorithm**



**Box 8-9 Voices from the Field: Prioritizing EBP Opportunities**

The earliest incarnation of the Spinal Cord Injury (SCI) Nursing Advice Line originally developed because patients called Craig Hospital looking for information on complications after injury and initial rehabilitation. At first, the patients would call anyone at Craig looking for someone to help them, so, to handle this call volume, the Outpatient Clinic nurses absorbed these phone calls in between seeing their patients. Because the nurses were focused on the patients they were caring for in the clinic, telephone calls were sent to a voicemail and retrieved sporadically, depending on the daily caseload. This created a situation where the patients were not getting information in a timely manner, sometimes waiting several hours or days to be able to talk with a nurse. On more than one occasion, a patient who needed emergency help postponed seeking medical attention because they were waiting for a nurse to call them back.

Also, the information provided over the phone was not standardized because the nurses responsible for answering the calls had varying levels of education, experience, and specialties. There was no system in place to ensure that all callers were getting the same information because each nurse was drawing on personal knowledge and experience rather than hospital- and physician-approved information and evidence-based practice.

Initially, my job was three-fold: develop a system to standardize the information provided over the phone; develop a documentation system that connects seamlessly to Craig Hospital's already existing electronic documentation system; and develop a system to monitor call volume and client needs for future program development.

To address standardizing information provided, I did research on available off-the-shelf products for telephone nursing triage and quickly found that there were no products available that consistently addressed the unique complications associated with spinal cord injury. The most widely used nurse triage products failed to address many complications including autonomic dysreflexia, one of the most common and deadly complications after spinal cord injury that presents as a simple headache in most people. It quickly became apparent that, to address the needs of our patient population, we would need to develop our own system.

This endeavor resulted in more than 150 telephone triage guidelines, which were carefully reviewed and updated based on best practice, clinical practice guidelines, and evidence-based research for the spinal cord injury population and their complications. These guidelines were developed with support, input, and approval from hospital psychiatrists, consultants, hospital administration, and internal clinical experts.

The overall result of the SCI Advice Line is a comprehensive disease management and case management system that eases and facilitates access to appropriate level of care, thereby promoting access to health services that are appropriate to the patient's condition and empowers the patient/family/caregiver to assume

*(continues)*

responsibility for self-care and health management. Because of our in-depth understanding of the injury and by applying evidence-based practice guidelines, we focus on prevention of illness and exacerbation of existing chronic conditions through education. This encourages patient self-management and adherence to health regimens and improves patient satisfaction and clinical outcomes. Most importantly, by basing our decision trees and algorithms on evidence, our patients are getting up-to-date information that is reliable and proven to help, regardless of the individual nurse's education level or experience.

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Craig Hospital

## SUMMARY

There are potential evidence-based questions everywhere in a contemporary healthcare organization. Linkages to organizational groups and departments provide a steady stream of EBP opportunity. Communication and data review are critical elements of these linkages. Developing a culture of inquiry will lead to clinician comfort with identifying evidence-based problems. Once a problem has been identified, it should be classified as to whether it can be addressed with a practice guideline, quality study, systematic review, or research study. A final step for an EBP Council is to apply a set of criteria in order to prioritize its work, and to communicate realistic deadlines to the clinicians who generate questions.

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# Systems for Defining and Appraising Evidence

*M. Eric Rodgers, Allison Elaine Williams, and Kathleen S. Oman*

## INTRODUCTION

Health care has become increasingly complex. As a result, care providers and healthcare organizations have turned to evidence-based practice (EBP) and clinical guidelines to assist in determining the best care approach or treatment option. Just as it is not practical for clinicians to make complex clinical decisions without assistance, it is not practical for clinicians or organizations to make judgments about complex evidence and recommendations unassisted. Valid judgments regarding clinical evidence can save lives, alleviate pain, decrease length of stay, and decrease costs. Thus, evidence-based practice and clinical practice guidelines exist to assist with clinical practice decisions.

Having a systematic approach to critically grade the quality or level of the evidence and strength of practice recommendations is vital to making appropriate judgments regarding clinical decisions. There are a number of different leveling models and grading systems that can be used to grade research studies, and while some are more complex, at a minimum they all evaluate study design and quality, population studied, methodology, sample size, and benefit versus risk. The challenge to the clinician is that different organizations utilize different leveling systems to grade the quality of evidence and strength of recommendations, and these systems may produce different rating outcomes. Depending on which system is used, the same evidence could be graded as II, B, 2, or strong. Not only are these different grades confusing, but they can also result in erroneous clinical judgments and failure to appropriately change practice. Adding to the confusion are the values placed on evidence, and, more specifically, on sources of evidence. Traditionally, the discipline of medicine places a higher value on randomized clinical trials and less on qualitative and nonexperimental studies. Medicine has also historically been more focused



on illness and cure than on the cost of treatment. In contrast, nursing values a broader range of research in addition to clinical trials. This recognition is likely related to the fact that the modern profession of nursing has been substantially influenced by qualitative research studies and methodologies. Additionally, nurses' holistic views and role as patient advocates enable them to be more inclined to consider cost in selecting treatment options. As costs have become of increasing concern to healthcare administrators, a broader view of evidence-based practice that incorporates costs has become popular in healthcare and professional practice organizations.

## REVIEW OF LEVELING MODELS

An exhaustive review of all the models in use is beyond the scope of this chapter; therefore, a brief review of some common models will be presented. It is important to understand that one model is not necessarily better than another. Individual or organizational values determine which model is the best fit for the organization.

The most frequently reported leveling models in the literature are derived from the medical model. There are many forms of this leveling model. Four examples are depicted in **Tables 9-1 through 9-4**. The variety of the models and the lack of standardization are evident and become problematic when comparing the strength of clinical practice guidelines.

**Table 9-1 Four Tiered Levels of Evidence**

<b>Level Ia</b>	Evidence obtained from meta-analysis or systematic review of randomized controlled trials
<b>Level Ib</b>	Evidence obtained from at least one randomized controlled trial
<b>Level IIa</b>	Evidence obtained from at least one well-designed controlled study without randomization
<b>Level IIb</b>	Evidence obtained from at least one other type of well-designed quasi-experimental study
<b>Level III</b>	Evidence obtained from well-designed nonexperimental descriptive studies, such as comparative studies, correlation studies, and case studies
<b>Level IV</b>	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

Reprinted from RANO (2005). Prevention of falls and fall injuries in the older adult: Nursing best practice guidelines. Retrieved on November 17, 2009, from <http://www.NGC.org>.

**Table 9-2 Seven Tiered Levels of Evidence**

<b>Level I</b>	Evidence obtained from a systematic review or meta-analysis of relevant randomized controlled trials (RCTs), or evidence-based clinical practice guidelines based on systematic reviews of RCTs.
<b>Level II</b>	Evidence obtained from at least one well-designed RCT
<b>Level III</b>	Evidence obtained from well-designed controlled trials without randomization (quasi-experimental studies)
<b>Level IV</b>	Evidence obtained from well-designed case-control and cohort studies (non-experimental studies)
<b>Level V</b>	Evidence obtained from systematic reviews of descriptive and qualitative studies
<b>Level VI</b>	Evidence obtained from a single descriptive study or qualitative study
<b>Level VII</b>	Evidence obtained from expert opinion, regulatory opinions, and/or reports of expert committees

Adapted from Melnyk, B. M., & Fineout-Overholt, E. (2005).

In using these models, evidence is categorized from the highest form of evidence (Level I or A) to the lowest (Level III, IV, VII, or M). High quality meta-analyses represent the best source of evidence and are given the highest rating in most leveling models. A meta-analysis of randomized controlled trials (RCTs) combines the samples of many studies into a larger study, and the result (a summary statistic) is more precise than the findings from the individual studies (Cliska, Collum, & Marks, 2008). It is important for the clinician to note that a higher level of evidence may be needed when making clinical treatment decisions that involve a high-risk benefit ratio but lower forms of evidence may be just as useful when the treatment or clinical decision carries less risk.

Many organizations have adapted these types of hierarchical models to assist their clinicians in decision making. The nursing profession has struggled with the medical model leveling framework as it does not account for patient preference, clinician experiences, local cultural influences, or cost, and devalues the richness of qualitative studies in identifying potential solutions. Nursing, at both the national organizational and local institutional levels, has frequently modified medical model leveling systems to broaden the criteria to encompass a more complete clinical picture.

**Table 9-3 Three Tiered Levels of Evidence**

<b>ONS Levels of Evidence</b>			
<b>ONS Level</b>	<b>Level of Evidence Subcategory</b>	<b>Evidence Source</b>	<b>Strength of Evidence</b>
<i><b>Research-Based Evidence</b></i>			
I	1	Meta-analysis or systematic reviews of multiple well designed, randomized, controlled clinical trials	
	2	Well-controlled, randomized clinical trials with adequate sample size	
	3	Well-designed trials without randomization (single group pre/post, cohort, time series studies)	
II	4	Well-conducted, systematic review of nonexperimental design studies	
	5	Well-conducted case-control studies	
	6	Poorly controlled (flawed randomized studies) or uncontrolled studies (correlational descriptive studies)	
	7	Conflicting evidence or meta-analysis showing a trend that did not reach significance National Institutes of Health Consensus Report Published practice guidelines, for example by professional organizations, healthcare organizations, or federal agencies	
<i><b>Non-research-Based Evidence</b></i>			
III	8	Qualitative designs Case studies, opinions of expert authorities, agencies or committees	Weakest

Reprinted with permission: Oncology Nurses Society.

**Table 9-4 Grading Levels of Evidence**

<b>Level A</b>	Meta-analysis of multiple controlled studies or meta-synthesis of qualitative studies with results that consistently support a specific action, intervention, or treatment
<b>Level B</b>	Well-designed controlled studies, both randomized and nonrandomized, with results that consistently support a specific action, intervention, or treatment
<b>Level C</b>	Qualitative studies, descriptive or correlational studies, integrative reviews, systematic reviews, or randomized controlled trials with inconsistent results
<b>Level D</b>	Peer-reviewed professional organizational standards, with clinical studies to support recommendations
<b>Level E</b>	Theory-based evidence from expert opinion or multiple case reports
<b>Level M</b>	Manufacturers' recommendations only

Reprinted with permission. Armola, R. R., *et al.* (2009).

Another set of models are used to grade clinical practice guidelines. In addition to evaluating the process used to develop the guideline, these models assess the quality, quantity, and consistency of research findings used in the development of the guideline. Quality is associated with the research design, as previously mentioned. The degree of control and manipulation of variables is another aspect of quality. Quantity is assessed by examining how many studies addressed the same research question, how many subjects were included in each study (sample size), and assessing the consistency of the findings. Consistency is the extent to which the studies had similar designs, research question, and findings (Guyatt, Rennie, Meade, & Cook, 2008).

The AGREE instrument was developed specifically to assess the quality of clinical practice guidelines. A group of researchers from 13 countries, including the United States, developed the Appraisal of Guidelines Research and Evaluation (AGREE) tool in 1998. Their objective was to provide a coordinated international approach to the appraisal of clinical practice guidelines. Guidelines are evaluated against 23 criteria grouped into 6 quality domains: (1) scope and purpose, (2) stakeholder involvement, (3) rigor of development, (4) clarity and presentation, (5) applicability, and (6) editorial independence. The comprehensiveness of the questions across 6 domains is a reflection of the interprofessional representation involved. The criteria and their corresponding domains are presented in **Table 9-5**.

**Table 9-5 AGREE Tool Questions**

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**SCOPE AND PURPOSE**

1. The overall objective(s) of the guideline is (are) specifically described.
2. The clinical question(s) covered by the guideline is (are) specifically described.
3. The patients to whom the guideline is meant to apply are specifically described.

**STAKEHOLDER INVOLVEMENT**

4. The guideline development group includes individuals from all relevant professional groups.
5. The patients' views and preferences have been sought.
6. The target users of the guideline are clearly defined.
7. The guideline has been piloted among target users.

**RIGOR OF DEVELOPMENT**

8. Systematic methods were used to search for evidence.
9. The criteria for selecting evidence are clearly described.
10. The methods used for formulating the recommendations are clearly described.
11. The health benefits, side-effects, and risks have been considered in formulating recommendations.
12. There is an explicit link between the recommendations and the supporting evidence.
13. The guideline has been externally reviewed by experts prior to its publication.
14. A procedure for updating the guideline is provided.

**CLARITY AND PRESENTATION**

15. The recommendations are specific and unambiguous.
16. The different options for management of the condition are clearly presented.
17. The key recommendations are easily identifiable.
18. The guideline is supported by tools for application.

**APPLICATION**

19. The potential organizational barriers in applying the recommendations have been discussed.
20. The possible cost implications of applying the recommendations have been considered.
21. The guideline presents key review criteria for monitoring and/or audit purposes.

**EDITORIAL INDEPENDENCE**

22. The guideline is editorially independent from the funding body.
  23. Conflicts of interest of guideline development members have been recorded.
- 

Adapted from the AGREE Collaboration (2001).

Each question is rated on a Likert scale from 4: Strongly Agree, 3: Agree, 2: Disagree, 1: Strongly Disagree (AGREE Collaboration, 2001). This model promotes transparency in guideline development and includes cost, patient preferences, and the organization in the analysis. Each reviewer is asked to provide a judgment to (1) strongly recommend, (2) recommend with proviso, or (3) not recommend the guideline. AGREE utilizes a numerical score of 60% or better for strongly recommends, 30–60% for recommend with proviso, and less than 30% as would not recommend (AGREE Collaboration, 2001). Having a numerical scoring system makes it easier to objectively compare and evaluate the evidence and determine a recommendation.

Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) is another useful leveling system developed by the GRADE working group. The GRADE working group is an international, interprofessional

**Table 9-6 GRADE System: Quality of Evidence and Definitions**

<b>Grade</b>	<b>Definition</b>
High	Further research is very unlikely to change our confidence in the estimate of effect.
Moderate	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the effect.
Low	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very Low	Any estimate of effect is very uncertain.
<b>Factors in deciding on confidence in estimates of benefits, risks, burden, and costs</b>	
Factors that may increase the quality of evidence	Large magnitude of effect All plausible confounding would reduce a demonstrated effect Dose response gradient
Factors that may decrease the quality of evidence	Poor quality of planning and implementation of the randomized controlled trial Inconsistency of results Sparse evidence Indirectness of evidence Reporting/publication bias

Adapted from Guyatt, *et al.* (2006).

collaborative that set out to develop a uniform rating system in order to resolve the confusion among the different leveling systems. The GRADE system is used to rate evidence and practice recommendations. The GRADE system classifies recommendations as either strong or weak, and the quality of evidence as high, moderate, low, and very low (Guyatt, 2006).

Consistent with most leveling models, randomized controlled trials receive the top rating of “high.” Studies may be downgraded if they are poorly designed, have inconsistent results, or indirectness of evidence. In this system indirectness refers to the study population not exactly matching the clinical area of interest. For example, a clinician may have a clinical interest in the evidence related to management of diabetes mellitus, while the studies being reviewed address testing to determine a diagnosis of diabetes. Thus, while the studies examine diabetes mellitus, they do not directly match the clinical application of interest.

The GRADE and AGREE models recognize the increasing reliance on clinical practice guidelines in today’s healthcare market, the importance of having solid evidence supporting the guidelines, and the need for transparency to facilitate acceptance and adoption of practice decisions. They explicitly consider factors more aligned with the principles of evidence-based practice and are interprofessional in their approach.

## FINDING THE EVIDENCE

Once a clinician has selected a model for leveling or evaluating the evidence, he or she must locate the evidence. The first place to start is with a literature search done individually or with the aid of a health sciences librarian. Sometimes a literature search begins with a single article about the clinical question being considered. Often one can find resources through the article’s reference list or by locating more recent publications that have cited the article. The Internet is also an excellent place to begin searching professional Web sites and local healthcare community sites for systematic and integrative reviews. Refer to Chapter 11 for a more detailed discussion about searching for the evidence.

An *integrative review* or an *integrative research review* is a narrative summary of qualitative and quantitative studies, theoretical, and methodological literature addressing the same topic. Integrative reviews are the broadest type of research reviews. One of the advantages to this review type is the ability to combine data from different types of research designs, as well as empirical literature. This variety has the potential to broaden the depth of the conclusions and provides a multidimensional perspective that enables clinicians to include patient experiences and perspectives in addition to quantifiable clinical

outcomes as they develop new practice guidelines (Whittemore, 2005). Specialty nursing organizations often provide integrative reviews on their Web sites. Integrative reviews are also published in peer-reviewed journals and may be included in systematic reviews.

*Systematic reviews* combine the evidence from multiple quantitative studies addressing a specific clinical problem and are the focus of evidence-based practice initiatives (e.g., Cochrane Collaboration). Systematic reviews may include the statistical methods of a meta-analysis or may be a narrative analysis similar to an integrative review (Whittemore, 2005).

A *meta-analysis* takes the mathematical results of homogenous primary studies and combines them in a new statistical analysis to generate an overall summary statistic (Greenhalgh, 2006). The summary statistic may be a mean effect size or a relative risk or odds ratio. The summary statistic is intended to definitively “answer” the clinical question at hand because the combination of each primary study’s numerical results increases the power of the meta-analytic study by increasing the sample size (i.e., the sample size of study 1, study 2, study 3, etc. is added together). Thus, the effectiveness of an intervention (that is, the “answer”) is more likely to be identified in the larger sample, and the probability of a Type II error is decreased. However, good meta-analyses are difficult to conduct and one must critically evaluate these studies. Studies seldom have exactly the same focus, are often inconsistent in design and study quality, and can also examine different populations. In evaluating the quality of a meta-analysis, it is important to ascertain if the analysis includes studies that are sufficiently similar to be combined (Burns & Grove, 2005). Consistency in the criteria for study inclusion/exclusion, method of analysis, and model used for leveling and reaching recommendations, as well as identification of bias, are all vital to consider in evaluating the quality of a meta-analysis. Perhaps the most valuable outcome of a meta-analysis is the more precise estimation of the population effect size for the topic under study. This estimate is helpful in determining not only whether a treatment or procedure will be useful to patients, but also whether the treatment or procedure will have enough clinical impact to justify the cost.

Systematic reviews and meta-analyses synthesize the results of quantitative studies. A *meta-synthesis* is a systematic review of primary qualitative study findings. Other names for a meta-synthesis include *meta-study*, *meta-ethnography*, *qualitative meta-analysis*, or *aggregated analysis* (Kent & Fineout-Overholt, 2008). The purpose of meta-synthesis is to “develop overarching or more conclusive ways of thinking about phenomena” (Ciliska *et al.*, 2008, p. 54). A meta-synthesis follows a similar methodical process as quantitative systematic reviews (Kent & Fineout-Overholt, 2008). **Table 9-7** depicts some of the characteristics of the various types of reviews.



**Table 9-7 Characteristics of Review and Synthesis Articles**

<b>Type of Review</b>	<b>Definition</b>	<b>Purpose</b>
Integrative review	A summary of the literature on a specific concept or topic whereby the research is summarized, analyzed, and overall conclusions are drawn	To review methods, theories, and/or empirical studies around a particular topic
Systematic review	A summary of research with related or identical hypotheses using an objective and rigorous approach	To summarize evidence regarding a specific clinical problem
Meta-analysis	A summary of research using statistical techniques to transform findings of studies with related or identical hypotheses into a common metric, and calculating the overall effect, the magnitude of effect, and subsample effects	To estimate the effect of interventions or relationships
Meta-synthesis	A summary of research combining the findings from multiple qualitative studies	To inform research or practice by summarizing processes or experiences

Adapted from Whittmore (2005).

Integrative reviews, systematic reviews, and meta-analyses/syntheses are excellent sources of evidence that summarize and combine research findings in a systematic manner. The Cochrane Collaboration is a very useful resource for locating systematic reviews. The Cochrane collection contains systematic literature reviews related to a specific clinical issue and provides comprehensive summaries of the findings as well as recommendations for clinical practice. These summaries are available through the Cochrane Library. Another well-known source for systematic reviews is the Joanna Briggs Institute (JBI). Like the Cochrane Collaboration, JBI provides a summary of published research studies related to a specific clinical problem. Additionally, JBI produces a “Best Practices” guideline following the summary that can be used in a clinical setting. Joanna Briggs has sites of clinical interest across the globe, including virtual sites within large healthcare organizations in the United States. For a

fee, individuals can access JBI systematic reviews and best practice guidelines through the JBI Web site (<http://www.joannabriggs.edu.au/about/home.php>.)

Meta-analyses and syntheses, systematic reviews, and integrative reviews are extremely useful to clinicians evaluating evidence and developing policy. These methods allow for comparison and summation of multiple studies, interventions, and outcome effectiveness, as well as significantly improving generalizability across clinical settings. They are valuable tools and can be thought of as “one stop shopping.” In one place, clinical experts have culled the evidence, evaluated it, and provided recommendations about the appropriateness of the findings to change practice.

Not all sources of evidence come directly from the research literature. Today most clinical specialty and professional organizations have developed practice standards that are available on their Web sites. Local consortiums and conferences provide additional opportunities to gather evidence on community standards of care. Local chapters of specialty organizations sometimes post local studies conducted on a particular clinical topic of interest, especially if they provided funding to the project. Also, ethnic organizations frequently fund culture-specific studies that are posted on their Web sites or are available upon request. These studies may be helpful to ensure culturally competent care when establishing best practices and clinical guidelines. Another often overlooked source for evidence is an organization’s quality improvement or quality assurance department. These departments typically track and trend a host of internal clinical improvement projects. Projects can range from infection rates, ventilator assisted pneumonia, staffing effectiveness, and hand-off communication. It may be surprising to learn what evidence other units or departments within a facility have available.

In any system used to grade or level the quality of evidence and strength of recommendations, there is the continual desire for clarity and simplicity. Every institution and every patient population is unique; as such there will always be the need for judgment in selecting a grading system. While there is no right or wrong system, the leveling system that best meets the values of the organization will provide the best framework to make clinically sound decisions.

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# Designing Studies for EBP

*Cathy J. Thompson*

## INTRODUCTION

Occasionally the advanced clinician will not find pre-appraised literature to quickly answer their clinical questions. In such instances, the clinician may have to conduct a systematic review of the literature and/or design unit-based studies to answer clinical questions. This chapter will discuss the process of conducting systematic reviews and designing studies for evidence-based practice (EBP).

## CONDUCTING SYSTEMATIC REVIEWS

A systematic review (SR) is a synopsis of original research studies about a specified topic that has been assembled in a methodical, rigorous, and reproducible manner. Systematic reviews are customarily conducted on questions of therapy; however, SRs on cost-effectiveness, diagnostic or prognostic questions, genetic associations, and policy making have been reported (Moher, Liberati, Tetzlaff, & Altman, 2009). Traditional reviews (often called state-of-the-science, review of the literature, or literature reviews) are different from systematic reviews; while they may provide good background information on a subject, the intent is usually *not* to provide a comprehensive and critical perspective of the topic area. Traditional literature reviews are not necessarily comprehensive or meticulous in the formation of questions or in the acquisition or evaluation of the literature; nor do they attempt to decrease potential biases (Ciliska, Cullum, & Marks, 2008). **Table 10-1** outlines the differences between systematic reviews and traditional literature reviews. As described in Chapter 9, there are a variety of different levels of research reviews: (1) integrative, (2) systematic (3) meta-analysis, and

(4) meta-synthesis or meta-study. All systematic reviews adhere to precise methodologies.

### Process for Conducting a Systematic Review

Conducting a well-built systematic review comes down to adhering to a rigorous and transparent process in the assembly and appraisal of the literature to come up with a “final” or definitive answer to a clinical question. While it is possible to conduct an SR independently, the process can be easier with a dedicated team. There are many resources available to provide the detailed explanations of how to conduct a systematic review (e.g., see Ciliska *et al.*, 2008; Engberg, 2008; Farquhar & Vail, 2006; Greenhalgh, 2006; Higgins & Green, 2008; Margalot & Chung, 2007). The PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) provides guidelines to enhance the clarity of reporting the process and results of SRs and meta-analyses

**Table 10-1 Differences Between Systematic Reviews and Traditional Literature Reviews**

<b>Feature</b>	<b>Systematic Review (SR)</b>	<b>Traditional Literature Review</b>
Purpose	Thorough examination of an issue (broad or narrow)	Highlights of an issue (broad)
Production process	Standards exist and the process or protocol used is described in report Potential bias decreased	No standards Process not described Potential bias likely
Search	As exhaustive as possible	Often limited
Inclusion	Original study reports, previous SRs, information from large databases	Original study reports, theoretical literature, essay, opinion articles
Selection	Often uses a quality appraisal filter (quality criteria applied)	Quality filter not applied
Statistical analysis	Homogenous quantitative study results may be pooled (meta-analysis)	None performed
Report	Inclusive of all qualifying studies	Often selective based on purpose
Evidence ranking	Level of evidence determined for each study	Evidence not ranked

(Moher *et al.*, 2009). General steps for conducting a systematic review are outlined as the four Ps: Prepare, Proceed, Publicize, and Practice.

### **Prepare**

Before conducting an SR, preparatory work is needed to make the process smoother. First, be sure that the work is important to the institution. Aligning work with institutional priorities is a powerful strategy to engender

## **Box 10-1 Steps to Conducting a Systematic Review (SR)**

### **Prepare**

- Assess the environment to identify aims for conducting the SR.
- Identify and engage stakeholders.
- Identify support personnel and institutional resources.
- Document all decisions, searches, rationales for constancy, efficiency, and audit.
- Develop a review protocol (include inclusion, exclusion, and quality criteria).
- Develop a data abstraction form or evidence table.

### **Proceed**

- Ask a searchable, answerable question (i.e., in a structured format, such as PICO[T], PITOR).
- Design a sensitive and specific search strategy.
- Acquire the evidence.
- Keep evidence relevant to the question.
- Develop a flow diagram to track eligible studies, reasons for exclusion.
- Appraise the evidence (validation with at least two independent reviewers is suggested).
- Assess studies for heterogeneity.
- Analyze results (SR/IRR or meta-analysis).
- Synthesize the evidence.

### **Publicize**

- Disseminate the SR (to administration, unit manager, and consider local, regional, national forums).

### **Practice**

- Decide on next steps (change practice, maintain status quo, conduct pilot study).
- Collect baseline data before changing practice or conducting a pilot study.
- Compare baseline data with outcome data after practice change/pilot study is implemented.

Acronym definitions—IRR: Integrative research review; PICO(T): Patient/Population, Intervention, Comparison, Outcome of interest (Time frame, if applicable); PITOR: Population, Intervention, Timing, Outcomes, Responsibility

support for a project. Second, identify and engage the major stakeholders who would be affected by the results of the SR. Consider including one or more stakeholders on the team conducting the SR to facilitate “buy-in” if practice changes need to be made based on the SR. Third, identify support people and institutional resources to assist in the conduct of the SR. Support personnel may include advanced practice nurses (e.g., CNS or NP), clinical scientists/researchers, the clinical research/EBP council, and/or a statistician. Institutional resources may include an on-site library, computer access, statistical software, or funding sources. Fourth, it is important that every decision related to the SR work be documented, along with the rationale. The quality of the SR is evaluated by the transparency and completeness of the methods, which is why it is important to document every decision. What search terms were used? How many results were obtained with specific strategies? What were the inclusion and exclusion criteria? What were the reasons for exclusion of studies identified in the search? What was the process for the review? What was the level of agreement between the abstractors? How were disagreements handled? Maintaining a data log will enable tracking of specific decisions, provide consistency to the research decisions and data entries, and decrease unnecessary work, especially for issues that may come up again.

Lastly, develop tools to aid the work process. Develop the review protocol and data abstraction form. The review protocol outlines the research methodology—what steps will the team go through to conduct the study? Detail the inclusion and exclusion (i.e., eligibility) criteria. Most quantitative SRs use only randomized controlled trials (RCTs); some include observational studies. A meta-synthesis would include only qualitative research. Applying eligibility criteria will help identify which articles to appraise and which to discard. Adhering to the review protocol will help decrease potential biases from being introduced into the study. The data abstraction tool can be in any format that helps the reviewers collect relevant data about the study. An evidence table is a popular format—one that can be useful for accumulating information about multiple studies on the same topic. The data abstraction tool may contain information about the population, research design, sample size, sampling method, data collection methods, research instruments, results, and comments, about each study included in the review. A sample evidence table is found in **Table 10-2**.

### *Proceed*

Once initial preparations are completed, the team is ready to proceed to conduct the SR. As noted in earlier chapters, begin by identifying the clinical question and design a search strategy that is most likely to uncover the articles you

**Table 10-2 Sample Evidence Table Format for a Systematic Review**

<b>Author/year</b>			
<b>Research Design</b>			
<b>Level of Evidence</b>			
<b>Study Aim/ Purpose</b>			
<b>Population Studied/Sample Size/Criteria/ Power</b>			
<b>Methods (study eligibility criteria; participants; interventions; sources of data [lab results; pt self-report; etc.]); Study Appraisal/ Synthesis Methods</b>			
<b>Primary Outcome Measures and Results (RR, OR, NNT, LR, CI, p value, etc.)</b>			
<b>Author Conclusions/ Implications of Key Findings</b>			
<b>Strengths/ Limitations</b>			
<b>Funding Source</b>			
<b>Comments</b>			

need to conduct your review. Asking a question that is searchable and answerable will increase the chances of finding relevant studies. The use of a structured format such as PICO(T) or PITOR may ensure that important search terms are included in the search strategy. PICO(T) and PITOR are mnemonics that stand for the following: PICO(T)—Patient/Population, Intervention,



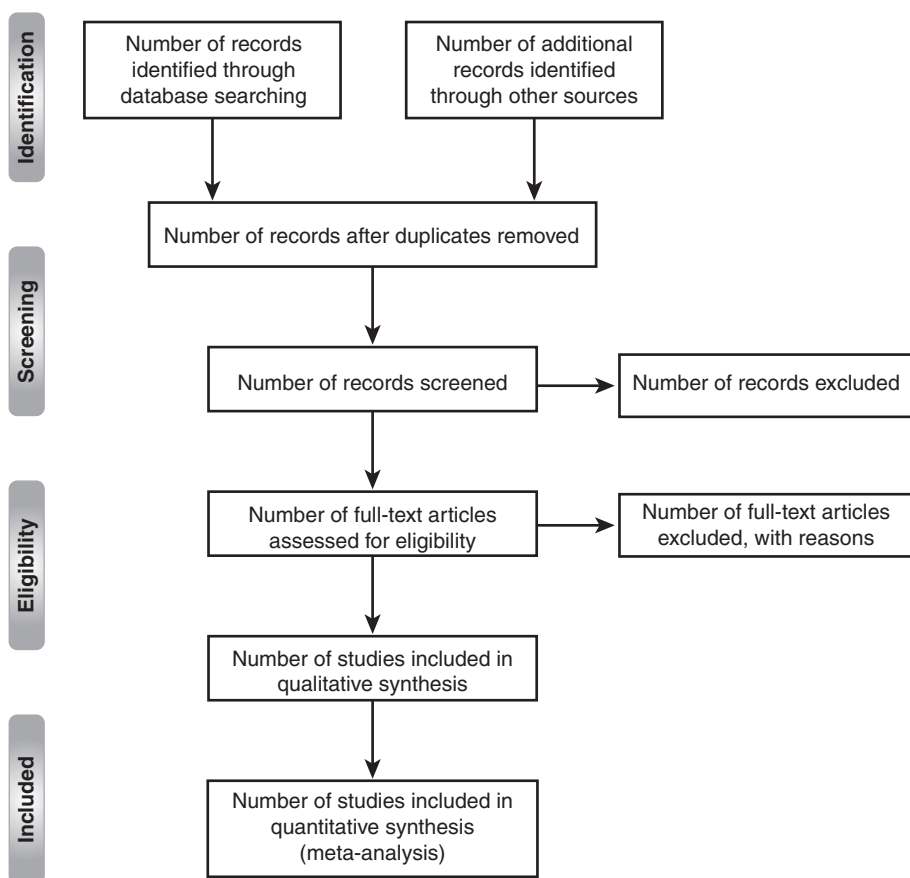
Comparison, Outcome of interest (Time frame, if applicable) (DiCenso, Guyatt, & Ciliska, 2005); PITOR—Population, Intervention, Timing, Outcomes, and Responsibility (Brown, 2009). Besides the search terms, the search strategy may also include thought as to which type of clinical queries you might limit the search to: diagnosis, etiology, therapy, prognosis, harm, meaning, or economics. Also ask what type of research evidence might answer the question: randomized controlled trials, observational studies (e.g., cohort, case-control, case series/reports), or qualitative studies (e.g., ethnography, phenomenology, grounded theory). The systematic review should contain mainly randomized controlled trials (if the clinical question is related to an intervention or treatment); observational studies (i.e., cohort and case-control designs) are appropriate for questions of prognosis, harm, and diagnostics. Qualitative studies are appropriate for questions of meaning or patient experiences. Finally, choose the database(s) to conduct your search for relevant evidence. See Chapter 11 for detailed information on searching the literature.

After a list of potential studies from your search of applicable databases is generated, the next step is to review the list to ensure that only the studies that are relevant to the topic are included. Use the eligibility criteria outlined to make decisions about which studies will be reviewed and which will be discarded. Eligibility is usually initially determined from titles and abstracts as a screening mechanism. For example, for a systematic review of a particular intervention, the eligibility criteria may consist of including English language, randomized controlled trials of the intervention versus a placebo or standard of care with a sample size of at least 30 subjects, conducted in the last 10 years. Observational studies may be considered for SRs in some circumstances; for example, if the quality of the RCTs is poor or there are too few RCTs to consider.

Once a list of potentially eligible studies is complete, acquire the full-text evidence reports; then apply the eligibility criteria again to weed out the irrelevant studies. Be sure to note the reasons for not including a study in your SR. The inclusion of a flow diagram is a helpful visual aid that is now recommended for systematic reviews published in major medical journals (Moher *et al.*, 2009). See **Figure 10-1**.

For the selected eligible studies, use a critical appraisal tool or specific critiquing method to appraise each study as a whole. Many critical appraisal tools are available in textbooks and on the Internet. Two examples are included in the Appendices of this text. The evidence table is a good way to concisely distill the salient parts of the study in one place (refer to Table 10-2). Some reviewers will contact the study principal investigator to retrieve information that may not have been reported in the article. Quality criteria (i.e., validity criteria/

Figure 10-1 PRISMA Flow Diagram



From Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA Statement. *PLoS Med*, 6(6), e1000097. doi: 10.1371/journal.pmed1000097.

validity assessment) is used to assess the scientific merit of the studies—that is, the methodological rigor. Quality characteristics that may be abstracted from the evidence sources include concealed randomization, blinded outcome assessors, length/completeness of follow-up, reliability and validity of tools, and intention-to-treat analysis. The team can then apply the quality criteria to each study and document the quality of each study. The quality criteria may

then be used to assign a level of evidence (LOE) to each study, and studies meeting the quality criteria can be selected for inclusion in the SR.

Both the selection of the studies to be reviewed and data abstraction should be performed by at least two independent reviewers. Consider having one person (or team of people) abstracting the data from the articles and another person (or team) abstracting data and then compare data books. This represents a form of interrater reliability and is reported as a kappa coefficient demonstrating the level of agreement between the reviewers. Kappa coefficients range between 0 and 1.00; a coefficient of 0.60 is minimally acceptable, and values of 0.75 and higher are excellent (Polit & Beck, 2008). Any discrepancies should be discussed, resolved, and the resolution documented.

Once the team has started to appraise the selected studies, review the reference lists of the included studies (i.e., hand search) for studies that may not have been identified in the database search. Search text books and the gray literature (studies with limited distribution such as unpublished reports, dissertations or theses, or conference proceedings) from sources such as the Internet (e.g., Web searches). Patient preferences from patient satisfaction reports, national surveys, clinical articles by experts, clinical data, and vendor materials may also be appropriate. Eligibility and quality criteria will need to be applied to any newly discovered studies. Keep a record of all of the decisions in the data log, including which databases were searched and who might have been contacted about the topic.

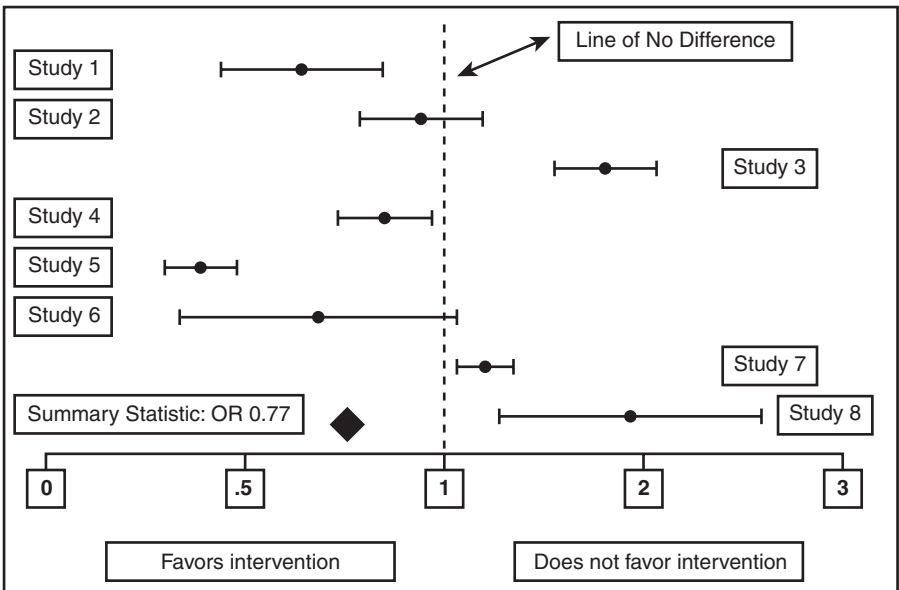
Once the appraisal process is finished, analyze the data and synthesize the results. If the decision was made to conduct a meta-analysis, then assess the selected studies for measures of consistency (e.g., heterogeneity,  $I^2$ ). Heterogeneity is the degree to which data or results are dissimilar.  $I^2$  is a statistic used to “measure the consistency between trials in a meta-analysis” (Higgins *et al.*, 2003, p. 557). The purpose of the test is “to determine whether there are genuine differences underlying the results of the studies (heterogeneity), or whether the variation in findings is compatible with chance alone (homogeneity)” (Higgins *et al.*, 2003, p. 557). The closer  $I^2$  is to 0, the better (this means there is no or little heterogeneity). A value of 25% is interpreted as low heterogeneity; 50% as moderate; and 75% as high heterogeneity. If the studies are homogeneous, the stronger review method is to do a meta-analysis. Details of how to do a meta-analysis are beyond the scope of this chapter, but the best advice is to enlist the help of a statistician. A meta-analysis is a type of systematic review in which the data from each study are combined to create one large study to find an overall effect size. The purpose is to get a quantitative answer to the question being proposed. To do this the researcher has to use studies that are similar in methodology, report the test statistic (i.e. the actual t or F value) or effect size, and have samples from similar populations. If the studies

are heterogeneous, then pooling the individual study results would not be appropriate, and a meta-analysis is not warranted. Once analysis of the data is completed, the statistical result is interpreted to obtain the “big picture” view of the data.

The results of the SR can be presented in a number of ways. The use of the flow diagram will provide information about the study selection, including number of eligible studies and number of studies actually included in the review. The characteristics of each study may be presented in an evidence table. The results of the meta-analysis for each study outcome may be effectively presented via a forest plot (see **Figure 10-2**). The forest plot depicts the effect sizes and confidence intervals from each study included in the review for the specified outcome. Forest plots provide a quick visual of the effects of many studies at once. The overall summary statistic (e.g., mean effect size, Relative Risk [RR], or Odds Ratio [OR]) is the quantitative result once the data from all the studies are combined and is identified by a diamond shape at the bottom of the forest plot.

Synthesize the evidence into a coherent review of the literature and interpret the findings within the context of the research question and the existing literature. Summarize the main findings. Discuss the limitations of the study

**Figure 10-2 Example of a Forest Plot**



and the process of the SR with respect to the findings and the success of the methods used (Moher *et al.*, 2009). Include the implications for practice and any areas for future research that the SR may have revealed. If funding to complete the SR (or any other study) was obtained, be sure to note the funding source. However, readers will be looking for a statement that the funding agency had nothing to do with the conduct, interpretation, or reporting of the findings.

### **Publicize**

So, what happens once the SR is complete? Clearly, others need to know the results. Dissemination of the SR may come as a report to the administrative team or to the unit staff. Depending on the topic, the findings may also be disseminated as a poster or oral presentation at local, regional, national, or international conferences. Publishing the SR should be a major priority for the team. See Chapter 13 for more information on disseminating research results.

### **Practice**

Once the review is completed, the team should have an answer to the initial question—if the results are not very strong or inconclusive, then another decision has to be made: are the findings used to change practice outright because the results are compelling? Should practice be changed even if the evidence is not very strong, arguing that the trend is in a positive direction? Does one continue with care as usual and await more conclusive studies? Or is a research study conducted within the team's institution to see if the intervention works in the specific patient population? The section on designing clinical research may be helpful if this is the decision.

One important tip to share: before changing practice or conducting a unit-based study, be sure to collect baseline data! This way, the team will be able to compare the baseline data with outcomes data after practice change or the study has been implemented. An improvement in patient or institutional outcomes cannot be demonstrated definitively if the starting point is not known.

### **Writing Clinical Practice Guidelines**

Another way to change practice is to implement clinical practice guidelines (CPGs). The benefits of CPGs include:

1. Assisting clinicians and patients in making complicated and, sometimes difficult, healthcare decisions
2. Improving the quality of health care
3. Providing information regarding the most judicious use of constrained resources (Guyatt *et al.*, 2008)

Externally developed CPGs are those produced by individuals or organizations outside of the institution. Internally developed CPGs would be those developed within the institution.

CPGs are considered pre-appraised evidence and are a time-efficient way to implement and sustain practice changes. The purposes of CPGs are outlined in **Box 10-2**. Many organizations, such as the American Heart Association, Society of Critical Care Medicine (SCCM), Registered Nurses Association of Ontario (RNAO) (<http://www.rnao.org>), The Scottish Intercollegiate Guidelines Network (SIGN) (<http://www.sign.ac.uk>), National Institute for Clinical Excellence (<http://www.nice.org.uk>), McGill University Health Center (<http://muhc-ebn.mcgill.ca/index.html>), and the Joanna Briggs Institute (<http://www.joannabriggs.edu.au>), offer CPGs, sometimes called Best Practice Guidelines. The National Guidelines Clearinghouse (NGC) (<http://www.guidelines.gov>) is an online repository of CPGs sent to the site by individuals and organizations. It is important to note that while the NGC has specific criteria for the inclusion of a CPG on the NGC Web site, the NGC does *not* validate or endorse the guidelines submitted; their purpose is solely to make guidelines accessible to the public.

The caveat to using any externally developed CPG is to determine how valid the guideline is. That means that the rigor of the methods used to develop the guideline must be critically appraised. More confidence can be placed in the CPGs produced by organizations that consistently adhere to a rigorous methodology template. Critical appraisal tools to evaluate the validity of a practice guideline are available. Major evaluation areas include the rigor of the methods used to develop the guideline; once the methods are deemed acceptable, the actual recommendations are evaluated; and finally the recommendations are evaluated for application to patient care. Key questions to ask when validating a CPG are found in **Box 10-3**. However, in the event that there is no current,

### Box 10-2 Purposes of Clinical Practice Guidelines

- To provide a guide of evidence of best practice upon which to support clinical decision making
- To condense information from a large body of evidence into practical recommendations
- To influence and improve clinical practice and patient outcomes
- To standardize clinical practice by decreasing professional practice variations
- To provide information on risks and benefits
- To optimize resource use
- To assist healthcare providers to keep current
- To provide a benchmark for quality improvement

### Box 10-3 Key Questions to Ask When Validating a CPG

#### Are the Results Valid?

- Before you can believe the results or recommendations from a study or practice guideline, you have to appraise how *well* the study was conducted in terms of methodological rigor or how rigorous the methods for the assembly of the practice guideline were.
  - CPG regarding prevention, treatment, diagnosis, or rehabilitation: does the CPG address all relevant patient groups, management options, and relevant outcomes?
  - How was the evidence for the CPG selected? Was the process detailed? How was the evidence identified? Selected? Consolidated?
  - How were values assigned to the outcomes of interest? Who were the “experts” involved in developing the CPG? Were the strategies for resolving differences made explicit? Was the degree of consensus reported? Which patient preferences or values were considered?
  - How current is the CPG? How recent is the publication date of the CPG? How recent are the included evidence sources? What’s the gap? How likely is it that new knowledge has been generated and published, and therefore how likely is it that the CPG may have outdated recommendations?
  - Have external reviewers evaluated the CPG? For CPGs based on weak evidence, in particular, is there any documentation that use of the CPG has led to better patient outcomes?
- Once you determine that the methods for assembling the CPG are sound, and therefore that you can *trust* the process, you can critique the actual recommendations.

#### What are the Results?

- Evaluating the results of a CPG means evaluating the actual practice recommendations themselves. Your appraisal of the recommendations relates to how practical or useful the recommendations will be to patient care.
- Are the recommendations presented in a way that may be easily applied to patient care situations? Are the recommendations clearly stated? Are they practical? Are they feasible in your care environment? Are the benefits of adhering to the recommendations greater than the risks to the patient?
- Have the authors of the CPG specified how strong the recommendation is? The strength of the recommendation is determined by the level and quality of evidence supporting the recommendation. The criteria used to grade the practice recommendations should be explained in the CPG.

#### Can I Apply the Results to Patient Care?

- Is the CPG applicable to my patient or patient population? The CPG is only useful if it meets your professional needs. Is your patient or patient population the same, or similar enough to, the ones for which the CPG was developed? If not, you cannot necessarily assume that the recommendations will work for your patients.
- To what extent is the CPG applicable to my patient or patient population? Is the prevalence of the condition different in my practice? Can the recommendations be individualized based on my patient preferences or values?

evidence-based CPG on the topic of interest, all is not lost—it may be necessary to create a unique CPG. The content of an internally created CPG should come from evidence specific to the institution, existing professional practice guidelines, and a systematic review.

**How to Write a CPG**

As with any project, choose a framework to guide the process and decrease the possibility of forgetting an important step. There are many practice guideline development frameworks available (DiCenso, Guyatt, & Ciliska, 2005; Turner, Misso, Harris, & Green, 2008). For example, Turner *et al.* reviewed CPG development handbooks and outlined 14 key elements common to all. Four phases of CPG development were identified as (1) preparing for CPG development, (2) systematically reviewing the evidence, (3) drafting the CPG, and (4) reviewing the CPG (Turner *et al.*, 2008). **Table 10-3** delineates the elements.

The first phase of CPG development includes identifying the topic of interest and the current state of practice, defining the scope of the guideline, searching

**Table 10-3 Key Elements of CPG Development**

Key Element	Phase of Development
<ul style="list-style-type: none"> <li>• Selecting topic</li> <li>• Determining the scope of the CPG</li> <li>• Identifying and adapting existing CPGs</li> <li>• Forming a multidisciplinary guideline development group</li> <li>• Involving consumers</li> </ul>	Preparing for CPG development
<ul style="list-style-type: none"> <li>• Establishing clinical questions</li> <li>• Systematic searching (including documentation of sources, filters and limits)</li> <li>• Including and/or excluding identified research</li> <li>• Appraising research</li> </ul>	Systematically reviewing the evidence
<ul style="list-style-type: none"> <li>• Developing recommendations</li> <li>• Developing an implementation strategy</li> <li>• Consulting on the draft CPG</li> <li>• Writing of summary versions of the CPG</li> </ul>	Drafting the CPG
<ul style="list-style-type: none"> <li>• Planning for evaluating the impact, revising and updating of the CPG</li> </ul>	Reviewing the CPG

Source: Turner, T., Misso, M., Harris, C., & Green, S. (2008). Development of evidence-based clinical practice guidelines (CPGs): Comparing approaches. *Implementation Science*, 3(1), 45–52, doi:10.1186/1748-5908-3-45.



for existing guidelines to adapt, and involving stakeholders. Forming a multidisciplinary, interprofessional team to provide clinical and research expertise to develop the guidelines is imperative. Consumer representation is also desirable. The leader of the CPG development group should have group process expertise to effectively lead the team to the desired outcomes (Brown, 2009).

The second phase consists of systematically searching for and reviewing the literature. The clinical questions should be defined to narrow the search. All search strategies and results should be documented. Eligibility should be assessed, using the process noted earlier. Finding the most current, comprehensive, and rigorous systematic reviews is a key objective to developing a CPG. Existing guidelines should be reviewed if available. If judged methodologically sound, existing guidelines could be adapted. However, one may need to search for additional studies that may have been published since the CPG was developed. Once the relevant literature is assembled, quality filters should be applied as described earlier. When the list has been whittled down, the evidence needs to be critically appraised.

Systematic reviews and primary studies can be appraised using a variety of instruments available in research and EBP texts and from EBP sites on the Internet. The aforementioned PRISMA statement can be used for SRs and meta-analyses. Many critical appraisal tools specific to the type of study being critiqued (e.g., diagnosis, prognosis, therapy, etc.) are available on the Internet. Some popular sites are the McGill University Health Center and the Joanna Briggs Institute, mentioned earlier in the chapter; as well as the Center for Evidence Based Medicine (<http://www.cebm.net>). If appraising preexisting guidelines, the Appraisal of Guidelines for Research & Evaluation (AGREE) tool is available to evaluate those guidelines. The AGREE tool was developed by an international collaboration to improve the development, reporting, and evaluation of CPGs (<http://www.agreecollaboration.org/>). The AGREE tool can be used to develop any guideline as well. See Chapter 9 for a more thorough presentation of the AGREE tool.

After the evidence is judged valid, it is time to outline the practice recommendations based on the results found. Practice recommendations are concise, integrated statements, based on the synthesis of evidence, to guide practice with respect to the topic studied. Translate the evidence from the systematic review into clear, practice statements using a numbered or bulleted format. For CPGs, the recommendations are usually decided by consensus of the writing group. Whether or not cost considerations should be included in the practice recommendations is a current controversy (Guyatt *et al.*, 2008). Guyatt *et al.* argue for incorporating resource use, rather than straight costs into CPGs. To make the link between the evidence and the recommendation explicit, follow each statement with the relevant citations and a grade.

### ***Matching Guideline Recommendations to Level of Evidence***

The grading of practice recommendations is not the same as grading a study for type and methodologic rigor (that is, the level of evidence (LOE) grade). LOE or hierarchy-of-evidence scales rate the *strength* of the study based on the methodologic design and success at reducing bias. Grading tools for practice recommendations rate the preponderance and type of evidence supporting a particular practice recommendation and may give an indication of how strong that evidence is overall. For example, the Agency for Healthcare Research and Quality (AHRQ) uses four letters for grading recommendations: Grade A indicates that the recommendation has a good research base; Grade B qualifies the recommendation as having a fair research base; Grade C is a recommendation based on expert opinion and panel consensus; and Grade X is given for interventions that have documented evidence of harm (<http://www.ahrq.gov>). The grading tool used by the American Association of Family Physicians is the Strength-of-Recommendation Taxonomy or SORT. This taxonomy grades clinical articles in terms of what they label as patient-oriented evidence: Grade A is defined as consistent, good-quality patient-oriented evidence; Grade B is considered inconsistent or limited-quality patient-oriented evidence; and Grade C is defined as consensus, disease-oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening (AAFP.org). Examples of other grading scales are found in **Box 10-4**.

Incidentally, note that there is not a universal format or definition of LOE or grading scales used by all entities and that organizations may reverse the terms or use different terms—so read the scale to determine if they are talking about levels of evidence or practice recommendations.

The process for judging the validity of the evidence and therefore the strength of the recommendations must be clearly defined and transparent to the reader (Guyatt *et al.*, 2008). The end-user should see a link between each practice recommendation and the evidence supporting that recommendation. The grading tool chosen will dictate how the level of evidence will be viewed. The grading scale may be one that the institution already subscribes to or one of the many found in the literature. The GRADE Working Group (2008) has produced a software program that generates a summary of findings table. Called GRADEpro, this software can be downloaded for free from the following Web site at the Cochrane Collaboration: <http://www.cc-ims.net/gradepr>. Resources and support are available.

Once the CPG is drafted it should be disseminated for an independent peer review. The guidelines are then adjusted as needed based on group consensus. The final draft can then be submitted for approval. The final phase, according to Turner *et al.* (2009), is drafting a plan for disseminating the guideline,

### Box 10-4 Grading Scale Examples

#### Registered Nurses Association of Ontario (RNAO) Guideline Development Panel (<http://www.rnao.org>)

##### *Grades of Recommendations*

- A) Requires at least one randomized controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendations. This grade may include systematic review and/or meta-analysis of randomized controlled trials.
- B) Requires the availability of well-conducted clinical studies, but no randomized clinical trials on the topic of the recommendation. This includes evidence from well-designed controlled studies without randomization, quasi-experimental studies, and nonexperimental studies such as comparative studies, correlational studies, and case studies. The Registered Nurses Association of Ontario (RNAO) guideline development panel strongly supports the inclusion of well-designed qualitative studies in this category.
- C) Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality.

#### Society of Critical Care Medicine (SCCM) (<http://www.sccm.org>)

##### *Grades of Recommendation (i.e., Grading Scale)*

- A) Supported by at least two level I investigations
- B) Supported by one level I investigation
- C) Supported by level II investigations only
- D) Supported by at least one level III investigation
- E) Supported by level IV or V evidence

##### *Grades of Evidence (i.e., LOE)*

- I. Large, randomized trials with clear-cut results; low risk of false-positive (alpha) error or false-negative (beta) error
- II. Small, randomized trials with uncertain results; moderate-to-high risk or false-positive (alpha) and/or false-negative (beta) error
- III. Nonrandomized, contemporaneous controls
- IV. Nonrandomized, historical controls and expert opinion
- V. Case series, uncontrolled studies, and expert opinion

#### American Heart Association (AHA) ([www.myamericanheart.org](http://www.myamericanheart.org))

##### *Classification of Recommendations*

**Class I:** Conditions for which there is evidence and/or general agreement that a given procedure or treatment is beneficial, useful, and effective.

**Class II:** Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment.

**Class IIa:** Weight of evidence/opinion is in favor of usefulness/efficacy.

**Class IIb:** Usefulness/efficacy is less well established by evidence/opinion.

**Class III:** Conditions for which there is evidence and/or general agreement that a procedure/treatment is not useful/effective and in some cases may be harmful.

monitoring compliance with and the impact of the guideline, and planning for revisions and subsequent updates.

## **DESIGN OF CLINICAL SCIENCE PROJECTS**

Occasionally the literature does not provide the answers the clinician needs to change practice, and unit-based or clinical science projects may need to be conducted. Questions for clinical research typically are staff-generated. Individual staff members may provide questions or they are generated via focus groups. Questions may relate to new types of monitoring equipment or trials of patient care interventions to optimize outcomes. The results of individual projects may be applicable only to the unit or patient population where the study is conducted. Projects related to high-volume patient care situations may be applicable to a wider range of clinicians.

The decision to design a clinical study is usually made because a search of the literature turned up little or no research in the area, or there is no definitive answer from the literature available. The choice may be to either replicate a published study or to design a new one. Replicating a study adds to the clinical science base and provides new information concerning a particular patient population. If the decision is made to design a new study, the literature review will provide assistance in producing ideas about how to conduct and design the study.

Once the question is posed, the next step is to assemble a team of individuals who are interested in the clinical question, have expertise in some aspect of the process, and/or are willing to participate. Working with a clinical research team has many benefits, including a means to generate excitement about the project to a larger group, contributions to the planning and actual work of the project, moral support, and better communication (Granger & Chulay, 1999). The clinical research team should meet regularly to plan and to troubleshoot once the project has started.

A clinical research project needs to be conducted as carefully as a major study. The clinical research team should develop the research protocol, which outlines the process of how the study will be conducted. This research protocol is no different than that of a major study. The research design needs to be laid out and include the aims of the study, sampling method, research methodology, tools and instruments that will be used, how the data will be collected, who will collect the data, and how the data will be analyzed. Protections for human subjects, if applicable, need to be outlined. Any data collection forms should be developed. The research protocol will then need to be submitted for approval. Typically, for nursing research, the protocol may first be submitted to the nursing research or EBP council for recommendations and approval; or to the council first and then

on to another approval body, such as the institutional review board, within the institution. Once the protocol is approved, the project may commence. The research protocol is followed, a data log is initiated and updated, data collection and analysis are completed, and the results are disseminated. Whether or not clinical practice changes is partially a function of the results of the project. For example, if the results of this project compare favorably to the results of other studies, then the evidence may now be conclusive enough to change practice immediately; otherwise current practice may be maintained until stronger studies are published. The bottom line is that the process of clinical science is not immensely different from a full-scale research study. The scope and sample size may be smaller, but the rigor of the process does not change. The clinical research process is described in the next section.

## DESIGN OF CLINICAL RESEARCH

Clinical questions for clinical research may come from staff, the organization, or from a national or professional mandate. Besides clinical topics, research questions may also be related to administrative issues (e.g., Does self-scheduling increase retention?) or staff development (e.g., What is the effectiveness of teaching Burn Care using a classroom approach as compared to an online module?). Factors to consider in prioritizing new research projects based on clinical questions include staff expertise, patient population and setting, existing or parallel projects, institutional priorities, cost issues, the existence and availability of measurement tools, requirements for funding, national and professional group priorities, and institution-specific issues (Granger & Chulay, 1999).

Once the clinical problem is identified and the decision to conduct clinical research is made, put together a research team. As noted earlier, clinical teams are beneficial in the research process, especially when there are more people to share the work. Think carefully about the people to ask to participate on the research team. Matching the type of person participating on the team with a role suited for them can make the team more effective. Be clear about the expectations of each member of the research team and keep the lines of communication open! Meeting on a regular basis after the study has started will keep the team updated on the progress of the study and offer an opportunity to brainstorm when problems arise.

One of the first items for the clinical research team to discuss is to identify the aims of the study and to develop the research question. The research question will help determine the design of the type of study to conduct. Clinical research designs are classified as experimental and nonexperimental.

## Clinical Research Designs

Experimental designs (i.e., randomized controlled trials or RCTs) are intended to determine causality and have three main requirements: manipulation of an intervention, randomization, and a control group. RCTs are the strongest research designs for research efforts seeking to answer questions of causality. Designs with a manipulated intervention, but without either control or randomization, are called quasi-experimental designs; because of the lack of control and/or randomization, potential biases may be introduced, and the results are not as robust as true experimental designs. Most clinical research will be quasi-experimental versus an RCT because, depending on the intervention, randomization may not be possible. For example, in a quasi-experimental design called a nonequivalent control group design, patients could not be randomized if an intervention was instituted throughout the hospital—the comparison group (i.e., control group) might have to be in another hospital not implementing that same intervention.

Nonexperimental or observational research designs contain no manipulation of the independent variable because many variables cannot be ethically manipulated. Correlational research (designs that examine how closely variables are related or associated with each other), case-control or cohort designs, cross-sectional and ecological studies, case report and case series, descriptive research, and prevalence or incidence studies are all examples of nonexperimental research (Polit & Beck, 2008; Torabinejad & Bahjri, 2005). These designs are frequently seen in the medical and nursing literature.

### The Four Ps—Again

Most of the process that a clinical research study entails has been outlined in the previous sections. Most of the elements of the four Ps, detailed in the section on systematic reviews (refer to Box 10-1), are applicable to any research study. Prepare and then proceed with the search of the literature for the question. Knowledge of current research will help to devise a study to fill in the gaps between what is known and what is not known about the topic of interest. Design the study using ideas from the literature pertaining to the topic—frequently one may find a study that was conducted on a specific topic, but with a different patient population. Replicating a study with a different patient population may provide the answers to improve patient care in the team's institution.

### *The CONSORT Statement*

An evidence-based template from the CONSORT Group (Consolidated Standards of Reporting Trials) can be used to design a study that will meet the minimum guidelines of what is considered best practice in reporting and appraising

RCTs (Moher, Schulz, & Altman, 2001). A modification of the CONSORT statement for “pragmatic” RCTs is also available (Zwarenstein *et al.*, 2008). “Pragmatic trials are designed to inform decisions about practice . . . and help choose between options for care” (Zwarenstein *et al.*, 2008, p. 2390). The CONSORT flow diagram follows the study participants from recruitment through follow up and analysis. A free template for a flow diagram (**Figure 10-3**) and a link to a free flow diagram generator are available on The CONSORT group Web site at <http://www.consort-statement.org>.

After designing the study, it will need to go through channels for research approval, as outlined in the section on clinical research. Once approved, and before starting the study, make sure to educate the nursing staff who will be caring for patients recruited for the study. Nursing staff frequently collect research data (e.g., lab samples, vital signs, etc.) or are responsible for interventions used in clinical research studies. Staff will be more amenable to participating in the study, according to the protocol, if they understand the clinical problem and how the study may help to solve that problem. Participant recruitment and random assignment of participants into groups should be delineated in the research protocol, as should the methodology. Following the research protocol will minimize bias in conducting and analyzing the study.

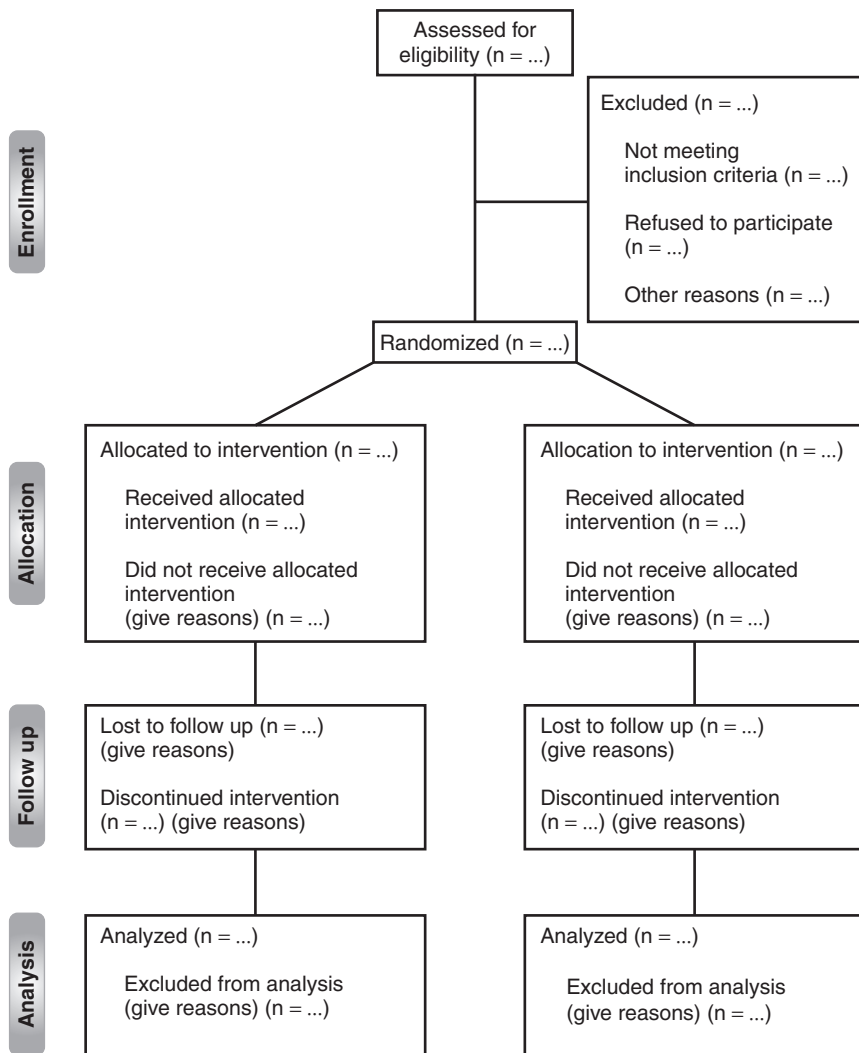
### ***Publicize and Practice***

When data analysis and synthesis have been completed, share the results with the unit(s) and with administration. Prepare the study report by including those elements in the CONSORT statement for pragmatic research. Be sure to discuss the results in terms of the existing literature to show how these results help to build the science of the discipline. The next step is to make a practice decision: change practice or maintain the status quo. The decision may rely on the predominance of the existing research and the strength of the study findings.

### **Use Your Resources**

Regardless if one is designing a study independently or as part of a clinical team, be sure to use existing resources, including human, technical, material, and financial resources. Organizational administrators or managers are excellent people to help identify resources. An example of human resources is to connect with people knowledgeable about the research process. If the unit or institution employs a scientist or clinical researcher, they are the first step in getting help to design the study being planned. The research council or EBP council is another group to go to for assistance. Are there advanced practice nurses (e.g., CNS or NP) who might be able to help? If this type of

Figure 10-3 Consort Flow Diagram



Revised template of the CONSORT diagram showing the flow of participants through each stage of a randomized trial (Murray, G. D. (2000). Promoting good research practice. *Statistical Methods in Medical Research*, 9:17–24. [PMID: 0010826155])



group, researcher, or advanced clinician is not available in the institution, is there an academic department in a nearby university or college (e.g., school of nursing or biostatistics department) who might be able to help? Many in academia are seeking the opportunity to partner research faculty or graduate students with those in the community. For isolated or rural institutions, the existence of the Internet opens up a world of possibilities for real-time counsel and collaboration.

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# Using Technology to Support EBP

*Lisa K. Traditi*

## INTRODUCTION

Finding the evidence needed to support daily clinical practice is a challenge. First, good informational database searching skills are needed, followed by the ability to critically appraise and apply current research findings to an individual patient or a population of patients. To accomplish this, access is required to current information through the Internet and license agreements with the myriad vendors of knowledge-based data sources. Depending on the size and type of institution, access to electronic information resources may range from a confusing wealth of choices to only that which is freely available on the World Wide Web.

Evidence-based practice (EBP) is a continuous learning process. The clinician or practitioner identifies his or her knowledge gaps, seeks information to fill those gaps, assesses how to apply this newly gained knowledge to individual patients and to clinical practice, and continues this learning throughout a career. Research shows that, without intervention, physicians' knowledge deteriorates over time (Choudhry, Fletcher, and Soumerai, 2005). It is a safe assumption that the results would be the same if the study had included all types of healthcare professionals. So, if a healthcare professional relies solely on that knowledge gained during educational training, the care they provide is not up to standard. Basing clinical practice on what was learned in medical school, nursing school, or other health sciences programs is no longer enough. Continuous and active learning is required to stay current in health care.

## ASKING AN ANSWERABLE QUESTION

Identifying a knowledge gap and then asking an answerable question about that gap and assessing the information found is a key component of lifelong learning. We start with asking an answerable question.

**Table 11-1 Writing Questions in PICO Format**

<b>P Patient, Population</b>	<b>I Intervention (usually put the “new” therapy here)</b>	<b>C Comparative Intervention (not necessary to provide Comparative Intervention if choice is “anything else”)</b>	<b>O Outcome</b>
Hospitalized patients requiring IV therapy	Does applying heat	Or injecting lidocaine at the insertion site	Provide better pain control? Offer fewer complications? Increase successful IV insertion?
In patients with mild to moderate depression	Does St. John’s Wort	Or prescription antidepressants	Provide better relief? With fewer or equivalent side effects? With less cost long term?

One method of formatting a clinical question is to use the PICO format, developed by Richardson *et al.* in 1995 and still widely used in teaching and learning about EBP. Using this format helps refine the question and identify the key searching concepts. Additionally, asking a question in the PICO format can identify the type of question being asked. For instance, asking if a certain drug causes a specific adverse outcome is a question of cause or etiology. Asking how long patients maintain weight loss after bariatric surgery is a prognosis question. Other clinical questions might be about therapy or diagnosis.

**Table 11-2 Study Designs that Answer Specific Clinical Questions**

<b>Question Type</b>	<b>Study Design</b>
Therapy/Harm	Randomized controlled trial or clinical trial
Etiology	Cohort study or case-control study
Diagnosis	Sensitivity and specificity study
Prognosis	Follow-up study

Identifying the type of question will determine what types of published studies to search for in the health sciences literature databases.

### CREATING A SEARCH STRATEGY

Creating a strategy for searching for a topic in a health-related database is made easier by using the PICO format described above. The key searching

**Table 11-3 Developing a Search Strategy**

**PICO Question: In adults with mild to moderate depression, is St. John's Wort as effective as identified antidepressive agents?**

	<b>Primary Term</b>		<b>Synonym 1</b>		<b>Synonym 2</b>		<b>Synonym 3</b>	
<b>P</b>	Mild Depression	OR	Moderate Depression	OR	Depression	OR	Depressive Disorder(s)	AND
<b>I or E</b>	St. John's Wort	OR	Hypericum					AND
<b>C</b>	Anti-depressants	OR	Antidepressive Agents					AND
<b>O</b>								

NOTE: Search terms for Outcome are not necessary, unless the search is looking for specific outcomes (e.g., incidence of adverse effects)

Search set 1: (Depression OR Depressive Disorder OR Mild Depression OR Moderate Depression)

Search set 2: (St. John's Wort OR Hypericum)

Search set 3: (Antidepressants OR Antidepressive Agents)

Search set 4: Set #2 AND Set #3

Search set 5: Set #4 AND Set #1

Limits to apply: Published in the last 10 years, Clinical Trials publication type

**Example from PubMed**

<b>Set #</b>	<b>Search terms</b>	<b># of results</b>
#6	Search #1 AND #4 Limits: published in the last 10 years, Clinical Trial	36
#5	Search #1 AND #4	319
#4	Search #3 AND #2	638
#3	Search antidepressants OR antidepressive agents	111724
#2	Search St. John's Wort OR Hypericum	1905
#1	Search depression OR depressive disorder OR mild depression OR moderate depression	232452

concepts identified in the PICO exercise can be expanded with synonyms. Using synonyms helps create a more sensitive search strategy, one that will cast the widest net possible for article citations on the topic. If the search results include too many citations, then the search can be narrowed with limits for year, age group, or publication type. Such techniques work well in databases like CINAHL and PubMed, where advanced human-curated indexing has been done on the citation records. Human-curated indexing means that trained indexing professionals have identified and tagged the record with subject headings, checked tags for age, publication type, and so on. This type of advanced indexing allows a searcher more options in how to limit or expand a search strategy.

The converse example is machine-indexed databases, where keywords are identified by characters, eventually leading to false hits in the search results. For example, a search on this author's last name, Traditi, in the Google search engine will eventually result in Web pages related to Tradition, Traditional Music, etc. **Table 11-3** gives an example of building a search strategy.

## KNOWING WHERE TO LOOK

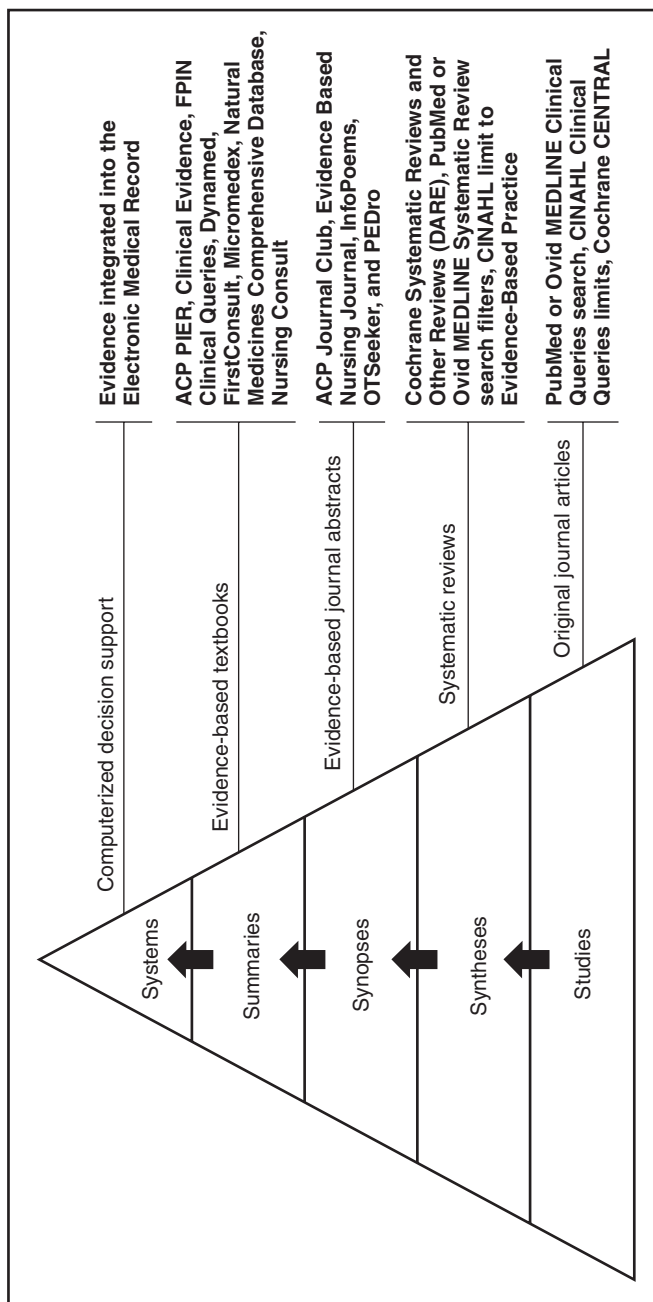
Nurses surveyed in New Jersey reported that they “sought information to support their nursing role ‘several times a week’” (Cadmus, 2008). In most cases, those same nurses relied on their peers to provide answers, citing barriers to using the library or online resources ranging from resources not being available due to lack of institutional funding to a lack of awareness of library resources. Asking peers is a good strategy, as long as the peers are those who keep up with the current literature. Unfortunately, this may not always be the case.

Being able to identify useful and reliable information resources is a vital tool in EBP. The “5S” levels of evidence devised by Haynes in 2006 suggests looking for answers to clinical questions first with summaries, which “integrate best available evidence from the lower layers (drawing on *syntheses* as much as possible)” and synopses “(succinct descriptions of an individual study or a systematic review),” rather than original research articles or even systematic reviews. **Figure 11-1** adds specific resource names to the Haynes “5S” model.

## Evidence-Based Clinical Point of Care Databases

These resources fit into the summary category. The authors of this information search the original and systematic review literature, critically appraising the findings, then summarize the evidence found in an easily readable method. A key feature of these resources is that they include an attempt

Figure 11-1 Levels of Evidence/Sources of Evidence



From Haynes, R. B. (2006). *ACP Journal Club*, 145 (3).



to identify and label the level of evidence and the strength of the evidence recommendations.

An ever-growing field, evidence-based clinical point of care resources vary in scope and price. A short list of such resources includes, but is by no means limited to, the following:

- ACP PIER (STAT!Ref)
- BMJ Point of Care (BMJ Group)
- Clin-eguide (Wolters-Kluwer-OVID)
- Clinical Evidence (BMJ)
- DynaMed (EBSCO)
- FirstConsult and NursingConsult (Mosby)
- FPIN Clinical Queries (Family Physicians Inquiries Network)
- Micromedex (Thomson Reuters)

### **Databases for Systematic Reviews, Synopses, and Original Article Citations**

When unable to find a satisfactory answer using summary resources or when more current information is needed, several resources exist for both original research articles and for systematic reviews.

Systematic reviews are critically appraised syntheses of the best evidence on an individual question. Several organizations create systematic reviews; the most well known is the Cochrane Collaboration. Well-done systematic reviews gather the best studies, usually randomized controlled trials, using a detailed and comprehensive search strategy. They identify those studies of the best quality that ask similar questions and appraise them in a systematic way.

Synopses—critical appraisals of individual studies—focus on individual trials of high quality. The Cochrane Collaboration provides DARE—Database of Abstracts of Reviews of Effects. ACP Journal Club, InfoPOEMs, and the series of evidence-based journal titles from BMJ provide the same types of critically appraised structured abstracts.

Well done, original research studies still have great value in the EBP model. The key is being able to identify the best evidence from the millions of articles published. In databases like PubMed and CINAHL searchers can employ Clinical Query search tools or limit to individual publication types.

### ***Systematic Reviews***

*The Cochrane Library (Wiley Interscience)* Created by the Cochrane Collaboration, the Cochrane Library includes, among other resources, the Cochrane Systematic Reviews database, The Database of Abstracts of Reviews

of Effects (DARE), and The Cochrane Central Register of Clinical Trials database (CENTRAL).

Cochrane Systematic Reviews, produced since 1996, are regarded internationally as those of the highest quality. DARE, created by the Center for Reviews and Dissemination of the University of York, includes critically appraised abstracts (or synopses) of systematic reviews not produced by the Cochrane Collaboration.

The Cochrane Library is available by subscription via Wiley Interscience in the United States. The Cochrane Systematic Reviews are also indexed in a variety of resources, including PubMed.

### **Synopses**

*ACP Journal Club (American College of Physicians)* ACP Journal Club finds and evaluates the best original studies and systematic reviews in internal medicine and related specialties. It is available via direct subscription to *Annals of Internal Medicine* or through a subscription to Ovid's Evidence Based Medicine Resources.

*Evidence Based Nursing and the Evidence Based journal series (British Medical Journal)* The Evidence Based journal series, created by the BMJ organization, is like the ACP Journal Club, in that it finds and evaluates the best original studies and systematic reviews in Nursing, Surgery, Dentistry and other specialties. All titles are available via direct subscription from BMJ.

### **Original Studies**

*CINAHL—Cumulated Index to Nursing and Allied Health Literature* CINAHL is an index of nearly 3000 journals from the fields of nursing and allied health with over 1 million records dating back to 1981. What began as a collaboration among three librarians and three institutions ultimately became a project of one library and one institution: Mildred Grandbois and her staff and the library at Glendale Adventist Medical System in California. CINAHL is now updated and maintained by EBSCO.com.

Every article indexed in CINAHL is read by a subject specialist and indexed using the most specific and appropriate CINAHL subject headings. This human touch provides more sensitive identification of each article's true nature, providing more refined retrieval for the searcher. Thus, an article on arthritis of the hip would be mapped to "osteoarthritis, hip" and not to the broader heading of "osteoarthritis" or "joint diseases." Indexers also apply tags, such as language, age limits, and so on to assist in refining a search.

**Table 11-4 CINAHL Subject Headings—Tree View**


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Musculoskeletal Diseases +
Joint Diseases +
Arthritis +
Arthritis, Infectious
Arthritis, Psoriatic
Arthritis, Rheumatoid +
Chondrocalcinosis
Gout
Osteoarthritis +
Osteoarthritis, Hip
Osteoarthritis, Knee
Spinal Osteophytosis
Reiter Disease
Rheumatic Fever
Spondylarthritis +

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In addition to using the Subject Headings as search terms, look for the “Clinical Queries” in the Limits or Refine Search section. Also, one can limit to specific publication types, such as Randomized Controlled Trials.

*PubMed* PubMed ([pubmed.gov](http://pubmed.gov)) is the National Library of Medicine’s (NLM) Web-based search service, located on the Entrez search engine, which is free to all and provides access to more than 18 million citations. MEDLINE, the largest component of PubMed, is NLM’s premier bibliographic database, covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system and the preclinical sciences. The database covers citations back to 1950, with some older material.

PubMed, like CINAHL, is also a highly indexed database. All citations are assigned Medical Subject Headings (MeSH) from NLM’s controlled vocabulary to assist users in their searches. The general search query in PubMed will map a search term to both the MeSH term and to the term as a text word term, thereby creating a more sensitive search result.

In addition to using the Subject Headings as search terms, look for the “Clinical Queries” in the Advanced Search section or from the PubMed Service menu on the main PubMed page. It is also possible to limit to specific publication types, such as Randomized Controlled Trials.

*EMBASE* EMBASE provides access to citations from biomedical and drug literature via EMBASE and MEDLINE. It contains over 19 million indexed records from more than 7000 peer-reviewed journals, covering 1947 to the present date. EMBASE is indexed using EMTREE, the Elsevier life science thesaurus, a controlled vocabulary. EMBASE is a good tool to use when looking for information on new drug development, such as discovery of new applications for existing drugs, to find all reported clinical trial phases of a drug, or to follow the therapeutic use of a substance in disease.

## **PUBLIC SOURCES OF EBP INFORMATION**

Any Internet search on evidence-based practice will yield thousands of Web pages. Some of the most useful are sponsored by university-based Centers for Evidence-Based Practice, such as the Oregon Evidence-Based Practice Center of Oregon’s Health & Science University or the University of Oxford Center for Evidence-Based Medicine. They may link to free tools and calculators or even learning tools or presentations that can be used with permission, which is often freely given.

Hospital and health sciences university libraries often keep lists of EBP resources, both licensed and freely available. For example, University of Colorado Denver Health Science Library keeps a long list of resources at <http://hslibrary.ucdenver.edu/ebhc>. Check to see what the nearest health sciences library has available by searching for the name of the library and adding the word, *evidence*, to an Internet search.

## **FREE ACCESS SOURCES FOR RESEARCH RESULTS**

Publicly funded research is discoverable on the Internet. Also, most guidelines and clinical trials can be searched for in the various databases mentioned in this chapter.

### **Guidelines (all free resources)**

- *Clinical Practice Guidelines from the CMA Infobase*—<http://mdm.ca/cpgsnew/cpgs/index.asp>—These guidelines are produced or endorsed in Canada by a national, provincial/territorial or regional medical or health organization, professional society, government agency, or expert panel.

- *Guidelines International Network (G-I-N)*—<http://www.g-i-n.net/>—Based in Scotland, this database links to worldwide sources of guidelines and is organized by health topic.
- *National Guideline Clearinghouse*—<http://www.guideline.gov>—A U.S. public resource for evidence-based clinical practice guidelines; it includes a display tool that allows side-by-side comparison of guidelines.
- *NHS National Institute for Clinical Excellence (NICE)*—<http://www.nice.org.uk/>—British evidence-based guidance on technology use, clinical care, and interventional procedures.

### Clinical Trial Registries

Many Web sites are available to enroll participants in clinical trials. In fact, such Web sites have been evaluated about their recruiting practices, and the US government has issued a recommendation for best practices (Bramstedt 2007; DHHS 1997). This section focuses on those resources that help discover results of trials, both active and finished.

- *Clinical Trials.gov*—[www.clinicaltrials.gov](http://www.clinicaltrials.gov)—A service of the National Institute of Health (NIH), Clinical Trials.gov is a registry of federally and privately supported clinical trials conducted in the United States and around the world. It is designed for healthcare professionals to use in partnership with their patients.
- *National Cancer Institute Physician Data Query Clinical Trials Database*—<http://www.cancer.gov/clinicaltrials>
- *AIDS Clinical Trials Information Service*—<http://www.aidsinfo.nih.gov/ClinicalTrials/>
- *National Cancer Institute Clinical Trials*—<http://www.cancer.gov/CLINICALTRIALS>
- *NIH Reporter*—<http://projectreporter.nih.gov/reporter.cfm> (formerly known as CRISP—<http://crisp.cit.nih.gov/>)— provides access to reports, data, and analyses of NIH research activities, including information on NIH expenditures and the results of NIH-supported research.

### Evidence Resources for Consumers

- *Cochrane Library Plain Language Reviews*—<http://www.cochrane.org/reviews/>—The abstracts of Cochrane reviews are available free of charge on this Web site, providing a valuable source of healthcare information. Plain language summaries are also provided when available. These are short synopses of the reviews' core findings, with a minimum of technical terms.

## ORGANIZATIONAL WEB SITES

### Electronic Medical Records

Some healthcare systems are starting to build evidence into their online Electronic Medical Record (EMR). The most advanced have built decision support tools into the EMR at appropriate decision points—at the point where lab tests are ordered or prescriptions are entered into the online prescription order entry. Other EMRs have supplied links or InfoButtons to clinical point of care resources. InfoButtons are a relatively new option in the EMR and are being explored by researchers and physicians (Cimino, 2007).

### LOCAL RESOURCES

A major difficulty in EBP is having help nearby. Ideally, healthcare practitioners will have access to a hospital or academic health sciences library or a librarian trained in searching for the evidence. Access to licensed information resources varies from institution to institution, even in hospitals of the same size and level of patient acuity. To discover local health sciences information resources, check the local office of the National Network of Libraries of Medicine. Eight Regional Medical Library offices are available to help locate the nearest information resource. Reach any of them by going to their Web page at <http://nnlm.gov/> or calling 1-800-338-7657.

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# EBP Implementation

*Mary Beth Flynn Makic and Regina M. Fink*

## INTRODUCTION

Presently, there is a heightened awareness and interest among healthcare professionals about translating research into clinical practice. However, there is still a need to improve clinician's knowledge and use of evidence-based practice (EBP). The evidence-based practice process involves the following: identifying the clinical problem; formulating a searchable, answerable question; finding the evidence; critically appraising and synthesizing the evidence; translating and implementing the evidence into clinical practice; and evaluating the EBP change. Implementing this process may be difficult for providers with little or no EBP experience. This chapter will review the concepts of mentoring and change champions and the important roles both play in implementing EBP. Additionally, how to use various EBP models to guide practice change, how to develop a journal club, how to integrate evidence into policies and procedures, and selected EBP resources will be discussed.

## MENTORING

With the advent of the magnet hospital initiative, a need for mentoring in EBP and research has increased over the past decade. Recent graduates have been exposed to EBP concepts in their formal education programs; however, clinicians who have been practicing for years are ripe for new knowledge. The nursing workforce needs to become competent in the work of being a knowledge-based profession instead of solely focusing on skill development. Nurses can become experts in the analysis and interpretation of data based on evidence. Mentoring by research nurse scientists, clinical nurse specialists, managers, faculty, peer colleagues and others more experienced in EBP



**Box 12-1 Voices from the Field**

The Medical Intensive Care Unit (MICU) successfully implemented evidence-based ventilator sedation orders. Adoption of the order set and daily wake up practices were not successful in the other ICUs. Current evidence suggested the use of sedation orders with daily wake up to improve ventilated patient outcomes. The critical care quality team explored the evidence and reworked the ventilator sedation order set to meet the clinical practice needs in all five intensive care units (ICU). Once the team approved the order set, the perceived challenge was how to implement the orders effectively and engage nursing staff to perform a daily wake up assessment timed with respiratory therapy for successful weaning. The team decided to set a specific date for initiation of the order set and the daily wake up practice standard. Prior to the set date, journal clubs were held to discuss a large, multicenter randomized control study that compared usual care with ventilator sedation protocols paired with daily wake up and extubation/weaning trials. The two journal clubs were established for each ICU and respiratory therapy department. The research nurse scientist facilitated the journal clubs with a unit-based champion, or leader. The journal clubs were broadly advertised and all healthcare providers were encouraged to attend. Nine interprofessional journal clubs were held. The journal clubs allowed active discussion between the physicians, pharmacists, respiratory therapists, and nurses concerning current practice compared to the study findings. A review of the new protocol and how the research influenced the protocol development provided the “why” to the healthcare providers prior to implementing an EBP practice change. Holding journal club as a strategy for implementing the revised ventilator sedation orders permitted healthcare providers time to “digest,” question, and begin to adopt the change in practice. Audits the month following the implementation of the new order set found all ICUs were using the orders.

and research will instill self confidence in the mentee, provide collegial relationships, increase the skill of the work force, and ultimately strengthen the nursing profession.

The mentor connection, as stated by Vance and Olson (1998), is a “developmental empowering and nurturing relationship extending over time in which mutual sharing, learning, and growth occurs in an atmosphere of respect, collegiality, and confirmation” (p. 5). Mentoring provides a means through which ideas, lessons learned, and experience may be passed from one person to another. This information sharing provides growth as it challenges both mentor and mentee to question the normal process and think creatively together (Funderburk, 2008). Mentoring is a tool that clinicians can use in hospitals to help others be successful in their careers and continue as expert nurses in EBP and research. It may occur naturally with the mentee seeking out mentors based on clinical experience or other characteristics, or it can be a formal

relationship with mentors assigned. Mentors are expert, experienced, and are able to share knowledge and expertise with others (Ihlenfeld, 2005). Some personal characteristics of both mentors and mentees have been delineated and are listed in **Table 12-1**.

Mentoring relationships offer support and professional development for clinicians at all levels within an organization (Kanaskie, 2006). Mentorship differs from teaching or preceptorship as it implies a long-term relationship between mentor and mentee (Fawcett, 2002). Mentoring has been used as a viable retention tool for the graduate nurse (Kanaskie, 2006; Leners, Wilson, Connor, & Fenton, 2006; Funderburk, 2008); and for experienced ICU and perioperative nurses (Ihlenfeld, 2005; Persaud, 2008). Mentoring can take place in rural health settings and is integral for career advancement as well as advancing the nursing profession (Mills, Francis, & Bonner, 2005). Oman and colleagues (Oman *et al.* forthcoming) provided an EBP Web-based and e-mentoring program to selected Rocky Mountain rural hospitals that included elements to create a culture of evidence-based practice.

An important element of the mentoring relationship is setting and facilitating clearly-defined objectives. This process begins when both mentor and mentee discuss their expectations and goals in a first meeting. Detailed objectives can be defined and explored as the mentorship relationship evolves. It is

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**Table 12-1 Mentor and Mentee Characteristics**

<b>Mentor</b>	<b>Mentee</b>
A desire to help	Committed to expanding his/her capabilities
Experience	Open and receptive to new ways of learning
Time and energy to give to the relationship	Able to accept feedback
Knowledgeable	Willing to meet on a regular basis
Intuitive	Desires to learn
Nurturing	Initiative
Objective	Strong self-identity
Patient	Honest
Enthusiastic	Knows self and what is needed from a mentor
Supportive	Desires to advance

(Vance and Olsen, 1998; Funderburk, 2008; Ihlenfeld, 2005)

important for mentor and mentee to have regularly scheduled meetings and a timeline established so that continued work can occur. During their time together, mentees observe, question, and explore; mentors demonstrate, explain, and model (Free management Library, retrieved on 09/01/09 from <http://www.managementhelp.org/guiding/mentrng/mentrng.htm#anchor565898>). There may be times mentees will not choose to follow a mentor's advice. Mentors should not express disappointment if this happens as this is part of a mentee's growth (Detsky & Baerlocher, 2007).

The following assumptions have been used by the authors to form a framework for a solid mentoring program for EBP projects conducted by research nurse scientists at the University of Colorado Hospital.

- *Respectful learning.* Mutual respect from mentor and mentee is critical to advance the mentorship relationship. Each needs to be respectful of time and commitment to each other. This includes follow-through on assignments and being present at meetings.
- *Knowledge sharing.* A willingness to share knowledge by the mentor must be met by openness of the mentee to new ideas. This includes the opportunity for mentees to challenge concepts presented by the mentor.
- *Open communication/Sharing of experiences.* Mentors encourage a mentee's development by sharing stories of success and disappointments that they personally have experienced over time. Both are powerful lessons that will assist mentees on their journey. Mentors who are able to openly talk about their experiences establish a rapport that makes them lifelong learning leaders.
- *Working together.* Mentors offer their support, are patient and nurturing; they are coaches offering feedback. Mentees grow from the experience and learn new knowledge that they will use in their profession and share with others.
- *Letting go.* Throughout the project and most definitely once the project has been completed, mentors must "let go" but be present for future mentoring experiences with their mentee or others. Mentees may feel able to mentor others knowing they will always have the availability of their mentor for advice.

## CHAMPIONS OF CHANGE

Moving research and best evidence into daily practice (adoption) requires more than educational seminars. Implementation of EBP requires a process that examines organizational and staff level support for practice change, flexibility

and adaptability in the change process, and staff openness to change (Crow, 2006). Effective adoption of new evidence with resulting change in practice requires facilitation of the process by formal and informal leaders. Facilitators of practice change can take the form of opinion leaders and champions. Opinion leaders are people from the local peer group viewed by their associates as respected sources of influence and technically competent (Titler & Everett, 2001). Opinion leaders frequently have larger scopes of influence over several units positively influencing the momentum for adoption of new evidence into practice. The opinion leader is actively engaged with the change process and provides guidance as needed. Champions of change are practitioners within the local group or practice setting (e.g., clinical nurses, pharmacists, respiratory therapists, physicians, etc.); are expert clinicians; passionate about the innovation (EBP topic); and committed to improving the quality of patient care (Flynn & Fink, 2001; Titler & Everett, 2001). Champions of change are the local influence providing excitement and modeling change in practice. To effectively disseminate EBP, individuals or sponsors who are passionate about practice change provide essential energy to the process of implementing EBP.

The structure of the EBP implementation teams can take multiple forms; however, a few key elements are needed: (1) group facilitator(s) (opinion leader), (2) champion members, (3) established meeting times, (4) mission and goals, and (5) EBP focus/practice topic (Oman & Fink, 2009). The group facilitator or opinion leader may be a clinical nurse specialist, educator, or nurse manager. This individual or individuals (co-chair) of the EBP team should be expert in the content topic and has the responsibility of organizing the team to explore how to best move evidence into practice. The opinion leader guides the process rather than directs the infusion of new knowledge (Rogers, 2003). The opinion leader holds the vision of the desired practice change or organizational goals for practice outcomes based on best evidence. Through monthly meetings the champions explore the evidence related to the specific topic and become more clinically expert. The EBP champions examine current practice and devise a method for moving new evidence into practice. It is optimal to have champions from diverse practice settings within an organization, as diversity enhances innovation allowing for all perspectives to be explored as part of the dissemination process.

The champions of change move evidence into practice through multiple avenues: revising policy, unit-based in-services and educational posters, revising documentation forms to include physician order forms, hosting journal clubs, and conducting and reporting unit-based audit results. When champions audit the process or outcomes of a practice change and provide timely feedback to their peers, clinicians see how using EBP improves care and patient outcomes,

thus making the audit process an important strategy for successful implementation of EBP (Engelke, 2006; Titler, 2007). Most importantly, the champion of change is an active participant who models the adoption of change in practice at the unit level, serving as an ambassador of the EBP process and infusing the innovation through example. Peers can identify EBP champions and seek more knowledge from the unit-based champion of change, thus impacting infusion of new knowledge with the “end user,” the healthcare provider.

Champions of change teams can be episodic groups that meet for a focused time period to implement best evidence into practice, or the team can be a standing organizational committee continually reviewing the evidence to ensure practice is reflective of the current evidence to optimize patient outcomes. The following are examples of both forms of champions of change teams that positively influence practice outcomes.

### **Example 1: Enteral Nutrition and Gastric Residual Volume Practice Change**

The dietitians realized that physician and nursing practices for enteral nutrition management within the hospital were not consistent, nor were orders based on current best evidence. A review of the policy for enteral nutrition found a lack of evidence on how, when, and why assessment of gastric residual volumes were needed. The dietitians felt the current practice was preventing delivery of optimal nutrition to the patients. Monthly data reflective of time of enteral feeding initiation, variation in enteral nutritional orders and gastric residual volume hold orders, and patient nutritional goals as met or not met were collected. The data reflected significant variation in practice and more importantly, that patient nutritional goals were frequently not met because of the variation in practice. A dietician and clinical nurse educator became the opinion leaders of the project. They invited champions from inpatient practice areas to join the team. They reviewed the current policy, hospital orders for enteral nutrition, and best evidence for enteral nutrition practices inclusive of nasogastric insertion, monitoring, and gastric residual volume assessment. The team met for 3 months, developing and implementing practice change for the hospital. They set a date for new enteral nutrition orders to be available within all inpatient units; provided an educational information sheet that outlined the current evidence and practice changes, revised the policy, and ensured that charting screens reflected practice and policy expectations specific to residuals and assessment of nasogastric tubes. Effectiveness of the infusion of the new practice was audited by the dietitians who provided unit-specific feedback to the nurse managers and medical directors. The team continues to meet as needed to evaluate the impact the process has on meeting patient enteral nutrition needs.

Figure 12-1 TRIP Sheet Example: Adult Enteral Feeds

## TRIP Sheet Adult Enteral Feeds

### *Translating Research Into Practice*

- Delivering early nutrition support, primarily using the enteral route, may decrease disease severity, diminish complications, decrease length of stay and improve patient outcomes (McClave et al, 2009)
  - **Goals:**
    - Initiate Enteral Nutrition (EN) within 24-48 hours of admission (requires MD order)
    - Deliver > 90% of required calories on a daily basis.
  - **Tools for Success:**
    - MD should complete the "Inpatient Enteral Tube Feeding" order and utilize the EN Feeding Guideline provided on the back of the order form (also available in Appendix A of P&P) (DOD# FND 12532)
  - **Reference: Level of Evidence I**  
 McClave S et al. Guidelines for the Provision and Assessment of Nutrition Support therapy in the Adult Critically Ill Patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (ASPEN). *Journal of Parenteral and Enteral Nutrition*. 2009 May-June; 33(3): 277-316.
- **RN Practice Implications/Policy Changes**
    - Small Bore (8Fr-12Fr) and Large Bore (14Fr-16Fr) tubes require placement confirmation by x-ray. MD should note the anatomical location of the tube (stomach or small bowel)
    - Confirm placement thereafter by assessment of aspiration contents and **assessment of the tube position as it exits the nare**. Note that with small bore tubes, aspiration may not be possible.
    - Gastric residual volumes (GRV) should be monitored at least every 4 hours. **Recommended maximum GRV is 350ml.** Refer to MD order.
    - Refer to the EN Feeding Guideline to manage excess GRV.
    - Do not check residuals when feeding the small bowel. Patient should be assessed for signs of feeding intolerance. If feeding intolerance is presumed, a large bore nasogastric tube should be placed into the stomach for GRV assessment and drainage.
    - Sterile water may be indicated for flushes and irrigation in immune-compromised and critically ill patient populations.
    - Refer to EN Feeding Guideline for tube maintenance and procedure for clog removal.



Courtesy of University of Colorado Hospital.

### Example 2: Pain Champions of Change

The pain champions of change team noticed through a review of medical record audits that the hospital did not have a pain assessment tool to evaluate pain in the nonverbal adult patient, which includes the mechanically ventilated adult patient. The pain champion team conducted an extensive review of the literature, synthesized the evidence, and adopted a pain assessment tool for nonverbal adult patients. The team revised the documentation forms to include this nonverbal pain assessment scale, revised the hospital policy, provided extensive staff education, and continues to audit nursing compliance with effective assessment of nonverbal patient's pain experience and nursing interventions. This champion of change committee is a standing EBP team that continually evaluates the evidence to ensure that healthcare providers are practicing with best evidence to reduce the hospitalized patient's pain.

## HOW TO USE EBP MODELS TO GUIDE PRACTICE CHANGE

Some form of structure is desirable to effectively implement practice change. A number of models (the Colorado Model [Goode, 2009], the Iowa Model of Evidence-Based Practice to Promote Quality Care [Titler, 2004], the Stetler Model [Stetler, 2001], the Johns Hopkins Nursing Evidence-Based Practice Model [Newhouse, 2007]) are available to guide the evaluation of practice and EBP implementation. Please refer to Chapter 6 for an in-depth description of these models. Choosing a model depends on how the model fits with the organizational culture, the available resources, and the intention for its use. The EBP Committee or Council in tandem with leadership staff should make the final decision as to model choice.

All of the models mentioned have a few common threads: (1) a process that identifies practice questions; (2) a review, critique, and synthesis of all best evidence, most importantly current and valid research; (3) a decision to institute a practice change if it is warranted; and (4) an imperative to monitor the change and evaluate the outcomes. Translation and adoption of EBP refer to the use of best evidence in practice as the norm.

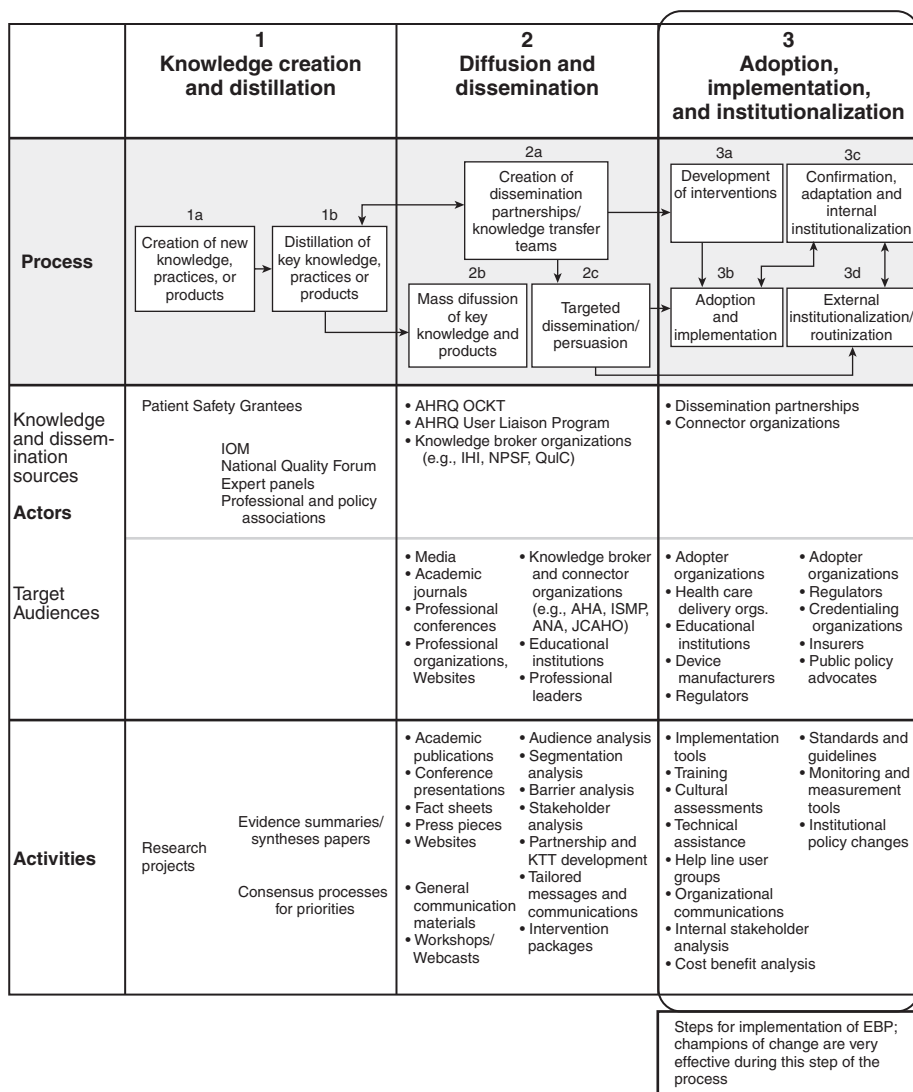
At the University of Colorado Hospital, the Colorado Model was recently revised to reflect the importance of leadership, organizational support, facilitation, and mentorship in changing practice based on best evidence. When examining the evidence, all sources of evidence are explored; staff is mentored and supported to facilitate the review process. UCH staff also use the Iowa Model to assist in the identification of clinical topics or issues based on triggers, either problem-focused or knowledge-focused. The model provides an algorithm (based on the trigger) and outlines a series of steps to determine if there is a sufficient research base to make a practice change. Key elements in the model include:

1. Type of trigger (problem focused or knowledge focused)
2. Organizational priority for exploring the trigger
3. Forming a team
4. Reviewing and critiquing current literature
  - a. If evidence is lacking, consider conducting research
  - b. If sufficient evidence is available, pilot the change in practice
5. Recommending and instituting change in practice based on best evidence
6. Monitoring and analyzing process change and practice outcomes

The Agency for Healthcare Research and Quality (AHRQ) developed a conceptual framework for the transfer of research and best evidence into practice ([www.ahrq.gov](http://www.ahrq.gov)). The framework has three stages: knowledge creation and distillation, diffusion and dissemination, and end user adoption, implementation,



Figure 12.2 Implementation Steps for EBP



Nieva, V. F., Murphy, R., Ridley, N., Donaldson, N., Combes, J., & Mitchell, P. *et al.* (2005). From Science to service: A framework for the transfer of patient safety research into practice. AHRQ. Retrieved on September 17, 2009 from [www.ahrq.gov/downloads/pub/advances/vol2/nieva.pdf](http://www.ahrq.gov/downloads/pub/advances/vol2/nieva.pdf).



and institutionalization. The structure provides an organized process for movement of new knowledge into practice to achieve effective change in practice. The AHRQ model outlines the importance of a change leader(s) within organizations to effectively implement and influence the movement of new knowledge into practice. Opinion leaders and champions of change have the responsibility of “packaging” new knowledge to effectively influence practice change.

## **JOURNAL CLUBS**

Journal clubs can be a fun and effective way to inform the healthcare team about new research and practice evidence. A journal club is a meeting of participants from similar or different disciplines who come together for the purpose of critically appraising a research article pertinent to a shared area of expertise or clinical practice (Thompson & Waters, 2009). Journal clubs can be unit-based, held within council meetings such as EBP champion meetings, interdisciplinary, or system based (e.g., inpatient and clinic services, local profession organizations, or colleges of nursing).

Journal clubs offer several benefits towards the goal of improving practice based on best evidence. A few of the benefits include:

- Encouraging healthcare providers to read and discuss research
- Exploring current practice through discussion of research article findings
- Improving healthcare provider skills and comfort with critiquing of research articles
- Fostering collegiality and interprofessional collaboration through dialogue on current research, evidence, and practice
- Promoting positive patient outcomes through exploration of new evidence to guide practice

Journal clubs improve interactions among healthcare providers through active dialogue as well as provide education about the research process to the participants (Hagman & Krugman, 2003). Often, new evidence is not well disseminated to bedside care providers. Journal clubs provide an informative and unthreatening manner for “updating” care providers on practice change. For example, with the implementation of the new enteral feeding and gastric residual volume policy, one of the inpatient units held a journal club to discuss the evidence. During the journal club, assessment of the nasogastric tube was discussed with emphasis on the fact that auscultation was no longer a reliable method to confirm tube placement. The journal club format allowed all team members to discuss this change in practice without specific reference to a participant’s personal practice. Recent graduate nurses were more aware of

current evidence for assessment of nasogastric tubes than other participants; however, the journal club format allowed a “safe” mechanism for the participants to learn and explore their personal practice and encourage adoption of best evidence into practice.

Journal club meetings, like other processes, have specific tasks that should be performed to maximize success. Roles for a journal club include: facilitator, leader, and participants. The role of the facilitator is to orchestrate and guide the process. Ideally the facilitator is knowledgeable about EBP and the research process. This individual provides mentorship and guides the leader and participants in the critique of the research article. The facilitator answers and leads participants in development of their skills in interpretation of research findings. It is helpful if the facilitator provides a formal written critique of the research article at the conclusion of the journal club to allow the participants to compare their critique with that of the facilitator. Often the facilitator is the nurse manager, educator, nurse researcher, or someone with an advanced degree that is familiar with the research process and critiquing the literature. The leader is the person who guides the critical review of the article. The leader usually advertises and distributes information about the article and journal club meeting at least 2 weeks prior to the established date. The leader directs the journal club discussion and facilitates participant dialogue. Participants can be any healthcare provider or a more focused group, depending on the article chosen for review. For example, in a journal club discussing fluid resuscitation with hypertonic saline, the leader desired physician dialogue, so the journal club was held during a quality review meeting to engage nursing and medical participants in the journal club discussion.

New knowledge and reexamination of practice is continually occurring in the literature. Journal clubs provide an excellent venue for actively exploring current evidence about practice through dialogue. However, engaging individuals in active participation in a journal club can be challenging. Strategies for successful journal clubs include:

- *Setting times for the journal club.* Explore what day/time is most frequently best for the healthcare team. Consider making the journal club a social event; bring food or consider holding the meeting off-campus. Be consistent with the established day/time for the journal club to help establish a “routine.” Multiple offerings are often helpful in engaging off-shift staff members.
- *Advertising.* Post flyers and send electronic communication about the logistics of the journal club. Include essential information in the communication—when, where, time, full citation of the article, and how the participant can access the critique form. Be creative in publicizing the journal club topic. Peaking interest in the participants to attend a journal club begins with how the journal club is advertised.

Figure 12-3 ICU Journal Club

## ICU Journal Club

### Ventilator Sedation and Daily Wake Up Protocol

Join us for Journal Club to review the literature and revised Ventilator/Sedation Orders

Review the Article and Complete the Critique prior to journal club

Article: Girard, T.D. et al. (2008) Efficacy and safety of paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care. *Lancet*. 371: 126.

*Sessions: Please join any session that works for your schedule*

**MICU/CICU**  
July 21 1100-1200 rm 2106  
July 23 0745 - 0845 room 2118 (Nursing Break Room)

**SICU**  
August 4 and 6 0730-0830 rm 2.2341.3 (west end of SICU back hallway)

**Neuro ICU**  
August 6 1100-1200 Nursing Break Room  
August 14 0730-0830 Nursing Break Room

**BTICU**  
July 22 0730-0830 Burn Gym  
July 28 1300-1400 Burn/Neuro Conference room 3.2213

**Respiratory Therapy Department**  
July 22 1400-1500 RRT Department



Courtesy of University of Colorado Hospital.

- *Choosing an article.* The facilitator or leader chooses the research article for the journal club. The topic may be driven by a patient problem, changes in practice that have not been well implemented in the practice area, or a burning clinical question. Journal clubs are most effective when the topic for discussion can be immediately applied to clinical practice or raises questions about the status quo in practice.
- *Critiquing the article.* Critiquing the literature is most effective when participants can follow a form that guides the reader in the critical analysis of the research article. Critique forms should reflect the methods of the research article: quantitative or qualitative review. **Table 12-2** provides examples of key questions to address when critiquing research articles. Creating user-friendly critique forms teaches the reader how to critically analyze a research article and provides a framework for the journal club dialogue. Use existing critique tools or develop a tool that will be effective within the organization. The goal is to critically

analyze the literature and encourage discussion about adoption of the evidence into practice.

- *Accessing the research article.* Explore methods to disseminate the article before the journal club. Discussions are most rich when the participants have read the article prior to attending the journal club. Be cognizant of copyright laws and do not mass-produce the article or send the PDF file. A link to the online resource is an acceptable method to make the article available. A single article posting with step-by-step instructions for participants to access the article is effective and will help participants learn how to access medical library or online literature resources. Online resources such as *Nursing Center* (<http://www.nursingcenter.com/library/index.asp>), PubMed (<http://www.pubmed.gov>), or *Google Scholar* (<http://scholar.google.com>) can be used to access articles for the journal club; however, a small fee may be required to download the full-text article. *Evidence-Based Nursing Journal* provides a critical review addressing the strengths and limitations of a research article and is an excellent resource for journal club articles.
- *Continuing education.* When possible, apply for continuing education credits for the journal club. Also, many research articles in clinical journals are “advertised” as research articles for journal club and may provide continuing education credits.
- *Holding the journal club.* Establish a meeting place that is near the unit or common area for participants. Ideally the meeting room should not be a high-traffic area, thus facilitating a focused discussion without frequent interruptions. Questions that can open the journal club discussion may include: “Who read the article and what are your initial impressions?” After a general discussion of initial impressions, proceed through the critique form while engaging participant dialogue in the review process.

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**Table 12-2 Key Critique Questions**

<b>Quantitative Study</b>	<b>Qualitative Study</b>
<p><b>Definition</b></p> <p>A formal, objective, systematic process to describe and test relationships and to examine cause-and-effect interactions among variables. Statistical tests used for data analysis.</p>	<p><b>Definition</b></p> <p>A systematic, interactive, subjective approach used to describe life experiences and give them meaning. Statistical tests are not used to analyze data.</p>

(continues)

**Table 12-2 Key Critique Questions (Continued)**

<b>Quantitative Study</b>	<b>Qualitative Study</b>
<p><b><i>Research Problem and Purpose</i></b>                      What is the purpose/problem of the study? Is it clearly identified?                      What are the research question(s) and/or hypotheses?</p>	<p><b><i>Research Purpose</i></b>                      What is the purpose of the study? Is it clearly identified?                      Identify why the phenomenon requires a qualitative format.                      Is the research question one that tries to explore, describe, or expand knowledge about how reality is experienced?</p>
<p><b><i>Review of Literature/Background</i></b>                      Do the authors specify a theoretical/conceptual framework guiding the study (do they provide a “word picture” or visual image of the framework)?                      Specify the framework/conceptual model used:</p> <ul style="list-style-type: none"> <li>• Is the literature reviewed relevant to the study purpose?</li> <li>• Is the review logically and clearly organized?</li> <li>• Does the review primarily use current literature? (published within the last 5 years; unless a “classic”)</li> <li>• Were primary sources used? (A primary source is written by the person who originated the ideas published)</li> </ul>	<p><b><i>Review of Literature/Background</i></b>                      Do the authors specify a theoretical/conceptual framework guiding the study (do they provide a “word picture” or visual image of the framework)?                      Specify the framework/conceptual model used:</p> <ul style="list-style-type: none"> <li>• Is the literature reviewed relevant to the study purpose?</li> <li>• Is the review logically and clearly organized?</li> <li>• Does the review primarily use current literature? (published within the last 5 years, unless a “classic” )</li> <li>• Were primary sources used? (A primary source is written by the person who originated the ideas published)</li> </ul>
<p><b><i>Research Design and Methods</i></b>                      What type of design(s) was (were) used? Circle all that apply:</p> <ul style="list-style-type: none"> <li>• Experimental; Quasi-experimental; Correlational; Exploratory; Descriptive; Survey</li> <li>• Other; None specified</li> </ul> <p>Does the study method make sense in light of the research purpose/questions/hypotheses?</p>	<p><b><i>Research Design and Methods</i></b>                      What type of design(s) was (were) used? Circle all that apply:</p> <ul style="list-style-type: none"> <li>• Qualitative Descriptive; Ethnography; Phenomenology; Hermeneutics; Grounded Theory; Historical Other; None specified</li> </ul> <p>Does the study method make sense in light of the research purpose?</p>

**Table 12-2 Key Critique Questions (Continued)**

<b>Quantitative Study</b>	<b>Qualitative Study</b>
<p>Identify and describe the population:</p> <ul style="list-style-type: none"> <li>• Sample (size, selection, representativeness) adequate and appropriate? N = _____</li> <li>• What type of sampling method was used? Probability (randomization) or nonprobability (convenience)?</li> <li>• List the inclusion and exclusion criteria.</li> </ul> <p>What is the setting for the study?</p> <p>List key variables:</p> <ul style="list-style-type: none"> <li>• Independent (causes the effect that is being studied)</li> <li>• Dependent (the outcome or effect thought to result from the independent variable)</li> </ul> <p>Research or study (characteristics or qualities being measured or described)</p> <p>Was institutional review board (IRB) approval obtained?</p>	<p>Identify and describe the population:</p> <ul style="list-style-type: none"> <li>• Sample (size, selection) adequate and appropriate? N = _____</li> <li>• How was the sample obtained?</li> <li>• List the inclusion and exclusion criteria.</li> </ul> <p>What is the setting for the study?</p> <p>List key concepts that were studied.</p> <p>Was institutional review board (IRB) approval obtained?</p>
<p><b><i>Data collection, measurement, and analysis</i></b></p>	<p><b><i>Data collection, measurement, and analysis</i></b></p>
<p>Describe the methods of data collection:</p> <ul style="list-style-type: none"> <li>• List instruments/tools used and note how reliability (consistency) and validity (accuracy) was established for each.</li> <li>• Describe the procedures for analyzing the data? Are they understandable?</li> <li>• List the statistics used to analyze data. Are they appropriated for the questions/hypotheses and levels of measurement?</li> </ul>	<p>Describe the methods of data collection and analysis:</p> <ul style="list-style-type: none"> <li>• <b>Credibility:</b> Does the researcher describe going back to the participants to validate the findings?</li> <li>• <b>Auditability:</b> Are enough examples given that the reader can follow the researcher's reasoning process throughout the study? Is the research process described step-by-step?</li> <li>• <b>Fittingness:</b> Are the findings described in enough detail to be useful to practice, research, and/or theory? Are the results useful for guiding your practice?</li> <li>• <b>Is saturation of data described?</b> (Data saturation occurs when additional sampling provides no new information)</li> </ul>

*(continues)*

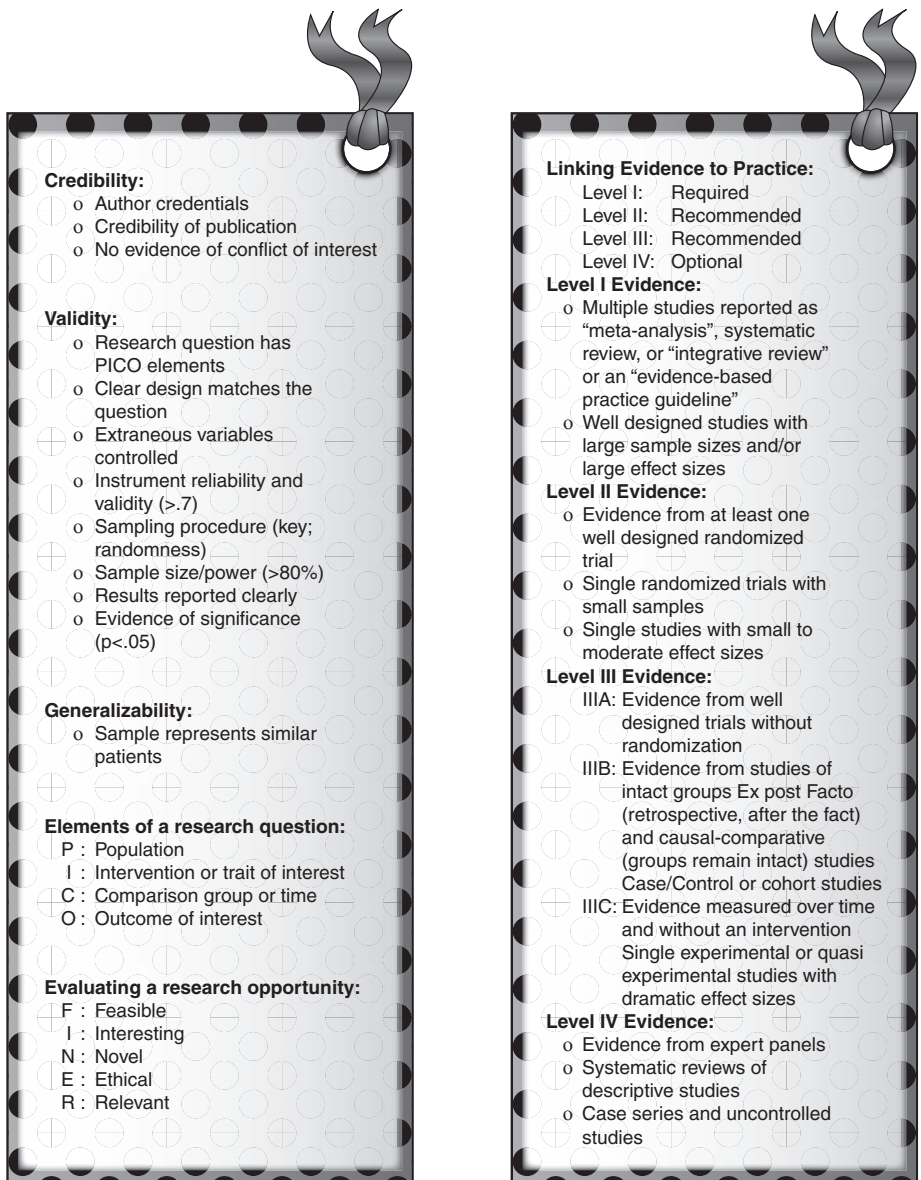
**Table 12-2 Key Critique Questions (Continued)**

<b>Quantitative Study</b>	<b>Qualitative Study</b>
<p><b><i>Findings/Results and Conclusions</i></b></p> <ul style="list-style-type: none"> <li>• Tables and figures are clear and relevant?</li> <li>• Results organized logically and presented clearly?</li> <li>• Briefly describe results and the conclusions drawn from them. Are the conclusions consistent with the results? Do the answers make sense?</li> <li>• Are the conclusions discussed in relation to the theoretical/ conceptual framework?</li> <li>• Does the researcher place the report in the context of what is already known about the focus of the study? (e.g., other studies, theories)</li> <li>• Are there answers to all the research question(s)/hypotheses asked in this study? If not, which one(s) were left unanswered?</li> <li>• List the strengths, limitations, and biases.</li> <li>• Are the limitations/biases concerning enough to cause you to question the validity of the results?</li> <li>• Are suggestions for future research included? If so, what are they?</li> <li>• Are the implications for practice clearly stated (i.e., how do the conclusions of the study affect my practice)? List the implications.</li> <li>• Is this study significant to nursing? (i.e., will this study have an impact on nursing practice?) If so, how is it significant?</li> <li>• What is the level of evidence for this study?</li> </ul>	<p><b><i>Findings/Results and Conclusions</i></b></p> <ul style="list-style-type: none"> <li>• Results organized logically and presented clearly?</li> <li>• Briefly describe results and the conclusions drawn from them. Are the conclusions consistent with the results? Do the answers make sense?</li> <li>• Are the conclusions discussed in relation to the theoretical/conceptual framework?</li> <li>• Does the researcher place the report in the context of what is already known about the phenomenon? (e.g., other studies, theories)</li> <li>• Do the themes/theory/process presented make sense in light of the data provided?</li> <li>• List the strengths, limitations, and biases.</li> <li>• Are the limitations/biases concerning enough to cause you to question the validity of the results?</li> <li>• Are suggestions for future research included? If so, what are they?</li> <li>• Are the implications for practice clearly stated (i.e., how do the conclusions of the study affect my practice)? List the implications.</li> <li>• Is this study significant to nursing? (i.e., will this study have an impact on nursing practice?) If so, how is it significant?</li> <li>• What is the level of evidence for this study?</li> </ul>

Adapted from Thompson and Waters (2009). Professional Resources Research Critique Forms. Aurora, CO: University of Colorado Hospital.



Figure 12-4 Bookmark Reference for EBP Review





Do not be discouraged if the first few journal clubs do not have great attendance or active dialogue. Getting a journal club off the ground can be challenging. Consider a “mini” journal club on the unit during down time to stimulate discussion and engage individuals who may increase participation in future journal clubs. Leave a copy of the highlighted article and critique form on the unit for others to read. Also, posting a summary paragraph of the journal club discussion can be an effective means to increase peers’ awareness of the journal club and spark interest for future meetings.

Journal clubs are an effective means to explain practice change, thus effectively moving evidence into practice. Providing a discussion of the science and evidence behind practice change is more likely to result in adoption of evidence rather than simply publicizing new practice guidelines. Dialogue facilitates understanding, and journal clubs are a medium for fostering this process.

## **RESOURCES FOR EFFECTIVE IMPLEMENTATION OF EBP**

Resources come in many shapes, sizes, and forms. Effective resources are available for the end user to maximize patient outcomes. National and professional resources can be used to support EBP, provide the “why,” and suggest effective strategies for implementing a specific EBP change. The availability of EBP resources is essential in supporting the current culture of change (Crow, 2006).

## **INTEGRATING EVIDENCE INTO POLICIES AND PROCEDURES**

Healthcare providers typically refer to policies and procedures to guide practice. Incorporating the best evidence into a hospital’s policies and procedures is an opportunity to infuse evidence into daily practice while disseminating practice changes (Oman, Duran, & Fink, 2008). An algorithm (see **Table 12-3**) developed by Oman *et al.* (2008) provides a consistent approach and outlines the process used at UCH for creating or updating a policy and procedure based on the best evidence. To ensure that all who participate in a policy’s revision or creation understand the process, new staff are educated at orientation, and all other experienced staff are provided with this information at UCH’s annual research competency.

Based on experience, the policy and procedure algorithm is simple to use, practical, and has been successfully incorporated into the UCH policy review process. UCH nurses and others have more confidence about the evidence supporting their practice since using the algorithm to review evidence-based policies and strength of the evidence.

**Table 12-3 Integrating EBP into Policies and Procedures: An Algorithm**

<b>Policy and Procedure Review Steps</b>	<b>Suggested Actions</b>
Select the policy for revision or create new policy if none available on topic.	Routine review (every 2 to 3 years) or practice changes; this process is also applicable for new policies.
Search for the evidence.	Suggested approaches and research-based evidence sites: <ul style="list-style-type: none"> <li>• CINAHL, Medline, or other databases</li> <li>• Professional associations' guidelines</li> <li>• University Healthsystem Consortium (UHC) for other academic hospital policies and procedures</li> <li>• Local standards of care (SOC) or policies</li> </ul>
Systemically evaluate the evidence.	Critical appraisal of research evidence: <ul style="list-style-type: none"> <li>• Assign a level of evidence (evaluate the strength of the evidence using the Stetler Model).</li> <li>• Consider a mechanism for organizing the evidence, e.g., an evidence table may be constructed.</li> </ul>
Compare evidence to current policy and make a decision.	Decision point: <ul style="list-style-type: none"> <li>• Make no changes in policy (update references).</li> <li>• Make language more precise.</li> <li>• Revise policy to incorporate new evidence.</li> <li>• Develop new policy or procedure based on evidence, if indicated.</li> <li>• Delete policy if no longer applicable to patient care.</li> </ul>
Conduct a policy review by stakeholders.	Send revised policy to stakeholders (those who have reviewed prior versions of the policy or those who are appropriate to review [Medical Directors, Nurse Manager, or Educator]), with deadline for revisions and timeline goal for presentation of policy to the P&P Committee.
Make revisions based on stakeholder/ experts comments.	If major revisions from stakeholders, resend new revision (with stakeholder suggestions) back to original distribution list for approval, again including approval deadline date.
Obtain approval signatures.	Electronic email approval is accepted at UCH.

**Table 12-3 Integrating EBP into Policies and Procedures: An Algorithm (Continued)**

<b>Policy and Procedure Review Steps</b>	<b>Suggested Actions</b>
Present policy to the UCH Policy and Procedure Committee.	Final recommendations and approval by the P&P Committee (may require additional UCH Committee approval prior to P&P approval [Medical Board, Ethics Committee, others, etc.]
Provide staff education as needed.	Develop a TRIP sheet, if indicated, and present to Nurse Educator Council to obtain their assistance with dissemination and developing an education plan.
Set up Web intranet submission or site-specific process.	All UCH Policies and Procedures are located on the hospital's home page intranet.

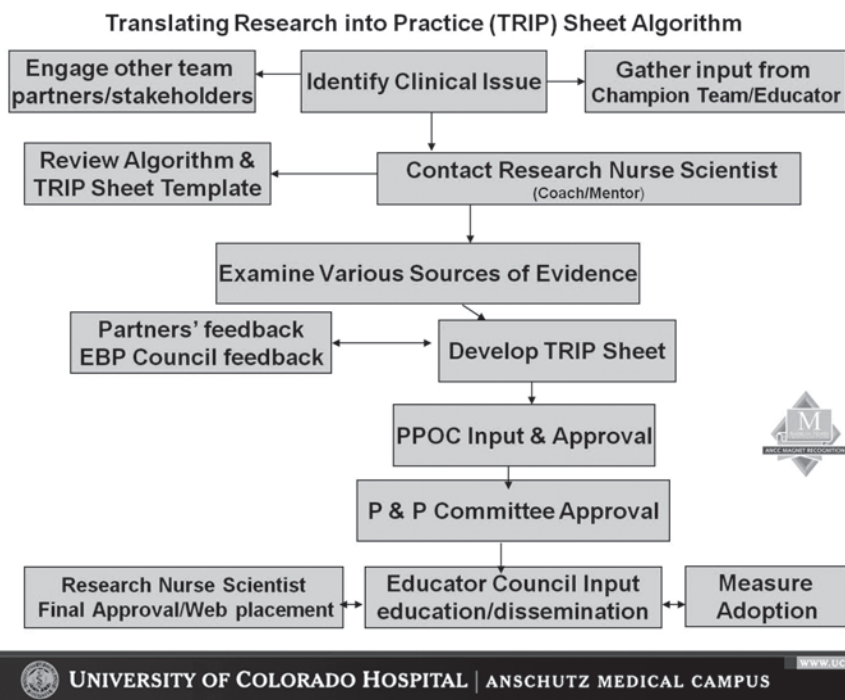
Adapted with permission from Oman, K. S., Duran, C., & Fink, R. M. (2008). Evidence-based policy and procedures: an algorithm for success. *Journal of Nursing Administration*, 38(1), 47–51.

## TRANSLATING RESEARCH INTO PRACTICE (TRIP)

Translation of research into practice occurs when research findings are adopted by healthcare providers into daily practice (Titler, 2004). Translational research is all about promoting the rate and extent of EBP adoption and describing organizational, unit, and individual variables that affect the use of evidence in clinical and operational decision making.

Translation occurs when the “new evidence” for practice is now “the norm” for practice. TRIP informational fliers can be used as an effective way to inform staff of an EBP change and provide the critical research citations that support the practice change. The University of Colorado Hospital Research and EBP Council developed an algorithm and checklist to guide the development of a TRIP sheet. (See **Figure 12-5** and **Table 12-4**). It begins with the identification of a clinical issue and involvement of the key stakeholders for their input. The research nurse scientists provide mentoring for the process and are consulted in the initial phase; clinical experts or educators in other organizations may take the responsibility for this. Examining various evidence sources provides the groundwork for the practice change. Obtaining feedback from the EBP Council and the Professional Practice and Policy/Procedures Committees is crucial before a change in practice can be implemented. The nurse educators are important facilitators of the practice change by disseminating

Figure 12-5 TRIP Sheet Algorithm



Courtesy of University of Colorado Hospital.

Table 12-4 TRIP Sheet Algorithm Checklist

**TRIP Sheet Algorithm Checklist**

Title: \_\_\_\_\_

Lead Author: \_\_\_\_\_

Team members: \_\_\_\_\_

Research Nurse Scientist: \_\_\_\_\_

*(continues)*

**Table 12-4 TRIP Sheet Algorithm Checklist (Continued)**

<b>Task</b>	<b>Person Responsible</b>	<b>Date Completed</b>
<b>Identify Clinical Issue</b>		
<ul style="list-style-type: none"> <li>• Engage team partners</li> <li>• Talk with educator, appropriate champion's team (if applicable)</li> <li>• Contact other stakeholders</li> </ul>		
<b>Contact research nurse scientist (coach/mentor)</b>		
<ol style="list-style-type: none"> <li>1. Discuss clinical issue</li> <li>2. Examine sources of evidence</li> </ol>		
<b>Examine sources of evidence</b>		
<ul style="list-style-type: none"> <li>• Use Colorado Model as guide</li> <li>• HSC librarian as resource</li> </ul>		
<b>Develop TRIP sheet if indicated</b>		
<ul style="list-style-type: none"> <li>• Review algorithm</li> <li>• Review TRIP sheet template, structure, checklist</li> <li>• Designate level of evidence of selected references</li> <li>• Solicit team partners feedback</li> <li>• EBP Council feedback</li> </ul>		
<b>PPOC for input and approval</b>		
<b>P&amp;P Committee for review and approval if a policy revision involved</b>		
<b>Research Nurse Scientist</b>		
<ul style="list-style-type: none"> <li>• Final Approval</li> <li>• Web site placement</li> </ul>		
<b>Educator Council and EBP Champions</b>		
<ol style="list-style-type: none"> <li>1. Input and approval</li> <li>2. Education and dissemination</li> </ol>		
<b>Measure Adoption, Outcomes, and Practice Change</b>		
<ol style="list-style-type: none"> <li>1. Educator               <ul style="list-style-type: none"> <li>✓ Staff</li> <li>✓ Others</li> </ul> </li> </ol>		

Figure 12-6 TRIP Incontinence Underpads Example

# Incontinence Underpads

## *Translating Research Into Practice (TRIP)*

UCH EBP Skin Champion Council

### What does the evidence say?

- Excessive moisture results in incontinence associated dermatitis (IAD) and increases the risk of pressure ulcers, infection, and pain
- Diapers increase IAD because of moisture retention and enzyme irritation
- Wicking underpads "pull" fluid into pad surface and away from skin
- Patients with fecal incontinence have a 22% > chance of developing a pressure ulcer

### Change in practice?

- Use an incontinence underpad for incontinent patients
- Change underpad when visibly soiled and/or it is saturated with fluid
- You may not need to change underpad with each incontinence episode
- Continue to use skin barrier creams



### Selected References:

- Wishin, J., et al. Emerging options for the management of fecal incontinence in hospitalized patients. *JWOCN*, 2008; 35(1): 104
- Gray, M. Incontinence-related skin damage: essential knowledge. *OWM*, 2007; [www.o-wm.com/article/8161](http://www.o-wm.com/article/8161)
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- Maklebust, J. & Mangan, M.. *Adv Wound Care* 1994, 7: 25.

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[www.uch.edu](http://www.uch.edu)

Courtesy of University of Colorado Hospital.

the TRIP sheets, educating staff, and assisting to measure change adoption. Key elements in creating a TRIP informational sheet include: Topic Title, Current Practice, Change in Practice, Selected References, Approval (committee and date). **Figure 12-6** is an example of a TRIP sheet developed to institute a policy and procedure and practice change related to dry heat application prior to peripheral intravenous catheter insertion.

## NATIONAL RESOURCES

Avoid recreating the wheel. Explore national resources for implementing EBP change. For example, the Oncology Nursing Society (ONS) has developed *Putting Evidence into Practice* (PEP) cards designed to provide evidence-based interventions for clinical practice and teaching to improve cancer patient outcomes related to various side-effects and symptoms ([www.ons.org](http://www.ons.org)). EBP teams are developed that encompass various members of ONS and are

led by a research nurse scientist to coordinate the effort. Clinical practice issues are addressed; evidence is searched for, critiqued, and synthesized into a laminated PEP card. A unique feature of the PEP card is the use of the three-colored stoplight (green, yellow, red) system. Green means the practice is supported by strong evidence, and it should be used in practice; yellow suggests caution in adopting the practice; and red indicates that the evidence is not conclusive enough for practice change.

The American Association of Critical Care Nurses ([www.aacn.org](http://www.aacn.org)) publishes EBP practice alerts and protocols on various topics. The topics address both nursing and multidisciplinary interventions or activities that are important to acute and critically ill patients or their environments. Goals of the practice alerts and protocols are to close research and practice gaps, provide guidance, standardize practice, and identify new advances or trends in practice.

### Box 12-2 EBP Resources

National Guidelines Clearinghouse: [www.guideline.gov](http://www.guideline.gov)

National Quality Forum: <http://www.qualityforum.org>

Institute for Healthcare Improvement: [www.ihl.org](http://www.ihl.org)

Evidence-Based Nursing: <http://ebn.bmjournals.com/>

AHRQ 12 Evidence-Based Practice Centers: [www.ahrq.gov/](http://www.ahrq.gov/)

The Joanna Briggs Institutes: [www.joannabriggs.edu.au](http://www.joannabriggs.edu.au)

National Institute for Health and Clinical Excellence: <http://www.nice.org.uk>

Cumulative Index to Nursing and Allied Health Literature (CINAHL):  
[www.cinahl.com](http://www.cinahl.com)

Online Journal of Clinical Innovations:  
[www.cinahl.com/cexpress/ojcionline3/index.html](http://www.cinahl.com/cexpress/ojcionline3/index.html)

Research Portfolio Online Reporting Tools (RePORT):  
<http://projectreporter.nih.gov/reporter.cfm>

EBN Online, Evidence-Based Nursing: <http://ebn.bmj.com>

Journal of Nursing Scholarship:  
[http://www.nursingsociety.org/Publications/Journals/Pages/JNS\\_main.aspx](http://www.nursingsociety.org/Publications/Journals/Pages/JNS_main.aspx)

Worldviews on Evidence-Based Nursing:  
<http://www.nursingsociety.org/Publications/Journals/Pages/worldviews.aspx>

Centre for Evidence-Based Medicine: <http://www.cebm.net>

TRIP database: <http://www.tripdatabase.com>

JCAHO: [www.jcaho.com](http://www.jcaho.com)

CDC: [www.cdc.gov/](http://www.cdc.gov/)

Healthlinks at University of Washington: <http://healthlinks.washington.edu/>

The practice alerts are brief, one-to-three page documents that provide a review of current evidence and key citations that support the EBP topic.

Sign up for EBP emails from the Agency for Healthcare Research and Quality (AHRQ). AHRQ provides several EBP resources and information for current government initiatives to improve the quality of care and patient outcomes through adoption of EBP.

Other resources are increasingly available as the EBP movement continues to evolve and gain momentum. **Box 12-2** provides a list of additional EBP resources that may be helpful in finding and moving evidence into practice.

## DISSEMINATING THE EVIDENCE

Successfully implementing EBP and achieving adoption of new evidence into practice takes time. Multiple avenues are needed to inform healthcare providers of new information and practice changes. Audits provide necessary feedback on adoption and more importantly patient outcomes (Titler, 2007). Incorporating EBP practice changes into all processes related to patient care is an essential step in moving the end user closer to adoption of new evidence. Maximize information technology to effectively guide best practice (Simpson, 2006). Consider the following multiple strategies for effective dissemination of EBP initiatives:

- *Electronic orders, charting screens, and documentation forms.* Work with the information technology systems to incorporate interventions that are only supported by current best evidence. For example, remove nursing intervention documentation options that are no longer supported by current evidence, such as auscultation of air to assess nasogastric tube placement. Implement EBP assessment tools into the physician and nursing ordering and documentation screens (e.g., nausea and vomiting assessment and anti-emetic medication orders). Working to ensure that documentation systems, paper or electronic, are embedded with evidence-based practices encourages adoption by healthcare providers (Simpson, 2006).
- *Patient and family education materials.* Develop evidence-based patient and family materials that are easily accessible and readable. Empowering and engaging the patient and family in care processes will also assist healthcare providers in adopting best practice.
- *Staff education.* Make educational materials engaging and fun. Create posters and unit educational flyers that are attractive to the eye as well as informative. Keep the content succinct to get the message out. Provide key citations and additional references for the reader to emphasize the science behind the EBP initiative.



- *Audits and feedback.* Monitoring performance indicators throughout the implementation process and for several months after provides important feedback to practitioners. This strategy helps staff see how the practice change is improving care and patient outcomes. (Titler, 2007). Ongoing audits are often needed to effectively evaluate if the new evidence has truly been adopted into practice as the “norm.”

## SUMMARY

Practicing by best evidence requires a team of healthcare professionals and an organizational culture that values change based on research and other forms of evidence to optimize patient outcomes. Implementation of EBP is a process involving multiple steps and reexamination of practice over time to maximize adoption of best evidence in practice. Mentoring staff, engaging champions, and immersing the environment with information about best practice helps create a culture that empowers clinicians to question practice and explore and implement new evidence to maximize patient care.

## ACKNOWLEDGMENT

To all the terrific nurses at the University of Colorado Hospital—it has been a joy to mentor you and be mentored by you along the journey toward achieving evidence-based practice. MBM, RF

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# Evidence-Based Practice Dissemination

*Kathleen S. Oman*

## INTRODUCTION

Communicating the findings of an evidence-based practice (EBP) project is the final and critical step in the process. A lot of time and effort has been expended on the project and it is time to showcase the work and have an impact on patient care processes and outcomes. This can be accomplished at many levels. At the patient care unit level, the findings may be presented at a staff meeting or a Quality Improvement (QI) meeting. This may be in the form of a verbal or written report, depending on the nature of the organization's QI reporting structure. Or the work may be presented in a poster format with charts and graphs to help represent the data and results. Whatever the venue, dissemination is a vital aspect of the project and should not be forgotten.

The project results are used to change organizational policy and procedures, direct care guideline development or revision, or develop care protocols and order sets. While this is precisely why the project was conducted, it is also important to consider broader dissemination of the findings. There are many ways to communicate the findings so they can be incorporated into practice. Local, regional, and national conferences or symposia often solicit well-conducted EBP projects for both poster and podium presentations. Evidence-based practice and QI journals also publish these types of projects. Whether the format is a poster, an oral presentation, or a written manuscript, certain steps in the process are very similar.

## APPROPRIATE AUDIENCE

The first step in communicating the findings of an EBP project is to find the right audience for the work. The audience should be identified before preparing

any written materials. The appropriate audience is one whose focus fits with the work (Houser, 2008). The journal focus may be evident by its title or personal experience with it, and some journals publish a list of priorities they consider for publication. Conferences usually have a theme or set of objectives that will help identify their interests. The more closely aligned the project is with the stated goals or objectives, the greater the likelihood that the work will be accepted. A clinical audience may be most appropriate for EBP projects as they will be able to judge the merits of the project and apply the findings to practice.

## WRITING AN ABSTRACT

An abstract is a summary of the project. It provides a brief, accurate, and informative overview of what is to come in an article or presentation. Abstracts are usually submitted in response to a conference “call for abstracts” and are used for three main purposes:

- To determine the quality and relevance of the work
- To help conference planners organize individual presentations into breakout sessions
- To assist conference participants in selecting the presentations they want to attend (Happell, 2008)

An abstract may also be included in a journal article and function as an overview of the manuscript. The abstract may be the only description of the work that conference reviewers will see, and it may be the first description that a journal editor sees, so it should be clear, compelling, and concise. Think of the abstract as an advertisement for the project, focusing on the strongest points and most interesting findings (Houser, 2008).

When a call for abstracts is issued, the conference planners have usually set specific criteria for the composition of the abstract. Word count, font type, spacing, and margins are also specified. Specific headings may be identified. Common headings for EBP projects might include:

- Title
- Author(s), Affiliation(s)
- Introduction/Background
- Purpose/Objectives
- Methods
- Results/Findings
- Conclusions/Implications for Practice

**Table 13-1** provides more detail about writing these sections.

**Table 13-1 Anatomy of an Abstract**

<b>Element</b>	<b>What is Included</b>
Introduction	<p>Usually no more than a sentence or two.</p> <p>Answer the question: Why is this research important?</p> <p>Include provocative sentences or an interesting lead-in that will “grab” the reader so they will want to read the whole abstract. Do not use extraneous information, jokes, or clichés; you do not have the luxury of using words for information that are not central to the research.</p> <p>This section may be called “Introduction,” “Summary,” or “Background.”</p>
Objective	<p>Report the primary purpose of the study; this can be one or two sentences that describe the aim of the study in detail.</p> <p>If the research question is a restatement of the purpose statement, do not include both.</p> <p>If, on the other hand, the purpose is achieved with an unconventional research question, then include both.</p> <p>This section may be called “Objective,” “Purpose,” or “Aims.”</p>
Methods	<p>Describe the design of the study, the methods used to achieve the purpose, and the procedures applied to control internal validity. This should include the sampling strategy and the analytic plan.</p> <p>Identify the independent and dependent variables, which may also be called “predictors” and “outcomes.”</p> <p>Enough detail should be presented that the reader understands the fundamental process for the research, but do not overload with detail.</p> <p>Only minimal statistics are included, but these usually include the sample size and the calculated power.</p> <p>The actual statistical tests that were run should be explicitly identified.</p>
Results	<p>Summarize the most important results (whether they were statistically significant or not).</p> <p>Keep in mind that a lack of effect may be as important as the presence of one.</p> <p>Some statistical results may be reported here, but limit these to test statistics and associated p values. Do not use this section to comment on the meaning of the results, but simply report them.</p>
Conclusions	<p>Focus on the most important implications of the findings and the usefulness for practice.</p> <p>Application issues should be addressed here.</p>

It is particularly important to abide by these criteria as lack of compliance may be cause for the abstract to be rejected or reviewed unfavorably.

The call for abstracts will also identify how the abstract will be submitted. It is most common now to submit electronically via email or on a submission Web site. With online submission, a password-protected account is created that enables the author to revise or modify the abstract up to a certain cutoff date. Always save a copy of the submitted abstract to use to prepare the poster or podium presentation (Happell, 2008).

The call for abstracts will also include a submission deadline. Do not assume that abstracts can be submitted beyond the date and time specified—the Web site or email address will usually not accept late submissions. However, if the deadline is missed, call or email the conference coordinator. Extensions are not common, but some conferences have extended their submission deadline if they did not have enough abstracts submitted or had technical difficulties with the submission process.

Most abstracts are reviewed by reviewers who are intentionally unaware of the author(s) and their affiliation(s), using an established rating or scoring system. The peer review process can take from a few weeks to months, and a time frame for notification of acceptance is usually included in the call for abstracts.

Writing an abstract can be a challenging undertaking for inexperienced authors. Call on colleagues with publication experience for mentoring and guidance; they are usually extremely happy to help, as someone most likely helped them get started also. Sharing new knowledge and contributing to the profession is a rewarding professional experience.

## **CREATING A POSTER PRESENTATION**

Poster presentations can be effective ways to disseminate the findings of an evidence-based practice initiative at a professional meeting or in the workplace. At a conference, a poster presentation gives the author an opportunity to engage colleagues in conversation, convey the main points of the project, and advertise the work. The interaction with participants occurs without the time constraints imposed on an oral presentation. Poster presentations also have the potential to be viewed by more attendees than a typical oral podium presentation can accommodate. A poster presentation is a nice place to begin the communication process because it is less intimidating than an oral podium presentation and requires less preparation than a journal manuscript (Houser, 2008).

A professional poster takes time to develop and may require the help of specialists in content and media design. Poster quality is as important as the

content to be included. Succinctly put: “A good poster display cannot rescue a bad idea, but a poor one can easily sink the best idea—as well as the viewers’ impression of the author” (Bushey, 1991, p. 11). Planning ahead is essential. A 6 to 8 week time frame is typically necessary. Hamilton (2008) suggests the following timeline, allowing at least a week for each step:

1. Draft content
2. Review content (self and others)
3. Revise content
4. Design poster
5. Review and revise layout
6. Finalize layout
7. Print poster
8. Allow an extra week for unexpected problems

When the abstract is accepted by conference planners, the author will usually be sent specifications for the poster display. Most conferences offer an easel, table, or display board for presentation options. Most large conferences only offer large (4 ft × 8 ft) display boards for the presentation. It is important to know how the poster will be displayed and the size constraints before beginning the development. Some additional considerations include: (1) institutional resources for design, (2) funds available for printing, and (3) travel limitations.

### **Components of a Poster**

Think of the poster as an illustrated abstract constructed primarily of visual displays of data with just enough supporting text to provide context, interpretation, and conclusions (Hess, Tosney, & Liegel, 2009). The usual components of a poster include the following:

- Title—develop a short, results-oriented title to communicate results and attract attention.
- Abstract—may or may not be included as many conferences publish the abstract in the conference syllabus.
- Introduction/Background—describe the need for the project; relevant facts about the prevalence of the clinical problem and the clinical implications are important.
- Purpose—describe the focus of the project and what was intended to be accomplished.
- Methods—include a concise description of the procedures, measures, and analytic tests used in the project.
- Results—use graphs, charts, tables, or other visual elements (limited text) to present the results.



- **Conclusions/Implications for Practice**—This is the heart of the poster. Highlight the most significant findings—this should be the “take home message” for the viewer.
- **Acknowledgments**—include recognition to peers who helped with the project, the poster, or sponsors of the work; include any funding if applicable.
- **References**—A brief list of the most important citations can be included. If space is an issue, a smaller font may be used, or consider omitting the references.

**Figure 13-1** represents the typical layout of a poster with associated text font sizes, but there are many ways to lay out the poster. An effective poster will have a balance of technical or scientific information and artistic elements (Ellerbe, 2006). Be creative and have fun designing the poster while always aiming for a professional product.

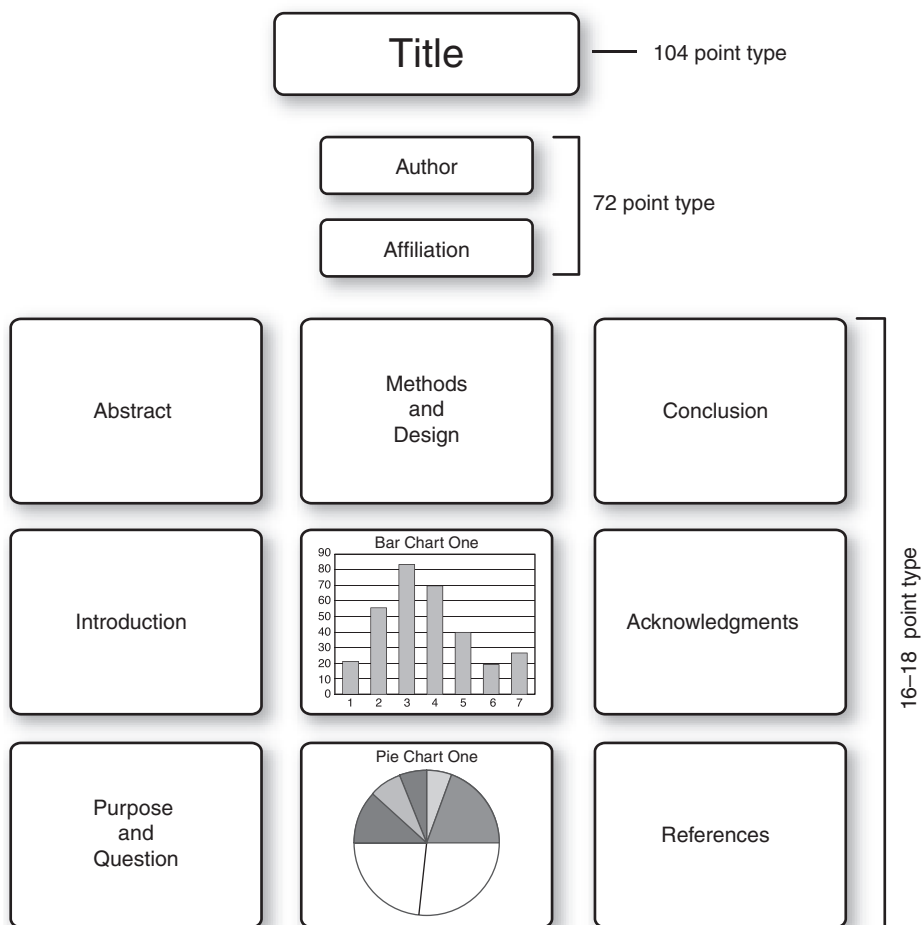
Typically, posters are read from left to right and top to bottom. Headings are used to focus and guide viewers; some authors number the headings for increased clarity. Be brief, concise, and edit the content ruthlessly. Use phrases (not sentences) active voice, and plain language. White space is important to keep the poster looking crisp. A poster cluttered with too much information will usually be overlooked by busy conference viewers. According to the 10-10-5 rule, the average viewer will spend 10 seconds scanning the poster from up to 10 feet away (Boullata & Mancuso, 2007) and then take approximately 5 minutes to read it. Some suggestions for poster design are listed in **Box 13-1**.

Posters can accommodate many types of visuals: graphs, photographs, illustrations, art, and even audiovisual effects. A small DVD player can be attached to the poster (given that there is electrical power near by) to display procedures or practice techniques that would be difficult to depict in photos or drawings (Bozdag, 2008).

### **The Poster Presentation**

Instructions about the location and time frame for the poster presentation will be communicated by the conference planners. There will be set times that the author will need to be present with the poster to participate in dialogue with attendees. Arrive early and bring extra supplies for assembling the poster (e.g., push pins or double-sided tape). Have business cards available to give to viewers who want additional information. Consider having copies of your abstract, measurement tool, or reduced copies of the poster as additional handouts. Enjoy the experience, have fun, and be sure to take time to view the other posters and network with other presenters.

Figure 13-1 A Sample Poster



Adapted from Houser, J. (2007). *Clinical research in practice: A guide for the bedside scientist*. Sudbury, MA: Jones and Bartlett.

**Box 13-1 Strengthen Your Poster Presentation**

- A poster presentation is a visual medium, so try to *show* what was done instead of using text. Arrows, flowcharts, diagrams, photographs, and schematics may all be used to demonstrate your research instead of describing it.
- Use bullets in the text. These emphasis points make the material easier to follow and read, and add interest to the presentation.
- When in doubt, edit out. Cluttered posters are hard to read and may be disregarded. Make sure every item on the poster is necessary. The purpose is to stimulate discussion, not formally report every detail of the project.
- Use a neutral-colored background for the poster. It is easier on the eyes than bright colors, and will not distract from the information on the poster or clash with the colors in your charts. Use white space effectively to differentiate parts of the poster and accentuate the elements.
- Self-explanatory graphics should dominate the poster. While you may be present to discuss your work in more detail, not every individual who looks at the poster will have an opportunity to discuss it with you. The work should stand alone as a general report of the project.
- Text and graphics should be readable from a distance of 4–6 feet. Sans serif fonts (fonts without embellishments) are easiest to read. Vary the font size relative to the importance of the information.
- The flow of the poster should be from left to right and top to bottom. Labeling each element with a number helps the reader sequence the parts of the poster in a logical way.

**EFFECTIVE PODIUM PRESENTATIONS**

Conference podium presentations are excellent venues for sharing knowledge as they allow for presenters to highlight their work, interact with the audience during the question/answer section of the session, and provide networking opportunities. As with any type of presentation, adequate preparation and practice are necessary for a successful experience.

Knowing the audience is important when considering how to present the project. Adjusting the presentation to fit the audience helps ensure that the information presented will be of interest to them. Start with the call for abstracts to determine the conference theme and the intended audience. The focus of the presentation might be on the implications of the work in practice when presenting to clinical practitioners, but the focus might shift to methods and statistical findings when presenting to advanced practice or research nurses. Tailoring the presentation to the needs and interests of the audience results in a greater chance that the findings will actually be used in practice.

There are many types of conference presentations, ranging from informal roundtable sessions to formal keynote speeches. The type of presentation will impact the content. Most podium presentations are grouped into breakout sessions of three-to-five presentations. The acceptance notification from the conference planners will describe the time frame and session for the presentation.

The first step in preparing for an oral presentation is to develop a content outline (Happell, 2008; Carlson, 2008). The following outline is a suggested format that will fit for most data-based presentations:

- Title with authors
- Acknowledgements
- Objectives for the presentation
- Introduction/Background/Problem statement
- Review of literature
- Purpose or primary aim of the project
- Study design, with a description of the methods and procedures
- Findings, including data analysis and major results
- Results, outcomes, and limitations
- Clinical implications

The content of the outline should build from the least to most complex (Platter, 2009). Start with straightforward objectives and take time to clearly present the purpose of the project. It is important that the audience be engaged and have a clear understanding of the topic.

Most conferences allot 10–20 minutes for oral presentations, so it is necessary to be efficient with the message (Jacobs, 2008). A common pitfall for novice speakers is to present too much information. The audience chose the breakout session, probably because they know something about the topic, and simply want to extend their knowledge (Happell, 2009).

Develop an outline of the presentation, add major points under each section, and then the specific content to include for each major point. This outline can be a guide for the development of the audiovisual presentation. Microsoft PowerPoint has become the preferred program for slide development as it is user-friendly (with some basic training), straightforward to adapt for different applications, and easily emailed to conference planners. Effective use of PowerPoint requires skill and attention to detail. Font style and size, layout, backgrounds, and color should be chosen carefully with the subject matter, audience, legibility, and readability in mind (Tarpley & Tarpley, 2008). Plan to talk for about 30–90 seconds per slide and limit the text to 6–8 lines per slide. Graphics are excellent ways to present data, but they must be readable. There is nothing more frustrating to the audience participant than to hear “I know

### Box 13-2 Strengthen Your Podium Presentation

- Podium presentations often have very tight time frames. When you develop your outline for the presentation, allocate a portion of the time allowed to each section. Develop the detail for each section with these time constraints in mind.
- Practice, practice, practice. Time yourself (there is a built-in timer in PowerPoint) and practice some more until you are well within the allotted time. It is the novice presenter who goes over the time limit. If you use slides, keep in mind that 1–2 minutes of talking time per slide is the average, so do not overload your presentation.
- Have colleagues attend one of your practice sessions and provide you with a critique. Often, someone unfamiliar with your research can tell you where your presentation has gaps or is confusing. Ask for feedback about your presentation style as well as content, so you can gain confidence in both aspects.
- Using a presentation package such as PowerPoint can enhance your delivery—or detract from it. While slides can help hold the attention of the audience, busy backgrounds or slides crowded with text can actually pull attention away from you. A basic rule of thumb is no more than seven lines to a slide and no more than seven words to a line. Stay away from light backgrounds—they are hard on the eyes when projected.
- If you have detailed statistics or tables, put them on a handout instead of a slide. Simple graphs are helpful, but too much detail cannot be read from a distance and distracts the audience.
- Speak naturally; pauses are a normal part of speech, as are gestures. Keep a professional stance, though, with your hands out of your pockets and your arms naturally relaxed.

you can't read this but. . . ." If the graphic is unreadable, modify it so it is readable or omit it from the presentation.

Practice the presentation several times to be sure it can be delivered in the allotted time. Focus on the most important points that have the most relevance for clinical application. **Box 13-2** describes some more specific principles for successful podium presentations.

### Speaking Tips for the Anxious

Stage fright is a common response to the anxiety associated with public speaking. Even the most experienced speaker can have stage fright if they are not prepared. Being thoroughly prepared and practiced is the best remedy.

Practice, practice, practice! Offer to present during a unit meeting or over lunch to colleagues. Ask for feedback. At home, practice in front of a mirror. Notice facial expressions and gestures. Time the presentation so you have a sense about the length of each section. Speak slowly, in a clear, assertive voice.

### Box 13-3 Overcoming Presentation Fear

Presentation anxiety is considered the most common phobia, so if you are anxious about your podium presentation, you are not alone. There are, however, some simple things you can do to reduce your fear and present your project in a professional way.

- Preparation and practice are key to a calm presentation. The more comfortable you are with your content, the more comfortable you will be in front of an audience.
- Get to the room early, and check out the environment and equipment. Anxiety is enhanced by feeling out of control; when you are familiar with the presentation environment and you feel in control, your anxiety will be reduced. Make sure your audiovisual support is working and your notes are organized, and that you know the layout of the room. Right before the presentation, step outside and “walk off” some of the nervous energy you feel immediately before you present.
- Use eye contact to your advantage. Pick a friendly face in the first few rows and focus on them until you are feeling relaxed in front of the group.
- Don’t apologize for your lack of experience, discomfort, or for any other aspect of the presentation. Apologizing is a sign of a novice presenter, and the audience will have less confidence in your presentation.
- Your most anxious time is likely right before the presentation begins. As you are introduced, breathe deeply and focus on relaxing your shoulders and neck. When it is your turn to talk, use assertive body language and stride to the podium with your head up. If you look confident, you will feel confident.
- Do not feel that you have to speak the moment you reach the podium. Take a moment to breathe, scan the audience, and smile. When you are composed, begin speaking.
- That said, if your voice shakes, do not focus on it, and let it work out as you talk. It is highly unlikely that the audience will notice the quiver in your voice.
- Your goal should be to control your anxiety, not completely remove all tension. A small amount of apprehension keeps you on your toes and actually adds energy to your presentation. Keep in mind that even seasoned speakers get nervous; they have learned to control it, and you can, too.

On the day of the presentation, review the first minute of the presentation just before the start of the session to become centered and focused (Platter & Matic, 2009). Some additional suggestions for overcoming speaking anxiety are included in **Box 13-3**.

### Responding to Questions

Part of preparing for a presentation is to anticipate participant questions. Practicing this is an important part of the presentation preparation. The first rule is

to be open and honest in providing answers (Platter & Makic, 2009). It is important to clarify and understand the question and then answer it. If the question addresses unfamiliar content, acknowledge it and perhaps open the question to the audience, or invite the individual to the podium after the session for further dialogue (DeSouza, 2007). While presenting, remember to acknowledge the participants when they ask questions or make comments. Common acknowledgements include statements such as:

- “Thank you for asking that question. . . .”
- “That is a great question. . . .”
- “Good point, thank you. . . .”

A podium presentation is a great accomplishment but do not think of it as the final step in the dissemination process. Consider publishing the work in a professional journal for broader exposure and clinical impact.

## WRITING FOR PUBLICATION

Writing for publication is an important means of communicating knowledge and experience to a broader population of healthcare professionals. Publishing findings that may have impact on a larger audience is a professional responsibility. Publishing also is a means to receive public recognition for the work, and may enhance career opportunities. Many healthcare professionals give conference presentations (oral and poster) but not all take the next step and publish their work. Only 45% of the abstracts presented at two annual pediatric meetings were published as journal articles within 5 years of presentation, and the main reason for lack of publication was that the investigator did not submit a manuscript for publication (Carroll, 2003; Riordan, 2000).

After the project is completed, it is not unusual to feel unsure about writing for publication. Lack of time and writing skills are frequently mentioned barriers to the publishing process. Expanding on the content from an oral or poster presentation is an easy way to begin, because these abstracts already follow the general framework of a manuscript: introduction, purpose, methods, results, and discussion (Gross & Fonteyn, 2008).

It is unusual for an evidence-based practice project to be conducted by a single person, so before the writing begins, decisions about authorship need to take place. The first author is usually the person who has the strongest commitment and investment in the project (i.e., the person who does most of the work) (Fink & Oman, 2009). Co-authors need to actively participate in the writing of the manuscript, and their level of commitment will determine the order of authorship. The co-authors should collectively decide on the order of authorship before drafting the manuscript. Honorary authorship—or

authorship for just being the department director or unit manager—should be avoided (Brumback, 2009).

Deciding where to submit the manuscript should be the next decision. Ask, Who should read about this project? Does it fit best with a clinically oriented audience or in the quality improvement literature? Journal Web sites usually contain author guidelines and past issues' tables of contents that can help determine if the topic is a good fit with the journal. Pierson (2009) suggests three steps for selecting the right journal: (1) read several articles from the journal; (2) look at the table of contents for past issues; and (3) read the journal mission statement.

When the choices have been narrowed to a few journals, query the editor about potential interest in the manuscript. Attach the abstract to the email. The query should include the focus of the manuscript, its anticipated length, and an estimated submission date (Gross, 2008).

Every journal has guidelines for authors, usually posted on their Web site, sometimes printed in the journal itself. It is very important to follow the guidelines. The manuscript will be viewed unfavorably or rejected outright if the format, style, headings, references, and page length do not comply with the journal guidelines.

Everyone approaches the actual writing from an individual perspective, but there are some common starting points that may help with the process. Research and/or evidence-based practice study manuscripts all follow a similar format; **Table 13-2** outlines these elements.

When working with a group, it is most efficient to assign sections of the manuscript to individuals to write. With this approach, one person will need to make the final edits to assure consistency in style and format. It is important

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**Table 13-2 Anatomy of a Manuscript**

<b>Element</b>	<b>Contents</b>	<b>Considerations</b>
Abstract	Summary of purpose and research question Overview of methods and procedures Major results Implications of the results General conclusions drawn	Generally written <i>after</i> the manuscript is complete. Should be 300 words or less. Reports the most important parts of the study. Can stand alone as a description.

(continues)



**Table 13-2 Anatomy of a Manuscript (Continued)**

<b>Element</b>	<b>Contents</b>	<b>Considerations</b>
Introduction	Detailed statement of the problem Relevance to clinical practice Brief review of the most relevant literature Theoretical framework for the study (if applicable) Specific purpose of the study, research question, and hypotheses (if appropriate)	Provides the context for the research question. Problem and purpose should be in the first few paragraphs. Limit the literature review to the most relevant sources.
Methods and procedures	Specific study design and rationale for selection Sampling strategy, including selection criteria and method Description of sample, including sample size Measurement methods with documentation of reliability, validity, and procedures Data collection and analysis procedures	If well-known measurement and/or treatment is used, then the description can be less detailed. Diagrams and photographs can clarify procedures for intervention or measurement. Provide description and references only for unique statistical tests.
Results	Textual description of the statistical tests Tables and figures that summarize the results	Tables and figures should not duplicate the text; information presented in each should be unique. This is a section for reporting only; discussion of the findings comes later.
Discussion	Interpretation of statistical results Discussion of clinical relevance of the findings Contribution of the results to practice Comparison of results with previous works of others Discussion of study limitations and strengths Suggested areas for further study	You can express opinions here. Commentary should not reiterate results but expand on them and relate findings to practical uses.
References	List of all references cited in the manuscript	

for the writers to keep in close touch for encouragement and support and to make sure the writing assignments stay on track. Whether the effort is a group one or an individual one, it is important to set deadlines. Writing is often challenging, so plan a realistic time frame to include writer's block, initial drafts, revisions, and final preparation, but not so much time that you lose interest or other demands take priority. It is always advisable to ask an outside reader, who can give constructive feedback, to review the manuscript before it is final. Ideally, this may be a colleague, one who will not gloss over the manuscript's weaknesses, and one who has publishing experience.

Most journals use an online submission process, or at the least, an electronic submission by email. Complete directions will be available at the submission site, and it is important to follow them to the letter. Most sites require files to be uploaded into the different sections of the manuscript template; for example, the main manuscript may be uploaded without any author information, and tables and graphs may need to be uploaded separately from the manuscript. Once all the pieces are submitted, a PDF file is created, and the review process begins.

Manuscripts are reviewed by a set of peer reviewers who are blinded to the author(s) and affiliation(s). The review process may take 4 to 12 weeks. The corresponding author will be notified by email of the editor's decision. Most authors are asked to revise the manuscript based on the reviewer's comments and suggestions before a final decision is made. Even the most experienced authors make revisions, and it is unusual to have a manuscript accepted without some revision. This peer review process is important to quality publishing, and a thoughtful, constructive critique is a gift from professional colleagues (Oman, 2009). When a manuscript is accepted pending revisions, the author will usually be given approximately 4 to 6 weeks to make the revisions. Then a final decision will be made by the editor. Usually, if the revisions have addressed the reviewers' comments, the manuscript will be accepted for publication. If the manuscript is rejected after the review process, the reviewers' comments are usually included; use this feedback to revise the manuscript and send it to another journal. Many times the second submission is published.

Seeing the work published in a professional journal is a great accomplishment. The findings could inform and enhance practice and ultimately improve patient outcomes. Feel proud and take time to celebrate the success.

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# Integrating Evidence-Based Practice with Organizational Systems: A Case Example

*Terry Capuano, Carolyn L. Davidson, and Kim S. Hitchings*

## INTRODUCTION

Acceptance of evidence-based practice (EBP) as the foundation of clinical and organizational decision making is logical for clinicians and professionals who were educated in the basic sciences. Translating that logic into utilizing evidence and achieving integration in everyday practice does not always follow. It requires leadership vision, focus, passion, and thoughtful planning to achieve a culture that relies on evidence to guide actions, advance practice, achieve outcomes, and promote organizational change.

Healthcare organizations are complex systems, dependent upon professionals from different backgrounds to function seamlessly to achieve positive patient, family, and community outcomes. An overarching yet simplistic schematic of a tricycle can be used to depict and communicate the primary focus of patient care. The large front wheel of the tricycle represents commitment to the advancement of patient care. Knowing that the advancement of patient care does not occur in isolation, the front wheel is supported by two smaller and necessary rear wheels of education and research. This pictorial representation, while basic, communicates the fact that sound clinical practice is dependent on evidence, research, education, and learning ways in which constant improvement in outcomes can be achieved. Changing practice in complex systems requires the two rear wheels to be present and effectively functioning to guide, not dominate, clinical practice.

## INTEGRATING EVIDENCE IN AN ORGANIZATION'S CARE DELIVERY MODEL

Care, centered on the patient, is fundamental to our beliefs as healthcare clinicians. The concept of patient centered care resonates with healthcare

professionals and serves to effectively set the foundation for integration of evidence-based practice into the care setting. Patient centered care is not just a collection of words that can be meaningful in health organizations. These words actually represent components or dimensions that have been identified as important to patients and families based on the rigor of research. The use of evidence-based patient-centered care research as the foundation of clinical practice in an organization signals the importance of evidence to guide the delivery of care.

### Introducing Evidence-Based Patient Centered Care

In 1995, Lehigh Valley Health Network (LVHN), a 950-bed tertiary care center, explored the concepts of patient centered care. Literature was reviewed, experts were sought, and site visits made to understand the concepts and their integration into practice. Knowing then that evidence should guide practice, patient centered care, as defined by research sponsored by the Picker Commonwealth Program for Patient Centered Care, was adopted (Gerteis, Edgman-Levitan, Daley, & Delbanco, 1993). Seven original dimensions of care, which have grown to the current number of eight based on additional research (Edgman-Levitan & Cleary, 1996), serve as the evidence-based foundation to guide our actions and infuse our culture. **Table 14-1** lists the eight dimensions of patient centered care. By adopting these eight dimensions, the message was clear that practice rooted in evidence was valued.

Our work of the first decade, 1995–2005, became one of involving many disciplines in the transformation of our culture to one of patient centeredness. With each change implemented, reinforcement of the evidence was apparent as it drove the processes. Environmental alterations were made to eliminate centralization of nursing stations and bring supplies, medical records, and professionals closer to the patient. New staffing roles were trialed and studied with

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**Table 14-1 The Eight Dimensions of Patient Centered Care**

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- Respect for Patients' Values, Preferences, and Expressed Needs
  - Coordination and Integration of Care
  - Information, Communication, and Education
  - Physical Comfort
  - Emotional Support and Alleviation of Fear and Anxiety
  - Involvement of Family and Friends
  - Transition and Continuity
  - Access to Care
- 

*Source:* Edgeman-Levitan & Cleary (1996).

the decentralization of functions such as phlebotomy, electrocardiograms, and respiratory treatments. Process flows were evaluated in the building of diagnostic care centers and other patient venues. Both the evidence-based foundation of patient centered care and the emphasis on outcome measurement during this decade were instrumental in advancing the importance of evidence-based care in our organization. Involving the research department to design effective measurement tools highlighted the importance of research rigor. It sent the message that we value the evidence and will use it to guide patient care practices.

### **Enhancing Patient Centered Care**

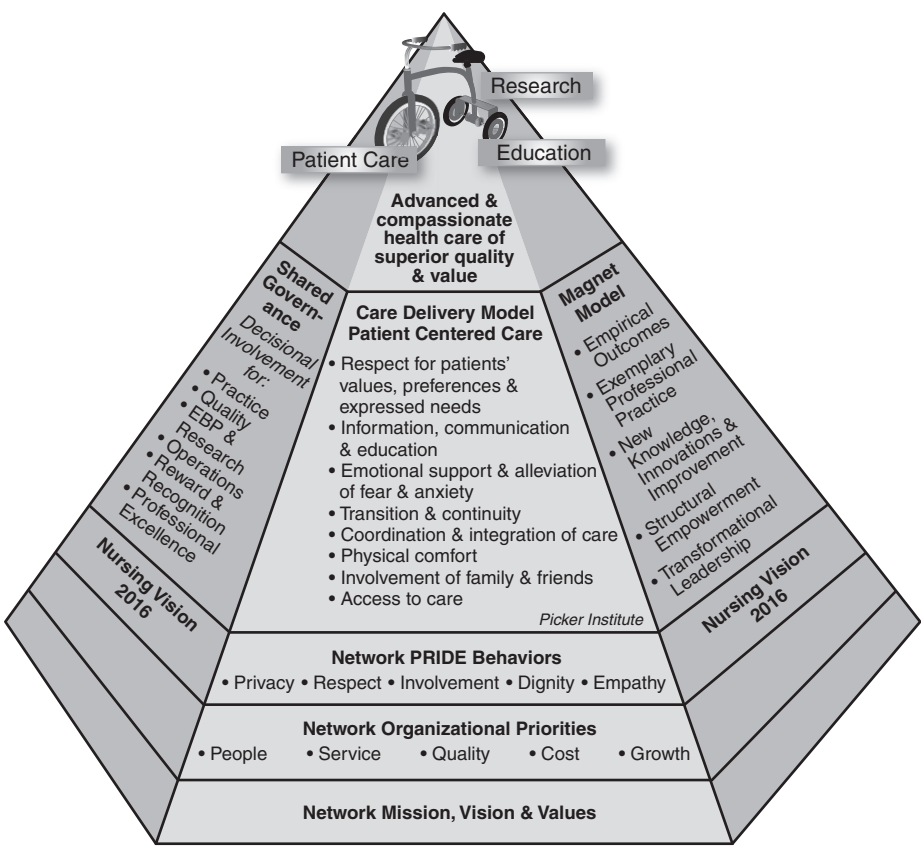
To be effective, organizations cannot fundamentally change what they believe or what they subscribe to on a frequent basis. Those that are most successful continue to build upon a consistent and strong foundation. After 10 years of patient centered care focus, the need to enhance and search for the next creative steps was apparent. Patients and families, community members, and health professionals were enlisted to design a vision for the future in a 2-day retreat using the future search conference model (Weisbord & Janoff, 2000) and organized around the evidence-based eight dimensions of patient centered care (Edgman-Levitan & Cleary, 1996). Emerging from the retreat was a Patient Centered Care Vision Statement comprising 37 components, designed to mature and strengthen our patient care delivery over the next decade.

Reinforcing our commitment and reliance on evidence to guide care, many strategies to achieve the vision have been identified and are being implemented and measured. Importantly, the message of clinical care based on evidence was reinforced through action, serving to further engrain evidence-based practice into our culture.

## **INTEGRATING EVIDENCE IN AN ORGANIZATION'S PROFESSIONAL PRACTICE MODEL**

A professional practice model is the overarching conceptual framework for nurses and other clinicians participating in interdisciplinary patient care. It schematically describes a system, theory, or phenomenon that illustrates how clinicians practice, collaborate, communicate and develop professionally to deliver care. An organization's practice model depicts the alignment and integration of a professional discipline's practice with the mission, vision, philosophy, and values adopted by that discipline (Magnet Recognition Program, 2008). Ideally, components of an organization's professional practice model should be evidence-based. **Figure 14-1** is a schematic depiction of the LVHN professional practice model. Just as the conceptual framework for care

**Figure 14-1 The LVHN Professional Practice Model**



delivery—patient centered care—is based on evidence, so too are other components within the professional practice model, most notably regarding clinician decisional involvement.

**Shared Governance**

To promote decisional involvement by clinicians, many organizations employ a shared governance model. Porter-O’Grady (2003) defines shared governance as a decision-making structural framework to effect autonomy through the principles of partnership, equity, accountability, and ownership. Much research related to the constructs of shared governance within health care exists in published literature. Thus, evidence can, and indeed should, be used to design and continually enhance shared governance.

A shared governance model was initiated at LVHN in 1985. Literature at that time spoke to councilor, administrative, and congressional structural models. Based on expert opinion, a councilor model was adopted. Since that time, efforts have been made to assure continuous evolution of the governance model, always based upon the most recent evidence.

In 1992, site visits by our staff to organizations with respected shared governance models revealed that, although we had defined the structure and processes associated with shared governance schematically and through charters for the various councils, we had not formally identified our conceptual beliefs. Through an iterative process, we defined the principle of accountability and its attendant elements of autonomy, authority, and competence as a key construct. The associated findings informed the subsequently developed formal document by front-line clinicians that defined shared governance at LVHN and in turn, reflected and articulated the organization's culture and values. The learning from our experience for other organizations is that a shared governance model must not only incorporate structures and processes, but have a defined conceptual framework based on evidence as its foundation. This assures a well-founded model to effectively guide care delivery and role models and teaches utilization of evidence to staff.

### **Accountability**

At the core of shared governance and professional clinical practice is accountability (Porter-O'Grady, 2008). As such, this principle should be addressed within the formal description of an organization's professional practice model. The three elements of accountability (**Table 14-2**) each prompt evidence-based practice to be inculcated within the organization's culture. Autonomy speaks to a clinician's right to use evidence to guide their practice. Authority addresses a profession's power to make a decision based on evidence. Competence provides the underpinning to offer educational programs and conduct subsequent knowledge assessment related to utilization of an evidence-based practice framework. Defining accountability by these three elements within the practice model description specifically delineates a profession's right, power, and competence to base their practice on evidence.

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**Table 14-2 Accountability Elements**

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- Autonomy—The right to decide/act
  - Authority—The power to decide/act
  - Competence—The knowledge to decide/act
- 

Used with permission: Tim Porter-O'Grady Associates, Inc. (2009).



### Measurement and Evaluation of Decisional Involvement

As we have done at LVHN, it is recommended that an organization communicate, in writing, its commitment to evidence-based practice within its professional practice model. We state that clinicians are responsible for decisions associated with six practice domains and that these decisions are to be based upon the most recent evidence (see **Table 14-3**). To assure that this is happening and to identify opportunities for system improvements, assessments of autonomy and decisional involvement may be helpful. Responses can reveal staff's perceptions of their involvement at both organizational and department levels; the latter offers feedback to the respective nurse manager about strategies to sustain or enhance an evidence-based practice environment. Established tools to consider are The Decisional Involvement Scale (Sullivan, Havens & Vassey, 2003), the Index of Professional Nursing Governance, and the Index of Professional Governance (Hess, 2009). All are available after communication with the authors and agreement for utilization in accordance with their respective guidelines.

#### *The Decisional Involvement Scale*

The Decisional Involvement Scale is a valid and reliable tool consisting of 21 items originally designed to measure actual and/or preferred decisional involvement for staff registered nurses and managers (Sullivan Havens & Vassey, 2003). More recently, this scale is being used by other healthcare clinicians in a broad range of settings.

#### *The Index of Professional Nursing Governance and the Index of Professional Governance*

The Index of Professional Nursing Governance and the more global Index of Professional Governance (Hess, 2009) measure perceptions associated with governance by, respectively, nurses and all healthcare professionals within an organization. These two valid and reliable instruments have been used widely in the United States and abroad to evaluate the implementation of management models and track changes in governance.

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**Table 14-3 Professional Practice Model Domains**

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- Practice
  - Quality
  - Research
  - Designated Department Operations
  - Professional Development
  - Reward and Recognition
-

### **An Organization-Specific Professional Practice Assessment Tool**

In 2005, LVHN leaders desired tangible evidence that staff perceived involvement in decisions and control over their practice environment. In addition, leaders wanted a quantitative method to assure that the professional practice model was continuously evolving to a higher state. Rather than utilize a

#### **Box 14-1 Voices from the Field I**

##### **Courtney Barilar Vose**

In fiscal year 2005, I was the newly appointed director for the largest of the three emergency departments (EDs) within Lehigh Valley Health Network. At that time, the department employed 104 full-time people, was an accredited Level 1 Trauma Center, and averaged 52,000 visits per year. One of my primary concerns was patient satisfaction scores, which were well below national benchmarks. During the first year in my new position, I was presented with department results for the organization-specific assessment of staff's perceptions regarding their involvement in decisions affecting their professional practice. I found this data to be extremely valuable and believed I could use it in a variety of ways to enhance the staff's professional practice and ultimately, patient satisfaction, and clinical outcomes.

The first thing I did with the results was share them with the staff. These results, coupled with employee satisfaction survey results that showed gross opportunity in the question, "My opinion is sought before decisions are made," served as a jump-off point for revamping and reinvigorating the existing professional practice model. The ED staff had communicated via the two aforementioned surveys that they were ready to go to the next level in the maturation process of their model. I communicated my expectation that we would together analyze the results and as necessary, action plan to create structures and processes that would promote the clinicians' involvement in decisions related to all domains of their professional practice model—clinical practice and quality, research, designated department operations, professional development, and reward and recognition. I was very clear in stating that the use of the assessment data to action plan for improvements was in itself an example of using evidence as a basis for our professional practice. I also encouraged and made the resources available for staff to investigate the evidence and incorporate the same into their action plans for improvement and enhancement of their unit professional practice model.

Prompted by their learnings from the literature, unit staff members developed a resounding vision statement for their professional practice. This vision was the driving force that led staff to further investigate evidence associated with decisional involvement, and in turn mature their shared governance model. One year later, councils were defined, charters developed, goals established, and action plans initiated. We now have a shared governance model that fosters an even higher level of decision making for all defined professional practice domains.

generic assessment of decisional involvement, a reliable and valid tool (Houser, Capuano, Hitchings, & Bokovoy, 2005) was designed to provide data regarding staff member perceptions of their involvement within the six decisional domains of the LVHN professional practice model.

The tool was administered in 2002, 2005, and 2009; the associated studies not only assessed fidelity to LVHN's organization-specific professional practice model, but the process of systematic instrument development modeled the use of evidence as a basis for administrative practices. Voices from the Field I illustrates how a new LVHN nurse manager utilized the results from the 2005 assessment to enhance the practice environment within a busy emergency department.

## CLINICAL QUALITY

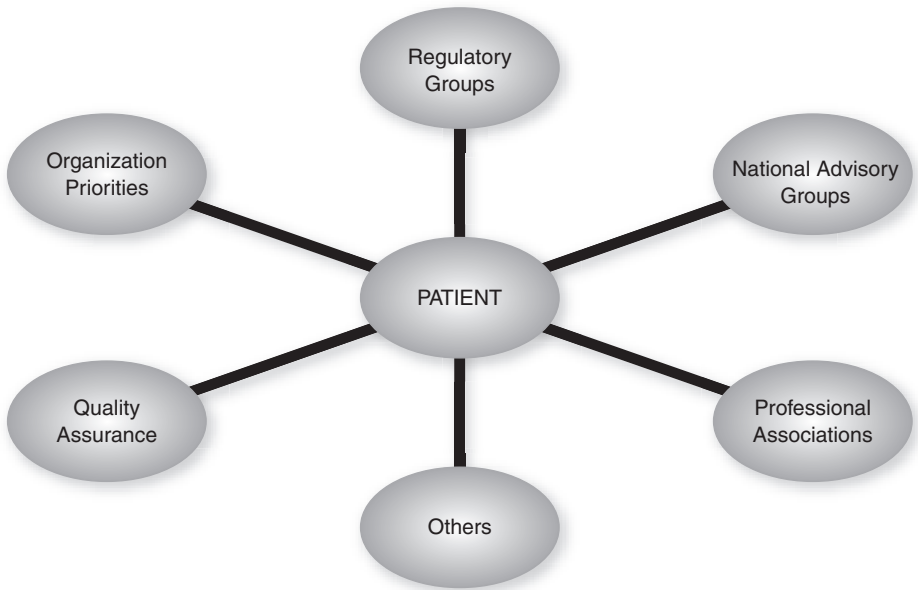
An organizational structure that encourages inquiry by all clinicians is a foundation for effective and quality care. A model of shared governance that promotes autonomy and decisional involvement (Porter-O'Grady, 2003), supported by leaders with a vision for best practice based on the evidence, set the stage for achieving quality.

### Drivers of Clinical Quality

Clinical quality is a multifaceted collection of evidence-based structures and processes that, when synergized, contribute to quality patient outcomes. The report, "To Err is Human" by the Institute of Medicine in 1999, inspired organizations to accelerate their efforts in clinical care processes to enhance the safety and quality of care for their patients. In the time since that report, additional regulations, most notably the Centers for Medicare and Medicaid Services (CMS) "never events" list developed in collaboration with the National Quality Forum (2006), eliminate payments to organizations for defined hospital-acquired conditions. The compiled list includes 15 evidence-based consensus standards that are considered nurse-sensitive, and also are among the indicators that The Joint Commission considers to be a result of staffing effectiveness.

Organizations should not rely upon a single agency, group, or body of knowledge to inform their care. **Figure 14-2** details evidence-based structures and processes that are commonly subscribed to by organizations, including:

- Regulatory groups (e.g., The Joint Commission, State Regulatory Agencies)
- National advisory groups (e.g., Institute of Medicine, Institute for Healthcare Improvement, Agency on Healthcare Research and Quality)

**Figure 14-2 Structure and Processes of Organizations**

- Professional associations (e.g., American Association of Critical Care Nurses, Emergency Nurses Association, Oncology Nursing Society, American Nurses Association, American Physical Therapy Association)
- Others (e.g., Leapfrog, National Quality Forum)
- Quality assurance (e.g., Departmental Peer Review)
- Institutional priorities (e.g., Nurse Sensitive Quality Indicators, Hospital Quality Initiatives)

Voices from the Field II (**Box 14-2**) illustrates how evidence guided a professional organization's position statement on family presence.

## **INTEGRATION OF EVIDENCE-BASED PRACTICE INTO QUALITY IMPROVEMENT**

The effective integration of evidence-based practice into quality improvement is not a unidirectional process. The discovery of evidence may be the impetus for a process or practice change that ultimately will lead to quality improvement. Likewise, a quality improvement process that uncovers inconsistencies

**Box 14-2 Voices from the Field II****Kim S. Hitchings**

As a member of the Practice Cabinet for the Pennsylvania State Nurses Association (PSNA), I was given the responsibility to draft a position statement for the organization regarding “Family Presence”—the opportunity for family to be in the patient care area, in a location that affords visual or physical contact with the patient (Clark, 2005). Recognizing a position statement should be based on evidence, the first thing I did was search the literature associated with the concept of family presence. Multiple studies from throughout the United States and abroad confirmed positive outcomes associated with family presence, as well as proved unfounded such concerns as increased lawsuits and family fatigue.

In addition to published research studies to inform the position statement, I turned to national advisory groups and professional associations to investigate their stance on the issue. Those supporting family presence included, but were not limited to the following: Institute for Healthcare Improvement; American Association of Critical Care Nurses; Emergency Nurses Association; National Association of Social Workers; American Heart Association; National Association of Emergency Medical Technicians; American Academy of Pediatrics; and American College of Emergency Physicians. Thus, the subsequently developed position statement was based on a multifaceted collection of evidence—including a compilation of research studies and the expert opinion (informed by evidence) of multiple professional health care agencies, groups, and organizations.

or undesirable outcomes will take the clinicians to the evidence for clarification. As Ruskin (n.d.) states, “Quality is never an accident, it is always the result of intelligent effort.” The organization that ascribes to evidence-based practice to guide actions, advance practice, and achieve outcomes will be in a perpetual review and analysis from the macro- to microsystem levels.

**Development and Review of Policies, Procedures, Guidelines, and Standards**

At the core of practice are an organization’s policies, procedures, guidelines, and standards. No universal nomenclature exists, but in general, a policy is a guiding document that is prescriptive and governed by a regulatory agency or organization. A procedure is a step-by-step process whereby a standard *guides* a clinician for a particular disease or condition rather than *prescribes*. An organization must establish a format, such as the one in **Figure 14-3**, for each document written.

A policy that is governed by a regulatory agency or organization allows for contextual appropriateness and integration of evidence-based practice. For

**Figure 14-3 Document Template**

LVHN Patient Care Manual

Approved by: _____ _____ _____	Title	File: PCM-* Date: 0/0 Revised: 0/0
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**Key Points:**

Lists important points and/or evidence up front so staff can quickly review critical items.

- I. **INTRODUCTION/PURPOSE:** Describe why the particular topic was chosen and why it is felt to be a priority for the organization. Statements should include information on quality, cost, volume, and degree of practice variation.
- II. **DEFINITIONS:** Define words or phrases that do not have universal understanding.
- III. **SCOPE:** Describe the specific diagnosis and/or patient population (inclusion and exclusion criteria) affected.
  - **SKILL LEVEL:** Identify the role(s) that have responsibility and accountability associated with the document.
  - **INTERVENTION/GUIDELINE:** Describe the interventions, outline, algorithm or flow chart for use.
- VI. **DOCUMENTATION:** Specify the minimum requirements that must be included.
- VII. **IMPLEMENTATION PROCESS AND MONITORING:** Specify methods of evaluation based on expected outcomes.
- VIII. **EVIDENCE:** Provide a review of the evidence to include: search strategy, databases, reporting constraints and evidence summaries, including the level of evidence, findings and references.
- IX. **ATTACHMENTS:**
  - a. **Evidence Table**
- X. **PRIMARY STAKEHOLDER:** List name of primary stakeholder.
- XI. **SECONDARY STAKEHOLDER(S):** List name of secondary stakeholder(s).

example, the Commonwealth of Pennsylvania requires all hospitalized patients to be screened and offered influenza and/or pneumococcal immunization if criteria are met prior to discharge. The risk of a patient being missed and not immunized led to an evidence review within LVHN, which did not support waiting until time of discharge for actual vaccination. As a result, the LVHN policy states that the immunization can occur during the hospitalization if the patient meets the inclusion criteria.

Clinical procedures and protocols are often difficult to change even when new or existing evidence is brought forward to clinicians who are quite comfortable in their current practice. The phrase, “That’s just the way we do it,” is no longer acceptable. Dissecting existing practice cannot be effectively achieved without a supporting structure that consists of leadership at multiple levels and a process that supports questioning the status quo. Voices from the

### **Box 14-3 Voices from the Field III**

#### **Carolyn L. Davidson**

As an advanced practice nurse (APN) in the postoperative cardiothoracic (CT) unit, I identified practice inconsistencies in glycemic control that were potentially contributing to complications, including sternal wound infections. When conducting patient rounds, I witnessed the nurses titrating insulin that did not match the current insulin infusion protocol and rationalizing their actions based on “gut feeling.” The nurses were struggling with the existing insulin infusion protocol, which was designed for general surgical patients and had not been updated with current evidence, especially for the cardiothoracic population.

I educated the staff on the basic physiologic evidence for hyperglycemia in CT patients postcardiac bypass, which is based on a stress response and may not be associated with actual diabetes. A review of the literature and engaging staff involvement to prepare a plan for change occurred over a period of 6 months. The team, in collaboration with the CT surgeons, was in agreement with the evidence-based and established “Portland Protocol” for glycemic management of the postoperative cardiac surgery patient. Although the team utilized a structured approach for evaluating and changing practice, they did not anticipate an additional hurdle—the reluctance of the existing diabetic disease team to support a different glycemic protocol than the one they were planning for the organization as a whole.

The CT leadership team persisted by engaging and empowering staff to provide daily feedback on the new protocol. The staff soon learned that their patients’ blood glucose was more adeptly controlled by continuous insulin infusion for 48 hours; this now had implications beyond the CT unit, to the stepdown unit. The CT and stepdown unit staff were not only skeptical, but had trepidations regarding the labor intensity of continuous insulin infusions. Therefore, it was imperative that I do a daily check-in with the staff to answer questions, support their feelings, and continually reinforce the rationale for the practice improvement.

This evidence-based practice improvement has led to the Surgical Care Improvement Project (SCIP) core measure for controlled 6:00 am blood sugar on postoperative days one and two, to be at or near 100% for 8 quarters. Additionally, no major sternal wound infections have been reported in over 24 months. The necessity to recognize the need for and foster persistence can not be overlooked when using evidence to change practice. Focusing on the achievement of quality outcomes will, ultimately, reinforce the necessity to “stay the course.”

Field III (**Box 14-3**) is an example of how an evidenced-based protocol drove change in clinical practice.

Guidelines and standards of care are often the most complex and challenging for an organization to establish because of the multidisciplinary components. Development and review of a guideline or standard designed to provide a general pathway of care for a patient should, at minimum, involve a physician champion, clinical nurse experts, pharmacy services, and a case manager. Depending on the guideline, additional disciplines to include are respiratory therapy, rehabilitation, and nutrition services. The essential aspects of the guideline must be supported by evidence from the contributing disciplines. The multidisciplinary methodology promotes a holistic and patient centered approach to outcomes.

Regulatory bodies most often have predefined expectations for the frequency that policies, procedures, and guidelines are reviewed. A predetermined schedule that prescribes review and revision of documents only every few years can leave a void in quality care. Rather, ongoing surveillance of the current evidence for a particular procedure, disease, or condition is best managed by clinical experts who are empowered to bring the evidence forward in the proper forum, implementing change as needed.

Each of the aforementioned policies, procedures or guidelines must include a quality improvement metric. This is an essential part of all practice, but especially important to practices that are changing or evolving. The measurement should include the process and outcome if you are seeking to establish a valid and reliable relationship between practice change and outcome. A statement referring to your implementation and monitoring plan is best to include within each policy, procedure, or guideline.

### **Selection of Quality Improvement Indicators and Target Goals**

Quality improvement indicators are to be developed concurrently with quality initiatives or changes in practice or process. Additionally, the organization should select and define the quality improvement indicators annually based on the previous year's quality results, identified areas for improvement and quality initiatives currently in process. All should be in alliance with the current evidence. The key to engagement of clinicians is involving them in the discussion of quality initiatives and establishing targets that are attainable.

An LVHN organizational example of using evidence to select an indicator and goal relates to catheter-associated urinary tract infections (CA-UTIs). Multiple quality initiatives and processes related to CA-UTIs were considered and an evidence-based guideline developed and implemented for the inpatient clinical areas. The process changes affected physicians, nurses, support staff, transporters, and rehabilitation staff. The guidelines included the innovative



use of a “Foley bundle” and contributed to a greater than 30% reduction in CA-UTI rates, consistent with the sources of evidence utilized to guide the practice changes (Huang, W-C. *et al.*, 2004; Reilly, Sullivan, Ninni, Fochesto, & Williams *et al.*, 2006). Despite the guideline outlining the indications for a urinary catheter, the overall utilization of catheters did not decline over the same period. Based on these results, an additional review of best practice organizations, the literature and clinical units with the highest urinary catheter utilization ratio was completed. The quality workgroup revised the guideline, and additional interventions now include unit-based champions and a nurse-driven removal protocol. Subsequently, catheter utilization rate is an additional indicator being monitored.

### **Development and Implementation of Action Plans**

The monitoring and measurement of quality indicators as they compare to target goals is best accomplished at least monthly and includes trending of the findings. The trends are compared to external and internal benchmarks and, when necessary, an action plan may occur at the macro (organization) or micro (unit) level to improve outcomes. As described in the previous paragraph, appropriateness, utilization, and care of urinary catheters was emphasized with the professional staff. However, in analyzing the results and lack of improvement, a unit concluded more inclusion of the support staff would be beneficial. It was noted that support staff at the unit level were educated on the tasks of urinary catheter care, but after implementation of the guideline, they were missing the “why’s” of urinary catheter care.

The action plan, which included a review of current evidence related to support staffs’ role in guidelines (Safdar & Abad, 2008) and specifically, urinary catheter care, led to a new quality initiative. The subsequent campaign for support staff, “Clean it up, Straighten it out, Stick to it,” focused on meatal care, keeping the tubing straight, and using the catheter securement device. This creative strategy was developed by unit-level educators and implemented across the organization.

### **Monitoring and Measurement**

”It’s the little details that are vital. Little things make big things happen” (Williams, 2006). Quality indicator monitoring and measurement must be accomplished at both the macro (organization) and micro (unit) levels. Quality indicators at the macro level often look at an overall rate or incidence, while the micro or unit level reflect the processes associated with the overall indicator.

A macro level quality indicator in both inpatient and outpatient health-care settings is falls. Preventing falls is complex and multi-faceted, with evidence for fall prevention becoming plentiful and overwhelming. Yet, organizations have been challenged to eliminate this costly event. Monitoring of

this complex quality indicator is best accomplished through a process of establishing a guideline for your defined healthcare setting that has an evidence base to which the staff will be held accountable. Break the guideline into its constituent elements of assessment and interventions and begin working on the most challenging element. Empower staff to provide input and engage them in measurement. At the unit level, a visual monitoring board can be used to post metrics, keeping the staff focused on the outcome, and adherence to the fall prevention guidelines. Peer support, empowerment, and process accountability equate to success with clinical quality.

### **Box 14-4 Voices from the Field IV**

#### **Julie Fulcher**

As a mother, I always followed the pediatrician's advice: give Pedialyte to rehydrate my children when they had gastroenteritis. As an emergency department (ED) nurse, I often wondered why the same was not done for young patients with gastroenteritis. Instead, the protocol called for nurses to rehydrate children through an intravenous (IV) line, which often resulted in crying children and frustrated parents.

Then, I came across an article about a study in Australia that reviewed the benefits of oral rehydration with products like Pedialyte. I shared my idea with the ED practice committee, which embarked on an evidence-based approach to develop an oral rehydration protocol.

The first step was an extensive literature search, in which I read numerous articles and research projects that weighed the advantages and disadvantages of oral rehydration. One study reported that almost half of American and Canadian pediatric emergency medicine directors who participated in a survey used IVs because they thought parents preferred them. Other research showed oral rehydration is just as effective and less traumatic for children and their parents. As I read further, the evidence was overwhelmingly in favor of oral rehydration as the best practice for pediatric patients.

Writing and implementing the emergency department protocol was just the beginning step for me in determining what was best for my patients. Next, I turned my attention to monitoring and evaluating the results over a 1-year trial period. Research questions investigated were: patient (parent) satisfaction scores; length of stay in the ED for pediatric patients receiving oral rehydration; and return visits to the ED for gastroenteritis. We have, to date, achieved statistically significant improvements in satisfaction scores and length of stay. Additionally, the pediatric patients ( $n = 342$ ) treated with oral rehydration returned to the ED less than 5% of the time, consistent with the research by Fonseca, Holdgate, & Craig (2004); Boyd, Busuttill, & Stuart (2005); and, Spandorfer, Alessandrini, Joffe, Localio, & Shaw (2005).

For a long time, nurses gave care based on what they were taught. Now, when we have an idea, we have a formal process to discover what is best for our patients and create better practices. It is empowering to know we can make such an impact on our patients.

## Design and Initiation of Organizational Research

The role of review and analysis of quality indicators includes using external and internal benchmarks, best practice organizations, and the current literature. Despite these resources, an organization may continue to find a gap and will need to conduct research to obviate the lack of appropriate evidence. Voices from the Field IV (**Box 14-4**) demonstrates this fact. The intensive resources required for research design and initiation should be considered when an organization embarks on evidence-based practice.

Practice that has limited or no supporting evidence must be carefully weighed within the organization to develop clinically sound and quality practices that staff can follow. Establishing a quantitative base of metrics prior to proposing and designing research is essential for leadership support.

## SUMMARY

Providing quality patient care in the complex, technologically, and scientifically advanced healthcare environment of today requires more than a visceral sense to guide processes. Professional practice requires knowledge of evidence upon which to base interventions that lead to positive, quality outcomes. Melnyk (2005) stated it best, relating that highest quality outcomes are created by the merging of science and art, in which evidence-based practice is institutionalized within a context of caring and evidence-based practice culture. Basing practice on what has been explored, tested, and found to best serve the health needs of patients will enhance professional practice, enabling care that is patient centered, and appreciation of evidence as the foundation of effectiveness.

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# Mock Survey Questions for the New Knowledge, Innovations & Improvements Component of the Magnet Site Survey

1. Do you know what an Institutional Review Board (IRB) is?
  - Is nursing represented on the IRB?
2. What nursing research projects are in progress at your institution or on your unit?
3. How are research findings disseminated to clinical staff?
4. What resources are available for nursing research?
5. Tell me about your evidence-based practice model and the approach you use to utilize research at the bedside on your unit.
6. What is available to you here to find literature or evidence to answer your clinical questions?
7. How do you make decisions on policy revisions or changes in practice?
  - What role does research have in policy revision?
8. Tell me about a situation when you implemented new evidence that improved patient care.
  - How were the patient outcomes measured?
  - Who was involved in measuring these outcomes?
9. Tell me about a time your unit did something innovative. Who was involved and what were the outcomes?
10. How are nurses involved in decisions related to technology or space design (remodeling)?
11. What are the current priorities for the Research and EBP Council?
12. How do you differentiate between Research and EBP?
13. How do you engage staff in the research and EBP culture?
14. Be prepared to describe how journal clubs are organized and conducted.
15. To council or champions members: Why did you join this group/committee? Why do you stay? What are you most proud of?



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# Materials to Have Available for Magnet Site Visitors

1. Magnet application materials
2. Policy and Procedure (P&P) manuals or computer access for online P&P
3. Research and EBP posters used to disseminate findings internally or presented at conferences
4. PowerPoint presentations used to disseminate findings internally or presented at conferences
5. Other mechanism of dissemination, such as Translating Research into Practice (TRIP) sheets/fliers; Putting Evidence into Practice (PEP) cards
6. Research and EBP published abstracts and/or manuscripts
7. Database of ongoing and completed research or EBP projects
8. EBP resources available to clinical staff, including books, manuals, and electronic access to Web sites or databases
9. Institutional Review Board (or equivalent) meeting minutes
10. Research and/or EBP Council philosophy, mission, and goals
11. Research and/or EBP Council minutes
12. EBP newsletters
13. Research mentors/scientists' or consultants' CV and job description
14. Journal club fliers, attendance records, and continuing education records
15. Clinical Orientation Agenda and presentation on research and EBP
16. Professional Practice Research and EBP job standards
17. Educational offerings about research or EBP agendas and attendance records
18. Grant applications (both funded and not)
19. Benchmarking data related to patient outcomes (NDNQI measures or other nurse-sensitive outcomes)
20. Quality Improvement patient outcome initiative data





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# Checklist for Evaluating a Research Study

- \_\_\_\_\_ **The authors have appropriate credentials for the study content and process.**
  - \_\_\_\_\_ Credential for research design and implementation
  - \_\_\_\_\_ Content expertise/experience
  - \_\_\_\_\_ No conflict of interest is evident
- \_\_\_\_\_ The purpose of the study is explicitly stated.
- \_\_\_\_\_ The introduction provides support for the importance of the study.
- \_\_\_\_\_ The research problem has significance for clinical practice.
- \_\_\_\_\_ The research question is appropriately refined and focuses on a single concept.
- \_\_\_\_\_ **The research question includes sufficient detail to identify *who* is the population, *what* will be measured, *how* will it be measured, and *when* will it be measured.**
- \_\_\_\_\_ The literature review relies primarily on the most recent studies.
- \_\_\_\_\_ The literature review can be linked directly and indirectly to the research question.
- \_\_\_\_\_ **The design is clearly identified.**
- \_\_\_\_\_ A rationale is provided for the choice of a design, and it is linked to the research question.
- \_\_\_\_\_ A specific procedure is described for the application of the treatment or intervention.
- \_\_\_\_\_ Instruments and measures are described objectively.
- \_\_\_\_\_ **Reliability of the instrumentation is described and supporting statistics are provided.**
- \_\_\_\_\_ Validity of the instrumentation is described and supporting statistics are provided.

- \_\_\_\_\_ A detailed protocol for the use of each instrument is described.
- \_\_\_\_\_ Inclusion criteria are specific and objective.
- \_\_\_\_\_ Exclusion criteria are specified as appropriate to control extraneous variables.
- \_\_\_\_\_ Procedures for selecting the sample are specified (if not, assume a convenience sample).
- \_\_\_\_\_ **Sampling procedures are likely to produce a representative sample.**
- \_\_\_\_\_ Potential for sampling bias has been identified and controlled by the researcher.
- \_\_\_\_\_ **The sample is of adequate size.**
- \_\_\_\_\_ Power analysis is conducted and reported, and is at least 80% (unnecessary if all results were statistically significant).
- \_\_\_\_\_ Descriptive statistics were reported for the sample.
- \_\_\_\_\_ P values were reported and were less than 0.05 for those described as significant.
- \_\_\_\_\_ **The right tests were used for the research question and level of measurement.**
- \_\_\_\_\_ Confidence intervals were reported that represented an acceptable level of precision.
- \_\_\_\_\_ Effect size was calculated and reported, and was clinically meaningful.
- \_\_\_\_\_ **This sample could reasonably be expected to represent my patients and settings.**
- \_\_\_\_\_ **The setting for the study is similar to mine in key characteristics such as level of care, type of unit, and geographic locale.**

\* **Bolded items are most critical for study validity.**

---

# Assessment of Internal Resources for EBP/Research Systems

Clinicians have

- \_\_\_\_\_ access to the Internet to search for best practices.
- \_\_\_\_\_ the knowledge to search the Internet for best practices.
- \_\_\_\_\_ the assistance of a professional librarian on a limited basis to assist in searches for best practices.
- \_\_\_\_\_ unlimited assistance from a professional librarian to assist in searches for best practices.
- \_\_\_\_\_ access to databases to search for literature for best practices.
- \_\_\_\_\_ the knowledge to search databases for literature for best practices.
- \_\_\_\_\_ access to reference books for research design.
- \_\_\_\_\_ access to reference books for statistical analysis.
- \_\_\_\_\_ access to reference books for systematic review.
- \_\_\_\_\_ access to reference books for evidence-based practice.
- \_\_\_\_\_ access to journals that publish evidence-based practice.
- \_\_\_\_\_ access to systematic review databases (e.g., Cochrane).
- \_\_\_\_\_ dedicated time for review of best practices.
- \_\_\_\_\_ the formal education to appraise research.
- \_\_\_\_\_ the formal education to create bedside science projects.
- \_\_\_\_\_ accountability for EBP in appraisal systems.
- \_\_\_\_\_ Clinician researchers have clerical support for project management.
- \_\_\_\_\_ Clinician researchers have data entry support for project management.
- \_\_\_\_\_ Clinicians are motivated to review for best practices.
- \_\_\_\_\_ There is a Clinician on the Institutional Review Board who can serve as an advocate for bedside science projects.
- \_\_\_\_\_ Financial resources are available for bedside science projects.

- \_\_\_\_\_ Financial resources are available through grants for bedside science projects.
- \_\_\_\_\_ Assistance is available for Clinicians to apply for grants for bedside science projects.
- \_\_\_\_\_ Statistical analysis software is available to Clinicians.
- \_\_\_\_\_ Consultation in statistical analysis is available to Clinicians.
- \_\_\_\_\_ Consultation with a Clinician scientist is available to Clinicians.
- \_\_\_\_\_ Organizational processes are in place to determine strategic priorities for EBP.
- \_\_\_\_\_ Organizational processes are in place to evaluate and prioritize projects for EBP.
- \_\_\_\_\_ Organizational processes are in place to communicate research results for uptake into practice.
- \_\_\_\_\_ Organizational processes are in place to assure practice conforms to best practice.
- \_\_\_\_\_ Organizational processes are in place to communicate results of bedside science research projects.

# Prioritization Matrix

Potential Research Problems:

	Appropriate Approach					Prioritizing Criteria													Rating Scale: 4: Absolutely 3: Clearly has value 2: Sort of 1: Not really
	Practice Guideline	Quality Study	Systematic Review	Research Study	Cost-Benefit	Feasible	Interesting / Novel	Ethical	Urgency	Relevant: Clinical Impact	Breadth of Applicability	Related/Required: Regulatory or Accreditation	Patient Safety	Strategic priority / Goal	Mission Basis	Total Priority Score			



---

# Worksheet for Appraising a Practice Guideline

1. The overall objectives of the guideline are specifically described.  
Not at all — Somewhat — Present — Well done
2. The clinical question covered by the guideline is specifically described.  
Not at all — Somewhat — Present — Well done
3. The patients to whom the guideline is meant to apply are specifically described.  
Not at all — Somewhat — Present — Well done
4. The guideline development group includes individuals from relevant professions.  
Not at all — Somewhat — Present — Well done
5. The patient' views and preferences have been sought.  
Not at all — Somewhat — Present — Well done
6. The target users of the guideline are clearly defined.  
Not at all — Somewhat — Present — Well done
7. Systematic methods were used to search for evidence.  
Not at all — Somewhat — Present — Well done
8. Criteria for selecting the evidence were clearly reported.  
Not at all — Somewhat — Present — Well done



9. Methods used for formulating the recommendations are clearly described.

Not at all — Somewhat — Present — Well done

10. There is an explicit link between the evidence and the recommendations.

Not at all — Somewhat — Present — Well done

11. The guideline has been peer-reviewed prior to its publication.

Not at all — Somewhat — Present — Well done

12. The recommendations are specific and unambiguous.

Not at all — Somewhat — Present — Well done

13. Different options for management of the condition are clearly presented.

Not at all — Somewhat — Present — Well done

14. Key recommendations are easily discernible.

Not at all — Somewhat — Present — Well done

15. Potential cost implications of the recommendations have been considered.

Not at all — Somewhat — Present — Well done

16. The guideline presents key review criteria for monitoring purposes.

Not at all — Somewhat — Present — Well done

17. The guideline is editorially independent from its funding body.

Not at all — Somewhat — Present — Well done

18. Conflicts of interest of guideline developers have been recorded.

Not at all — Somewhat — Present — Well done

Adapted from AGREE Collaboration 2001. Retrieved April 26, 2009 from [www.agreecollaboration.org](http://www.agreecollaboration.org).

# Worksheet for Rating the Strength of a Body of Literature

## Worksheet for Rating the Strength of a Body of Literature

Review Topic: \_\_\_\_\_

EBP Question: \_\_\_\_\_

Review Team: \_\_\_\_\_

<b>Author/Year</b>					
<b>Title</b>					
<b>Level of Evidence (list from highest to lowest)</b>					
<b>Study Design</b>					
<b>Setting</b>					
<b>Sample Characteristics and Size</b>					
<b>Summary of Findings</b>					
<b>Quality* (Good, Fair, Poor)</b>					

**\*Quality definitions:**

**Good:** A study that meets all design-specific criteria well

**Fair:** A study that does not meet (or it is not clear that it meets) at least one design-specific criterion but has no known “fatal flaw”

**Poor:** A study that has at least one design-specific “fatal flaw,” or an accumulation of lesser flaws to the extent that the results of the study are not deemed able to inform recommendations

**Evaluation Questions:**

1. What is the strength of the research base?
  - a. Number of studies \_\_\_\_\_
  - b. Size of total sample \_\_\_\_\_
2. Are the findings consistent \_\_\_\_\_ or inconsistent \_\_\_\_\_ across studies?
3. Does the evidence support the intervention or practice change in a particular setting or sample? (practical relevance) Yes\_\_\_ No\_\_\_
4. Do the findings relate to our setting/patients? Yes\_\_\_ No\_\_\_
5. Is it feasible to make the practice change or apply the findings in practice?
6. What are the potential risks to patients? \_\_\_\_\_
7. Recommendation: \_\_\_\_\_ Findings of sufficient quality for use in practice  
\_\_\_\_\_ Findings of insufficient quality
8. Are resources needed and/or available to implement the practice change? Yes\_\_\_ No\_\_\_
9. How should the findings be used? \_\_\_\_\_ Update practice  
\_\_\_\_\_ Update Policy & Procedure  
\_\_\_\_\_ Develop a clinical practice guideline

---

# Worksheet for Planning an Evidence-Based Practice Review

1. Background for the review:  
Why is this issue important to address? How was the need for this review identified?
  
2. What is the purpose of this review? How will it be used?
  
3. What is the current practice? Attach a protocol or procedure if applicable.
  
4. The Review question(s):
  - A. Specify the population to be included in the guideline:
  
  - B. Specify any populations to be excluded from the guideline:
  
  - C. This review is to include:
    - Intervention/therapy
    - Prevention activities
    - Diagnostic actions
    - Screening tools
  - D. Specify the outcome of interest:

5. Type of review:  
\_\_\_ Systematic \_\_\_ Integrative \_\_\_ Qualitative synthesis

6. Methods used to collect/select evidence:

A. Identify search terms:

B. Assign database searches:

---

<b>Database</b>	<b>Assigned To:</b>	<b>Number of Citations Identified</b>
.....		
.....		
.....		
.....		

---

C. Inclusion criteria for evidence:  
Dated no earlier than \_\_\_\_\_  
Types of studies to be included:

D. Exclusion criteria for evidence  
Types of studies to be excluded:

7. Critique of the evidence: (at least five sources)  
Article 1 Citation:

Key recommendations from the article:

Grade of evidence:

Article 2 Citation:

Key recommendations from the article:

Grade of evidence:

Article 3 Citation:

Key recommendations from the article:

Grade of evidence:

Article 4 Citation:

Key recommendations from the article:

Grade of evidence:

Article 5 Citation:

Key recommendations from the article:

Grade of evidence:

8. Recommendations for practice:

- a) Maintain current practice
- b) Evidence inconclusive/does not support practice change
- c) Change practice

9. Identify organizational committees that need to be informed of the recommendations:
  
10. Identify patient care departments and care units that need to be informed of the recommendations:
  
11. Identify organizational resources necessary to implement a practice change, if any:







---

# The Link Between Evidence and Recommendations for Practice

<b>Type of Evidence</b>	<b>Clear Evidence of Benefit or Harm</b>	<b>Benefit and Harm are Balanced</b>
Level I Evidence	Strong recommendation for or against the intervention	Action is optional
Level II Evidence	Recommendation for or against the intervention	Action is optional
Level III Evidence	Recommendation for or against the intervention	Action is optional
Level IV Evidence	No recommendation for or against the intervention	Action is optional

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