Translation of Evidence Into Nursing and Health Care Practice
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Sharon Dudley-Brown, PhD, RN, FNP-BC
Dr. White and Dr. Dudley-Brown would like to dedicate this book to the doctoral students with whom they have worked—past, present, and future—whose ideas and questions provided inspiration for this book.
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Foreword

The need to practice in an evidence-based environment is paramount, particularly given the explosion of new knowledge from basic and clinical research. All health professionals have a moral obligation to ensure that patients receive appropriate and evidence-based care. To accomplish this, we need clinicians who can critically appraise and summarize the evidence, simplify and prioritize it, and design strategies to ensure patients actually receive the therapies. This book guides clinicians to accomplish this last important part of the process, translating the research into practice. As many of us have learned from the research, patients, on average, receive half the recommended therapies. As a result, tens of thousands of patients die needlessly and suffer unnecessary harm, and health care costs skyrocket. Strategies to summarize the evidence and establish best practices to ensure that all patients receive that evidence are needed.

Far too often nurses have been on the sidelines of evidence-based practices, when they, in fact, have a vital role in this process. This role is to ensure that patients get the best care and evidence-based therapies. They also play a vital role in questioning practice and highlighting gaps in new knowledge to provide better care; gaps that should be the focus of research priorities. When we asked nurses in the ICU at Johns Hopkins Hospital about evidence-based practices for ventilator-assisted patients, the nurses initially knew little about the therapies. When asked why they used therapies, the nurses responded, “because the doctor ordered them” rather than, because the evidence says they should get it. This has changed, and now nurses do participate in summarizing the evidence and implementing new evidence at the bedside. However, nurses need to be more engaged in planning for the practice change. This includes the decision making about whether to implement the new evidence and the design of the strategies to translate that evidence into their local practices. This book discusses the current knowledge on translation models and strategies and can serve as an important resource for nurses to engage in these other key steps in the process of translating evidence. Indeed nursing should address evidence-based practice to the same degree that they tackle giving compassionate and holistic care to patients. Our patients deserve nothing less.

Peter J. Pronovost, MD, PhD
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Preface

It is widely known that there is a wide gap in time between the generation of research to the implementation of those findings into practice, or the translation or research into practice. This book aims to provide clinicians and administrators in health care with knowledge and strategies to address this problem, and begin to shorten this timeframe and close this "translation gap."

As faculty members designing a translation course for the new Doctor of Nursing Practice (DNP) program at The Johns Hopkins University School of Nursing, we found lots of great resources on evidence-based practice and current journal articles on the emerging science of implementation and translation. However, we were looking for that one great resource on translation and didn't find it. Of course, we were particular in what we were looking for and we wanted it to follow the sequence of the translation course. The resource needed to first include the theoretical perspective on translation to give the students the foundation for their developing expert practices. This theoretical perspective needed to include not only the models and frameworks for translation but also a discussion of the change process. Second, the resource had to include current topics or foci of translation, such as clinical practice guidelines, information technology or health policy to name a few. And finally, we wanted the resource to discuss the practical perspective on the translation of evidence into practice, including content on organizational culture, barriers and facilitators to implementation and a discussion of the how-to's. After developing the content and teaching the DNP translation course once, we found ourselves contemplating the possibility of creating this needed resource for the course. It turned out to be this book!

We hope that you will agree that this book meets an important need as a textbook for DNP students as well as a practical resource for other health professionals leading translation of evidence into practice projects. The two major threads throughout the book are 1) the integration and application of knowledge into practice and 2) the leadership strategies necessary for translation of evidence for both direct and indirect care. Each chapter includes an extensive list of references, current web links, and other applicable resources to enhance learning.

Part I of the book (Chapters 1–3) describes theories and frameworks important to the translation of research into practice. Chapter 1 describes and reviews the key tenets of evidence-based practice frameworks and models being used in nursing today. Chapter 2 defines translation of research to practice and discusses current translation frameworks and the important elements for consideration in any translation effort.

Chapter 3 discusses models of change as they relate to translation of research to practice.
Part II of the book (Chapters 4–9) provides detail on existing evidence for translation in specific areas of nursing and health care practice and describes methods of translation for these specific situations. Chapter 4 discusses the importance of translation of evidence to improve clinical practice, specifically, clinical outcomes, and outlines how the Appraisal of Guidelines for Research and Evaluation (AGREE) collaborative process can be used by clinicians. Chapter 5 describes the current quality and safety environment and the need for translation of evidence to improve quality of care and increase patient safety. Chapter 6 explains the importance of translation of evidence for effective leadership in health care today. Chapter 7 illustrates many innovative strategies used to translate evidence in nursing education. Chapter 8 discusses the difficulties in translation of evidence to health policy and offers strategies to decrease the divide between researchers and policy makers. Finally, Chapter 9 defines the role of information technology (IT) in translation and how IT is a strategy for translation.

The last section of the book, Part III (Chapters 10–15), provides specific strategies and interventions to conduct the translation of evidence into practice. The first chapter in Part III (Chapter 10), Creating a Culture that Promotes Translation, delineates how organizational culture influences the translation of evidence, and steps to address this. Chapter 11, Challenges and Barriers in Translation, offers strategies in the identification, prioritization, and interventions to addresses common challenges in translation, guided by the use of a cascade framework. Chapter 12, Legal and Ethical Issues in Translation, addresses issues of legal risk and fairness in the translation of evidence. Chapter 13, The Project Plan and the Work of Translation, provides detail in the development, planning, and execution of a complex project such as that in translation. Chapter 14, Evaluation of Translation, provides a theory-driven approach to evaluation of translation and translation projects. The final chapter, Dissemination of Translation (Chapter 15), delineates necessary avenues for dissemination, and provides detail of dissemination at multiple levels.

As a companion and follow up to texts on searching for, analyzing and grading the evidence, this text provides details about the next step, which is the translation of the evidence. The translation of evidence has not previously been described in sufficient detail to be practical, which was the driving force behind the development of this book. We trust that you will discover how well this book provides these important details along with the leadership qualities useful in closing the translation gap.

Kathleen M. White and Sharon Dudley-Brown
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Dr. Dudley-Brown would like to acknowledge her husband and friends who provided unwavering support and encouragement during this journey.
PART ONE

Translation of Evidence
Evidence-based practice (EBP) is not new. In fact, most contemporary literature credits Dr. Archie Cochrane, a British epidemiologist in the 1970s, with the impetus for moving medicine toward EBP. Cochrane criticized the medical profession and their use of findings from medical research: “It is surely a great criticism of our profession that we have not organized a critical summary, by specialty or subspecialty, updated periodically, of all randomized controlled trials” (Cochrane, 1972).

The implementation of EBP in health care has moved us from a “do something . . . anything” framework of patient care to “Why do we do these things when we don’t really know what works?” The Evidence-Based Medicine Working Group (1992), in promoting a new paradigm for medical practice, is often quoted as saying:

Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research. Evidence-based medicine requires new skills of the physician, including efficient literature searching and the application of formal rules of evidence [in] evaluating the clinical literature. (p. 2420)

However, the nursing profession also lays claim to the origins of EBP, from Florence Nightingale’s collection of epidemiological data that were used to change practice (Titler et al., 2001). Nightingale emphatically taught her nurses that the foundation of clinical practice was to use evidence to guide clinical decision making. Stetler and Marram (1976), in their earliest work on research utilization for nursing, noted that even though tools are available to critique research design, there are no criteria to help the nurse—from critique to application—to decide if and how to use the findings in the nurse’s specific work environment. For nursing, the framework for decision making has long been the nursing process: a systematic problem-solving methodology that has served us well. However, this process does not include the step of questioning one’s own practice and being able to say “I don’t know if what I am doing is really improving the patient’s outcome.” The evaluation step of the nursing process only takes the nurse halfway to maximizing quality and effectiveness of care.
This chapter discusses the importance of EBP for nursing and presents a summary of key EBP nursing models in use today.

**WHY EVIDENCE-BASED PRACTICE AND WHY NOW?**

Nurses can no longer rely solely on their clinical experience to provide quality care. Nurses routinely need to question their practice and look for alternative methods to improve the processes of care. As the nurse evaluates patient care processes and the outcomes of that care as part of everyday care, he or she must ask whether the best and the most current practices are being used and whether those interventions are producing the best outcomes for the patient. This critical thinking is the foundation for EBP and should be guided by a systematic approach to the evaluation of current practice. EBP in health care today uses a formal process with specific criteria to appraise emerging evidence and methods for incorporating that evidence to inform and change practice.

Why has the emphasis for use of evidence in practice gained so much momentum? The increasing complexity of health care delivery systems has seen five important factors that challenge clinicians to seek and use evidence to guide their practice. The first factor is the high visibility of the *quality and safety movement* in health care. In the midst of ever-increasing health care choices, clinicians want to know what works to increase the quality of care delivered, including the best practices to improve and optimize patient outcomes, the satisfaction with care to optimize the patient experience throughout the continuum of care, and implementing safer systems of care to protect patients from medical error. Recently, it has been recommended that consumers should be included in discussions and implementation of safety and quality initiatives at local levels, and this challenges clinicians to consider the role of patients in these initiatives. For example, proper hand washing before and after patient contact has been consistently shown to decrease the spread of infections. Empowering patients to ask their physician or nurse when they enter their hospital room or clinic suite, “have you washed your hands,” directly involves the patient in implementing evidence at the point of care.

The second factor is the *tremendous growth of new knowledge* available to today’s health care clinician. As of November 2010, there are 5,511 journals that are indexed in MEDLINE, including journals that are cited as *Index Medicus*, as well as other non-*Index Medicus* journals. There are 4,893 journals indexed in the *Index Medicus* and 618 non-*Index Medicus* journals, such as dentistry, nursing, health care administration, health care technology, history of medicine, consumer health, and HIV/AIDS (https://www.nlm.nih.gov/bsd/num_titles.html). The Cumulative Index to Nursing and Allied Health Literature (CINAHL; n.d.) now includes more than 3,000 journals in its index for nursing and allied health professionals (http://www.ebscohost.com/academic/the-cinahl-database). In 1995, when there were fewer journals than are available to clinicians today, it was estimated that clinicians would need to read 19 articles a day, 365 days a year to stay abreast of the explosion of new information (Davidoff, Haynes, Sackett, & Smith, 1995). The challenge to be updated with new knowledge in health care is even greater today.

The third factor is the research in health care that has shown that there is a *considerable delay in incorporating new evidence into clinical practice* (Balas & Boren, 2000). There are many examples of these delays in implementing knowledge into practice, too numerous
to cite here; however, the most famous is that in 1973, there was good evidence for the effectiveness of thrombolytic therapy in reducing mortality in acute myocardial infarction (MI), which is still not uniformly given in a timely fashion to patients who would benefit.

The fourth factor is a result of the growth of new knowledge and the delays in implementing that new knowledge, a resultant decline in best care knowledge for patient care. There is so much information available to the clinician and the limited time to read and evaluate it for use in practice. It is widely recognized that the knowledge of best care has a negative correlation with the year of graduation (i.e., the longer the time since graduation, the poorer a person’s knowledge of best care practices. EBP techniques, such as systematic reviews of evidence, available to the clinician at websites—such as the Cochrane Collaboration, the Agency for Healthcare Research and Quality (AHRQ), National Guidelines Clearinghouse, and the Joanna Briggs Institute)—synthesize new knowledge and make it available to clinicians to improve best care knowledge.

Finally, the tremendous consumer pressure created by an increasingly savvy consumer with online health care information at their fingertips has increased consumer expectations to take part in treatment decisions. Patients with chronic health problems who often access the Internet have considerable expertise in the self-management of their health care. Nurses at the point of care are in important positions to provide up-to-date information to patients, incorporating the best available evidence when patients question the type and quality of care being provided.

These factors mentioned previously demand that the nurse in today’s health care system be knowledgeable about their practice and use explicit criteria and methods to evaluate their practice to incorporate appropriate new evidence. However, the research over the last 15 years has been inconsistent on nurses’ use of evidence to inform and improve practice.

In one of the earliest studies, Mitchell, Janzen, Pask, and Southwell (1995) studied the use of research in practice in Canadian hospitals and found that only 15% had a research utilization/EBP program for their nurses and only 38% based changes in practice on research, but that 97% wanted assistance in teaching their nurses about the research process. They also found that only 35% of small hospitals of less than 250 beds had nursing research journals in their library.

In 2000, Parahoo studied nurses’ perceptions of research and found that many reported a lack of skill in evaluating research and felt isolated from colleagues who might be available to discuss research findings. The study found that nurses lacked the confidence to implement change and felt that they did not have the autonomy to implement changes. Parahoo also found that organizational characteristics are the most significant barriers to research use among nurses, including lack of organizational support for EBP, noting a lack of interest, a lack of motivation, a lack of leadership, and a lack of vision, strategy, and direction among managers.

In a Cochrane Review, Foxcroft and Cole (2006) reviewed studies that had identified organizational infrastructures that promote EBP to determine the extent of effectiveness of the organizational infrastructure in promoting the implementation of research evidence to improve the effectiveness of nursing interventions. They found only seven case study designs to review. They concluded that there were no studies rigorous enough to be included in the review and recommended that conceptual models on organizational processes to promote EBP need to be researched and evaluated properly.

Pravikoff, Tanner, and Pierce (2005) studied the EBP readiness of registered nurses (RNs) in a geographically stratified random sample of 3,000 RNs (n = 1,097) obtained from a nationwide publishing company. The purpose of the study was to examine the nurses’ perceptions of their skills in obtaining evidence and their access to tools to obtain that evidence.
Seven-hundred sixty of the RNs were currently in clinical practice. Among that group, the study team found that 61% of the respondents said they needed to seek information at least once per week; however, 67% of those nurses always or frequently seek information from a colleague instead of a reference text, and only 46% were familiar with the term EBP. Additionally, 58% reported not using research reports at all to support their practice, 82% reported never using a hospital library, and 83% reported rarely or never seeking a librarian’s assistance. These are large gaps in nurses’ skills and knowledge that are necessary for EBP.

In a study to identify the presence or absence of provider and organizational variables associated with the use of EBP among nurses, Leasure, Stirlen, and Thompson (2008) surveyed nurse executives to identify barriers and facilitators to the use of EBP. They found that facilitators to EBP are reading journals that publish original research, joining journal clubs, nursing research committees, facility research committees, and facility access to the Internet. However, the barriers included lack of staff involvement in projects, no communication of projects that were completed, and no knowledge on outcomes of projects.

It is clear from this sampling of studies that EBP is continuing to evolve but not to the extent that is necessary. Nurses must understand the importance of EBP, and health care organizations must invest in resources necessary for nurses to have access to evidence at the point of care. However, a systematic approach to using that evidence is necessary: A formal process that uses specific criteria to appraise evidence to enhance efficiency and effectiveness of practice, and uses methods for incorporating that evidence into practice. There are many good EBP models that have been developed to organize and assist nurses to ask clinical questions, evaluate new evidence, and to make changes in the clinical setting. Each of these models has advantages and disadvantages and they vary in usefulness by setting and context. Gawlinski and Rutledge (2008) suggested that a deliberate process should be followed by an organization to select a model for EBP. They first suggested that a group should be developed to champion the EBP process and that this group should review models by using specific criteria, and summarize the strengths and weaknesses of the models by asking specific questions such as:

- What elements of EBP models are important to your organization?
- Is the model useful for all clinical situations and populations?
- Has the model been tested and disseminated?
- Is the model easy to use and who will be the users of the model?

They also suggested that once a model is chosen, the EBP champion group should educate the staff. Dearholt, White, Newhouse, Pugh, and Poe (2008) have gone further suggesting that once the organization decides that an evidence-based foundation for nursing is needed, a model should be chosen that is easy for the staff nurse to use; the administration should also create a strategic initiative around the implementation of EBP for the nursing department, supporting the initiative with resources in terms of time, money, and people.

**EVIDENCE-BASED PRACTICE CONCEPTUAL FRAMEWORKS AND MODELS**

A conceptual framework or model is a guide to an empirical inquiry that is built from a set of concepts, deemed critical to the inquiry, that are related and function to outline the inquiry or set of actions. Frameworks have been used in nursing to guide research and to
define the foundation for nursing practice and educational programs. Likewise, models for implementing EBP have also been developed to guide the process. These models vary in detail and in explicit criteria and methods for carrying out an EBP inquiry. However, the following steps or phases are common to most models:

1. Identification of a clinical problem or question of practice.
2. Search for best evidence.
3. Critical appraisal of strength, quality, quantity, and consistency of evidence.
4. Recommendation for action (no change, change, further study) based on the appraisal of evidence.
5. Implementation of recommendation.

The chapter continues with a presentation of the key nursing EBP models in use today.

**Stetler’s Model of Research Utilization**

Cheryl Stetler’s model of research utilization (Figure 1.1) was one of the original models developed as an EBP for nursing that began to receive attention. She originally developed the model in 1994 and revised it in 2001. The purpose of the model is to formulate a series of critical-thinking and decision-making steps that are designed to facilitate effective use of research findings (Stetler, 2001). The model is an individual practitioner-oriented model rather than an organizational-focused model. The revised model promotes the use of both internal data (such as quality improvement, operational, evaluation, and practitioner experience data) and external evidence (such as primary research and consensus of national experts). The model describes five phases of research utilization. In Phase I, Preparation, the nurse searches for and selects research to be evaluated for practice implementation. This step is driven by critical thinking about potential internal and external influencing factors. During Phase II, Validation, the nurse appraises the findings of the study using specific methodology and utilization considerations. In Phase III, the Comparative Evaluation or Decision Making phase, a decision about whether a practice change can be made is made using four applicability criteria: (a) the substantiating evidence, (b) the fit for implementing the research findings in the setting, (c) the feasibility of implementation, and (d) the evaluation of current practice. Phase IV is when the translation or application of the research findings are implemented and the “how tos” of implementation are considered. Phase V, Evaluation, requires that processes include different types and levels of evaluation.

**Dobbins’s Framework for Dissemination and Utilization of Research**

In 2001, Dobbins, Cockerill, and Barnsley studied the factors affecting the utilization of systematic reviews. The purpose of their study was to determine the extent to which public health decision makers in Ontario used five systematic reviews to make policy decisions and to determine the characteristics that predict their use. The findings of the study were used to assist health services researchers in disseminating research. Informed by their own research and using Everett Rodgers’s diffusion of innovation model, the Dobbins’s framework for dissemination and utilization of research (Figure 1.2) was developed for policy and practice. The model illustrates that the process of adoption of research evidence is influenced by characteristics related to the individual, organization, environment, and innovation. The model includes
five stages of innovation: knowledge, persuasion, decision, implementation, and confirmation. Identified under each of the five stages are the considerations for transferring research to practice in health care (Dobbins, Ciliska, Cockerill, Barnsley, & DiCenso, 2002).

Funk’s Model for Improving the Dissemination of Nursing Research

In 1987, the research team of Funk, Champagne, Tornquist, and Wiese, after concluding that there was a huge gap between the conduct of nursing research and the use of research findings to improve practice, developed the BARRIERS scale to assess clinicians’, administrators’, and
Academicians’ perceptions of barriers to the utilization of research findings in practice. Items were derived from the literature, from research data, and from the Conduct and Utilization of Research in Nursing (CURN) project’s research utilization questionnaire (Crane, Pelz, & Horsley, 1977). The BARRIERS scale consisted of 28 items in four categories: characteristics of the adopter, the organization, the innovation, and the communication. The tool was tested with a sample of 1,948 RNs in clinical practice (n = 924). Standard psychometric analyses of the tool were performed, and it has been replicated. Using the results of this analysis, the team developed a model for improving research utilization. The Funk model for improving dissemination of nursing research (Figure 1.3) includes three components: the qualities of the research, characteristics of communication, and facilitation of utilization (Funk, Tournquist, & Champagne, 1989). The model delineates three mechanisms to achieve the dissemination of research: (a) hold topic-focused, practice-oriented research conferences; (b) write monographs that are based on the research conference presentations; and (c) develop an information center that provides ongoing dialogue, support, and consultation for the dissemination (Funk et al., 1989). The goal of the approach is to reach the practicing nurse with research results and to provide support and consultation to those doing the research.

Clinical Practice Guideline Implementation Model

The Registered Nurses Association of Ontario (RNAO; 2002) took the lead in Canada in the development of best practice guidelines for nurses. The Nursing Best Practice Guidelines (NBPG) project was funded by the Ontario Ministry of Health and Long-Term Care and involved the development, implementation, evaluation, and dissemination of a series of clinical practice guidelines (CPGs). It became evident early on in the project that the health care organizations were struggling to identify ways to implement the guidelines, and little attention was being paid to implementation strategies. The RNAO established a panel of nurses and researchers, chaired by Alba DiCenso, to develop a planned, systematic approach to the implementation of the CPGs (DiCenso et al, 2004). The likelihood of success in implementing CPGs increases when:

- A systematic process is used to identify a well-developed, evidence-based CPG.
- Appropriate stakeholders are identified and engaged.
- An assessment of environmental readiness for CPG implementation is conducted.
- Evidence-based implementation strategies that address the issues raised through the environmental readiness assessment are used.
- An evaluation of the implementation is planned and conducted.
- Consideration of resource implications to carry out these activities is adequately addressed (DiCenso et al., 2002).

The panel developed an implementation model (Figure 1.4) with an accompanying toolkit for implementing CPGs (http://www.rnao.ca/Storage/12/668_BPG_Toolkit.pdf).

The Johns Hopkins Nursing Evidence-Based Practice Model and Guidelines

The Johns Hopkins Nursing EBP (JHNEBP) model (Figure 1.5) was developed by a collaborative team of nurse leaders from the Johns Hopkins Hospital (JHH) and the Johns Hopkins University School of Nursing (JHUSON) to develop a practical model
to ensure that staff nurses would be able to evaluate current evidence and translate research findings into patient care. The goals of EBP at both the JHH and JHU SON are to:

- Assure the highest quality of care.
- Use evidence to promote optimal outcomes or provide equivalent care at lower cost/time.
PART I: TRANSLATION OF EVIDENCE

Cultural Environment
Equipment Supplies
Staffing Effectiveness
Standards
Accreditation
Core Measures
Legislation
Licensing
Standards
Regulations
Magnet

- Experimental
- Quasi-experimental
- Non-experimental
- Qualitative

- Organizational experience
- Quality improvement
- Financial data
- Clinical expertise
- Patient preference


• Support rational decisions (including structural changes) that reduce inappropriate variation.
• Make it easier to do our job (optimal processes).
• Promote patient satisfaction and health-related quality of life (HRQOL).
• Create a culture of critical thinking and ongoing learning.
• Grow an environment where evidence supports clinical and administrative decisions.

The JHNEBP model is defined as a problem-solving approach to clinical decision making within a health care organization that integrates the best available scientific evidence with the best available experiential (patient and practitioner) evidence, considers internal and external influences on practice, and encourages critical thinking in the judicious application of such evidence to the care of the individual patient, patient population, or system (Newhouse, Dearholt, Poe, Pugh, & White, 2005). The model also includes the three domains of professional nursing: nursing practice, education, and research.

The guidelines that accompany the model describe the three phases in getting to an EBP (Figure 1.6). These three phases are described as the “PET” process, an acronym that stands for the _practice question_, _evidence_, and _translation_.

The first phase or “P” in PET is the practice question and involves five steps:

1. Identify a practice question through the use of the _PICO_ format that will help to identify key search terms for the evidence search (Richardson, Wilson, Nishikawa, & Hayward, 1995):
   - **P** – Patient, population, or problem (age, sex, patient setting, or symptoms)
   - **I** – Intervention (treatment, medications, education, and diagnostic tests)
   - **C** – Comparison with other treatments (may not be applicable or may not be apparent until additional reading is done)
   - **O** – Outcome (anticipated outcome)

2. Recruit an interprofessional team.
3. Define the scope of problem including agreement with the team on the patient population, staff involved, and key stakeholders.
4. Assign a team leader.
5. Schedule team meetings.

The second phase or “E” in PET is evidence and involves another five steps:
1. Think about key search terms for the evidence search and brainstorm what databases and other places to search for the evidence.
2. Conduct search for evidence.
3. Critique each piece of evidence by rating the strength and the quality of each piece of evidence.
4. Summarize the evidence.
5. Determine the overall strength of the evidence.

The third phase or “T” in PET is translation that includes the following eight steps:
1. Determine the appropriateness and feasibility of translating recommendations into the specific practice setting.
2. Create an action plan.
3. Implement the changes.
4. Evaluate the outcomes.
5. Report the results of the preliminary evaluation to the decision makers.
6. Secure support from decision makers to implement the recommended changes internally.
7. Identify the next steps.
8. Communicate the findings.

This model includes a set of tools for use at each of the phases discussed previously and a project management tool that includes the 18 steps in the PET process. The tools are:
1. Developing a Practice Question.
2. Evidence Appraisal Guideline.
5. Evidence Review Table.
7. Project Management Tool

These tools are an added dimension to the model and make its use very practical for the staff nurse.

The Iowa Model of Research-Based Practice to Promote Quality Care

The Iowa model of research-based practice was developed as a decision-making algorithm to guide nurses in using research findings to improve the quality of care (Figure 1.7). It was originally published in 1994 and a revised model in 2001 was based on changes in the healthcare system and feedback from users, including the use of new terminology and feedback loops, and encouraged the use of nonresearch types of evidence (case studies, etc.) in the absence of research. The Iowa model uses the concept of “triggers” for EBP, either clinical problem-focused or new knowledge-focused triggers often coming from outside the organization. These triggers set an EBP inquiry into motion and at each point in the algorithm, the nurse must answer the algorithm question, consider the organizational context, and the strength and quantity of evidence, while answering several questions:

Are the evidences to change practice sufficient?
Are findings across studies consistent?
CHAPTER 1: EVIDENCE-BASED PRACTICE

Problem Focused Triggers
1. Risk management data
2. Process improvement data
3. Internal/external benchmarking data
4. Financial data
5. Identification of clinical problem

Knowledge Focused Triggers
1. New research or other literature
2. National agencies or organizational standards & guidelines
3. Philosophies of care
4. Questions from institutional standards committee

Is this topic a priority for the organization?

Yes
Form a team

No
Consider other triggers

Assemble relevant research & related literature

Critique & synthesize research for use in practice

Is there a sufficient research base?

Yes
Pilot the Change in Practice

1. Select outcomes to be achieved
2. Collect baseline data
3. Design evidence-based practice (EBP) guideline(s)
4. Implement EBP on pilot units
5. Evaluate process & outcomes
6. Modify the practice guideline

No
Base Practice on Other Types of Evidence:
1. Case reports
2. Expert opinion
3. Scientific principles
4. Theory

Conduct research

Continue to evaluate quality of care and new knowledge

Is change appropriate for adoption in practice?

Yes
Institute the change in practice

No
Disseminate results

Monitor and Analyze Structure, Process, and Outcome Data
- Environment
- Staff
- Cost
- Patient and family

Are the type and quality of the findings sufficient? 
Do the studies have clinical (not just statistical) relevance? 
Can the studies reviewed be generalized to your population? 
Are the findings of the study feasible? 
How appropriate is the risk/benefit ratio?

This model emphasizes the use of pilot testing versus the implementation of a practice change.

**Rosswurm and Larrabee’s Model for Evidence-Based Practice Change**

Rosswurm and Larrabee (1999), at the University of West Virginia, developed a 6-step model to facilitate a shift from traditional and intuition-driven practice to implement evidence-based changes into practice (Figure 1.8). The model has been tested in the acute care clinical setting, but the authors think it is adaptable to primary care settings. The following are the six steps in the model (Larrabee, 2009):

1. Assess the need for change in practice by comparing internal data with external data
2. Link the problem with interventions and outcomes (standard interventions, if possible)
3. Synthesize the best evidence (research and contextual evidence)
4. Design a change in practice

**FIGURE 1.8** A model for change to evidence-based practice.
5. Implement and evaluate the change in practice, including processes and outcomes
6. Integrate and maintain the change in practice using diffusion strategies

The Ace Star Model of Knowledge Transformation

The Academic Center for Evidence-Based Practice (ACE; n.d.) Star model of knowledge transformation (Figure 1.9) was developed by Kathleen Stevens and staff at the University of Texas Health Science Center in San Antonio to provide a framework for understanding the cycles, nature, and characteristics of knowledge that are used in EBP processes into operation (http://www.acestar.uthscsa.edu/acestar-model.asp). The goal of the process is knowledge transformation that is defined as “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). The model promotes EBP by stressing the identification of knowledge types (from research to integrative reviews to translation). This model does not discuss the use of nonresearch evidence. The ACE Star model is depicted by a 5-point star for the five stages of knowledge transformation:

- **Point 1:** Knowledge discovery (knowledge generation)
- **Point 2:** Evidence summary (single statement from systematic review)
- **Point 3:** Translation into practice (repackaging summarized research—clinical recommendations)
- **Point 4:** Integration into practice (individual and organizational actions)
- **Point 5:** Evaluation (effect on targeted outcomes)
Advancing Research Through Close Clinical Collaboration

The Advancing Research and Clinical Practice Through Close Collaboration (ARCC) model (Figure 1.10) was originally developed by Fineout-Overholt, Melnyk, and Schultz (2005) at the University of Rochester Medical Center.

The goals of the ARCC model are as follows:

- Promote the use of EBP among advanced practice nurses (APNs) and nurses.
- Establish the network of clinicians who are supporting EBP.
- Obtain funding for ARCC.
- Disseminate the best evidence.
- Conduct an annual conference on EBP.
- Conduct studies to evaluate effectiveness of the ARCC model on process and outcomes of clinical care (Melnyk & Fineout-Overholt, 2005).

This model was originally developed to create a link between a college of nursing and a medical center. It is referred to as a clinical scholar model and relies on mentors with in-depth knowledge of EBP and expert clinical and group facilitation skills. The following are the five steps in the model:

Step 1: Asking the clinical question
Step 2: Searching for the best evidence

**FIGURE 1.10** The Advancing Research and Clinical Practice Through Close Collaboration (ARCC) model. Figure adapted from Melnyk, B. M., Fineout-Overholt, E., Giggleman, M., & Cruz, R. (2010). Correlates among cognitive beliefs, EBP implementation, organizational culture, cohesion and job satisfaction in evidence-based practice mentors from a community hospital system. *Nursing Outlook, 58*(6), 301–308.
Step 3: Critically appraising the evidence
Step 4: Addressing the sufficiency of the evidence: To implement or not to implement
Step 5: Evaluating the outcome of evidence implementation

Melnyk and Fineout-Overholt (2005) conducted a pilot study to test the ARCC model at two acute-care sites. The pilot study examined what must be present for a successful implementation of EBP in the acute-care setting. These essentials include identifying EBP champions, redefining nurses’ roles to include EBP activities, allocating time and money to the EBP process, and creating an organizational culture that fosters EBP. In addition, practical strategies for implementing EBP are presented to encourage implementation of EBP (Melnyk & Fineout-Overholt).

Veterans Administration’s Quality Enhancement Research Initiative Model

The Quality Enhancement Research Initiative (QUERI) model (Figure 1.11) was developed by the Department of Veterans Affairs in 1998 to improve the quality of health care throughout the veterans system through the use of research-based best practices (Stetler, Mittman, & Francis, 2008). The program had a quality improvement focus and included a redesign of organizational structures and policies, and implementation of new information technology and a performance accountability system (Perrin & Stevens, 2004). The QUERI process model includes six steps:

1. Select conditions per patient population that are associated with a high risk of disease and/or disability and/or burden of illness for veterans.
2. Identify evidence-based guidelines, recommendations, and best practices.
3. Measure and diagnose the quality and performance gaps.
4. Implement improvement programs.

5. Assess improvement program feasibility, implementation, and effects on patient, family, and health care system processes and outcomes.
6. Assess improvement program effects on HRQOL (Stetler et al., 2008).

The program has been implemented in a 4-phase pipeline framework that begins with pilot projects for improvement and feasibility, then advances to small clinical trials, moves to regional roll-outs, and, finally, the improvement based on research becomes a national effort (Department of Veterans Affairs, 2011a and Department of Veterans Affairs, 2011b). The QUERI model is highlighted graphically showing an intersection between research and practice, and showing that the translation of research is accomplished through clinical and quality improvement (QI) activities and enhanced by feedback in the system.

■ SUMMARY

Nursing has entered an important era in the profession’s development. A key to making important contributions in today’s complex health care environment is understanding the need to develop and sustain EBP. Health care systems need to implement the interventions that not only increase nurses’ EBP knowledge and skills, but also strengthen their beliefs about the benefit of evidence-based care (Melnyk, Fineout-Overholt, Stone, & Ackerman, 2000). However, there is a lot to be learned about how those interventions are implemented and how evidence is translated into practice. The next two chapters in this book will present translation frameworks that can be used to guide the implementation of evidence into practice and explore the key interrelationships within organizations that drive or restrain the translation.

■ REFERENCES

Academic Center for Evidence-Based Practice, University of Texas Health Science Center at San Antonio. (n.d.). The ACE Star model. Retrieved from http://www.acestar.uthscsa.edu/acestar-model.asp


