CHAPTER ONE

Evidence-Based Practice

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Let whoever is in charge keep this simple question in her head (not, how can I always do this right thing myself, but), how can I provide for this right thing to be always done?
—Florence Nightingale (1860)

Evidence-Based Practice (EBP) Is Not New. In fact, most contemporary literature credits Dr. Archie Cochrane, a British epidemiologist, who in the 1970s was the impetus for moving medicine toward EBP. Cochrane criticized the medical profession and its 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 healthcare 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 based on 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 whether 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

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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 takes the nurse only 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 EBP 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 their outcomes 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 healthcare 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 the use of evidence in practice gained so much momentum? The Institute of Medicine's report, *Health Professions Education* (2003), called for all health professional educational programs to include competency in five areas: patient-centered care, quality improvement, interprofessional collaborative practice, health information technology, and emphasizing EBP. In addition, a U.S. Department of Health and Human Services report (2012) defined a national quality strategy, an important element of the Affordable Care Act, to improve the quality and delivery of healthcare services, patient health outcomes, and population health. This quality strategy began with three aims—better care, healthy people/healthy communities, and affordable care—for quality improvement. It has developed into a road map for quality with a consensus-based set of core principles to guide the quality strategy and all efforts to improve health and healthcare delivery. These 10 principles are based on the implementation of evidence-based interventions that have been shown to have positive benefit and impact the health and health outcomes of individuals and populations (Agency for Healthcare Research and Quality [AHRQ], 2010).

The increasing complexity of the healthcare 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 healthcare. In the midst of ever-increasing healthcare 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 implementation of safer systems of care to protect patients from medical error. It has been recommended recently 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 healthcare clinician. As of April 5, 2018, 5,235 journals are currently indexed for MEDLINE. MEDLINE includes journals that are cited as *Index Medicus* as well as other non-*Index Medicus* journals. There are 4,946 journals indexed as *Index Medicus* and 289 additional non-*Index Medicus* journals, on topics such as dentistry, nursing, healthcare administration and delivery, healthcare technology, history of medicine, consumer health, and HIV/AIDS (National Library of Medicine, 2018). The Cumulative Index to Nursing and Allied Health Literature (CINAHL; EBSCO *host*, n.d.) now includes more than 4,000 journals in its index for nursing and allied health professionals. 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 healthcare is even greater today. Evidence-based practice is a way for nurses to bridge the research–practice gap (International Council of Nurses, 2012).

The third factor is the research in healthcare 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 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 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 who has online healthcare information at her or his 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 healthcare. 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.

The factors mentioned previously demand that nurses in today's healthcare 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 past 15 years has been inconsistent on nurses' use of evidence to inform and improve practice.

In one of the earliest EBP studies, Mitchell, Janzen, Pask, and Southwell (1995) investigated 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 libraries.

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) examined 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 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. Of the RNs, 760 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 sought information from a colleague instead of a reference text, and only 46% were familiar with the term *EBP*. In addition, 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 need to be closed to enable 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, and facility research committees; and having 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.

More recent studies by Melnyk and colleagues have assessed beliefs about and the state of EBP among U.S. nurses. They found that having an organizational culture and work environment that supports EBP is positively associated with nurse satisfaction, belief in EBP, and implementation of EBP by nurses and other healthcare providers (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012; Melnyk, Fineout-Overholt, Giggleman, & Cruz, 2010). They also found that even though EBP is generally accepted by nurses despite differences in this acceptance by Magnet® and non-Magnet institutions, the nurses still identify barriers to positive implementation of EBP in their practices (Melnyk et al., 2012).

Importance of Using Best Available Evidence to Guide Nursing Practice

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 healthcare 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 is needed 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 suggested that first a group should be developed to champion the EBP process and that this group should review models by using specific criteria and then 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 use 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.

■ EBP 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, which 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 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
6. Evaluation of that recommendation in relationship to desired outcomes

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 the effective use of research findings (Stetler, 2001; Stetler & Marram, 1976). 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 determined 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 is implemented and the "how tos" of implementation are considered. Phase V, *evaluation*, requires that processes include different types and levels of evaluation.

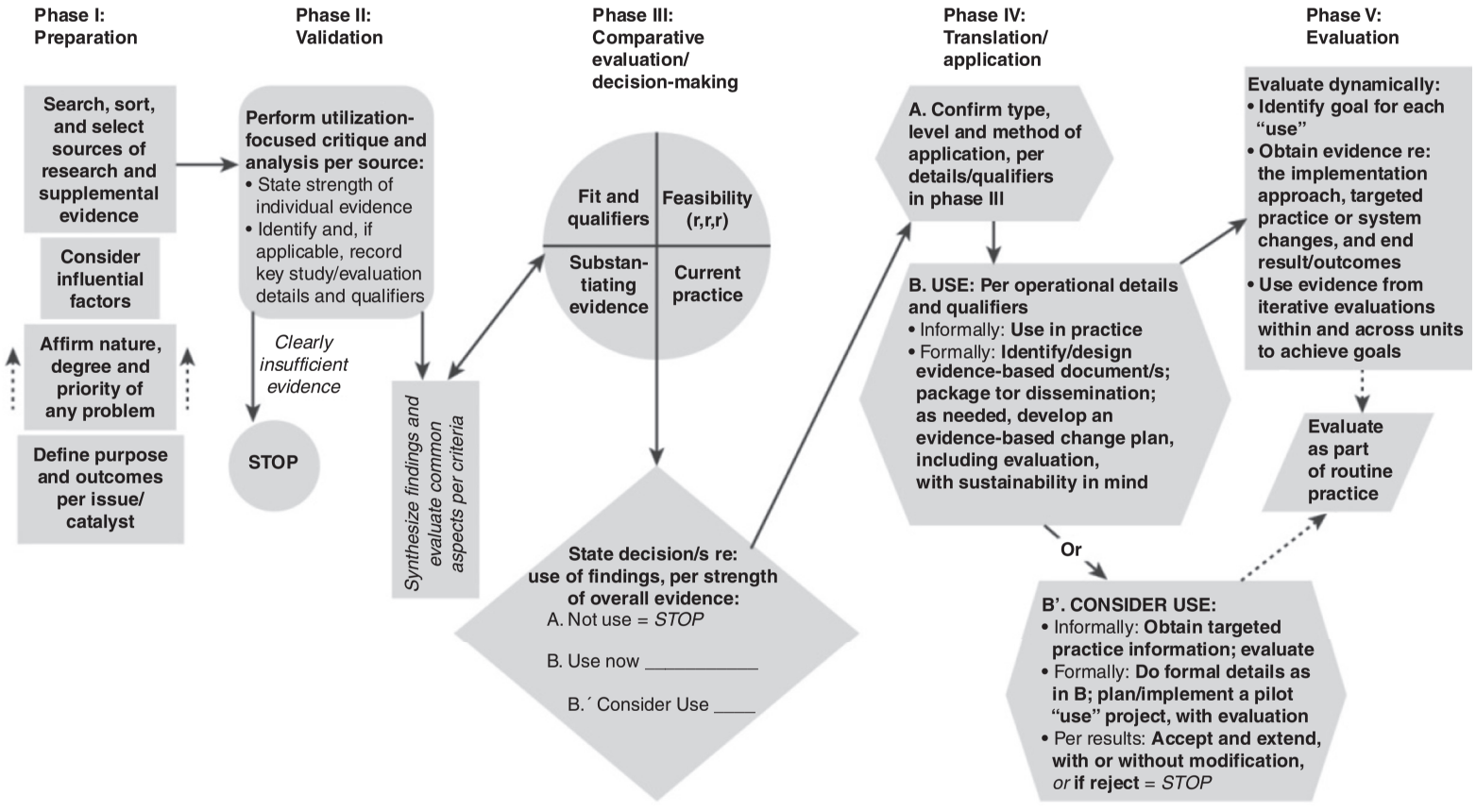

FIGURE 1.1 The Stetler model.

r, r, r, risk factors, resources, and readiness of others to be involved.

Source: From Stetler, C. (2010). Stetler model. In J. Rycroft-Malone & T. Bucknall (Eds.), *Evidence-based practice series*. Oxford, UK: Wiley-Blackwell.

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 Rogers's Diffusion of Innovations theory, the Dobbins's framework for dissemination and utilization of research (Figure 1.2) was developed to inform 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

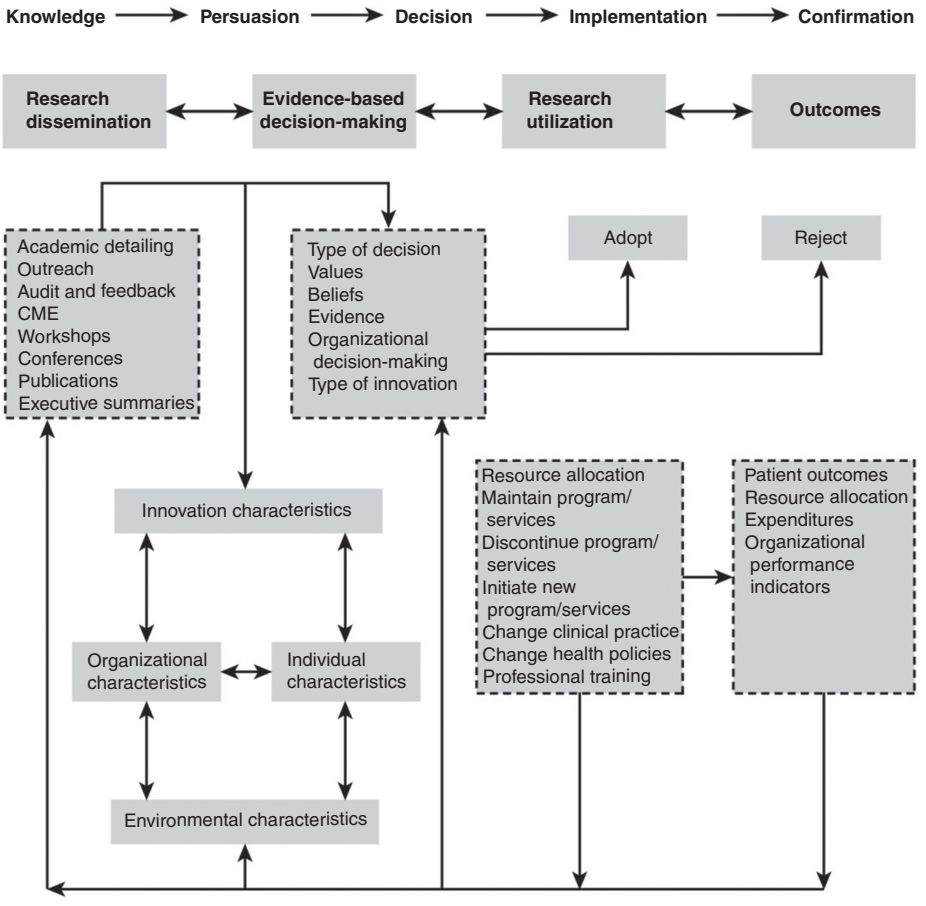

FIGURE 1.2 Framework for research dissemination and utilization.

CME, continuing medical education.

Source: Adapted with permission from Dobbins, M., Ciliska, D., Cockerill, R., & Barnsley, J. (2001). Factors affecting the utilization of systematic reviews: A study of public health decision makers. *International Journal of Technology Assessment in Health Care, 17*(2), 203–214. doi:10.1017/S0266462300105069

under each of the five stages are the considerations for transferring research to practice in healthcare (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 the perceptions of barriers of clinicians, administrators, and academicians 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 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, Tornquist, & 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 developing 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). Early on in the project it became evident that healthcare 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., 2002). 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 tool kit for implementing CPGs (rnao.ca/bpg/resources/toolkit-implementation-best-practice-guidelines-second-edition).

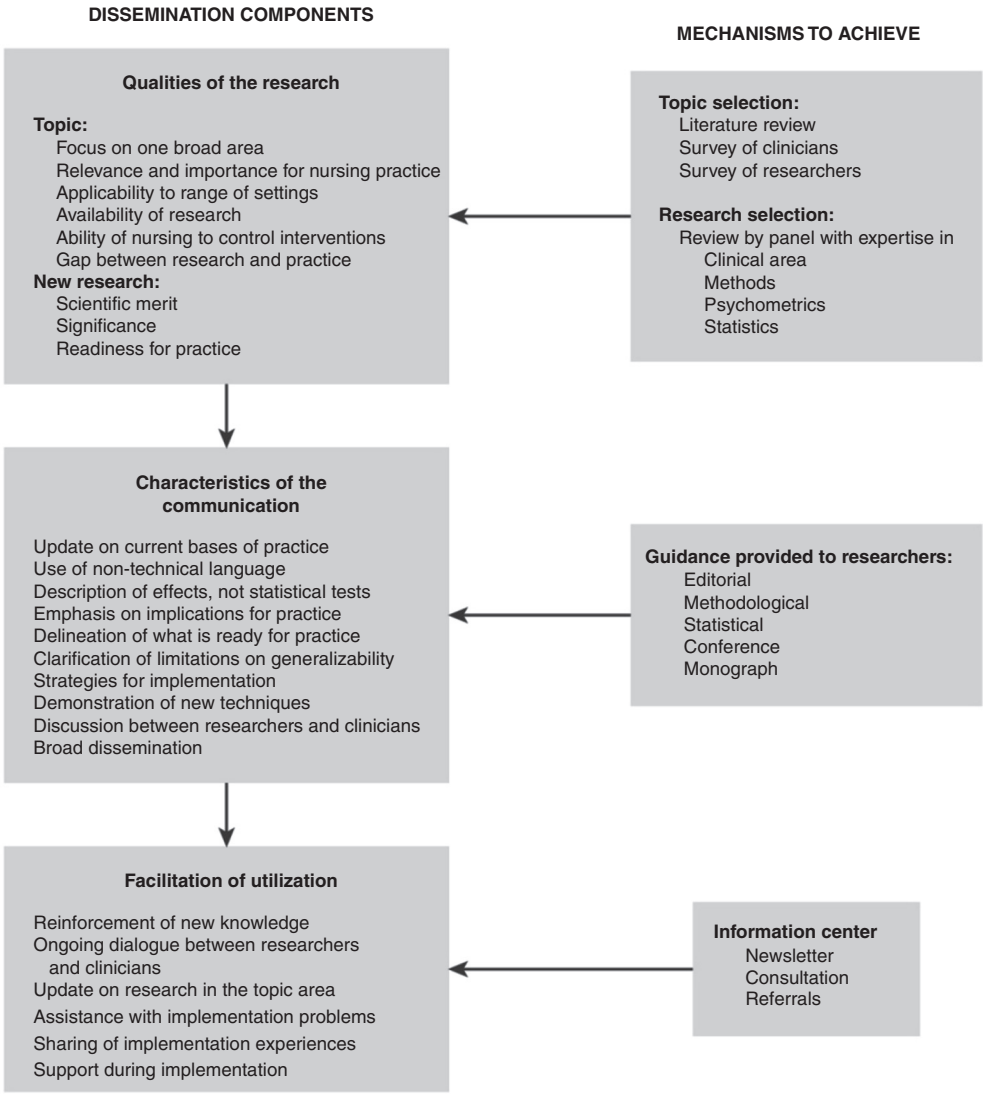

FIGURE 1.3 The Funk research dissemination model.

Source: Reprinted with permission from Funk, S. G., Tornquist, E. M., & Champagne, M. T. (1989). A model for the dissemination of nursing research. *Western Journal of Nursing Research, 11*(3), 361–372. doi:10.1177/019394598901100311. Copyright by Sage Publications, Inc.

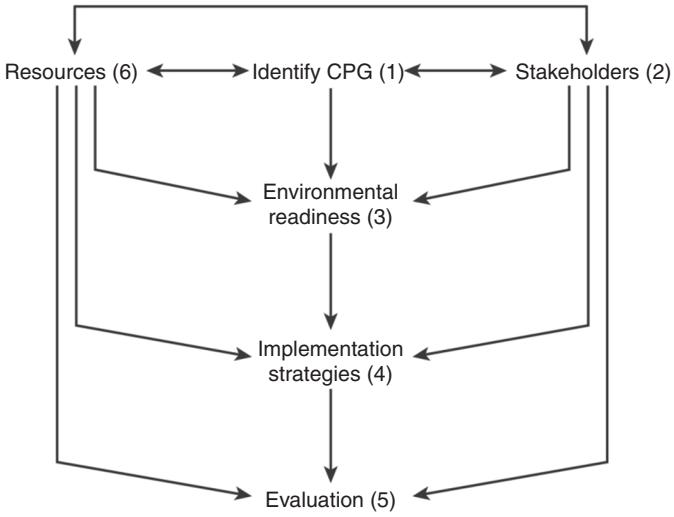

FIGURE 1.4 CPG implementation model.

CPG, clinical practice guideline.

Source: From Registered Nurses Association of Ontario. (2002). *Toolkit: Implementation of clinical practice guidelines*. Retrieved from http://rnao.ca/bpg/resources/toolkit-implementation-best-practice-guidelines-second-edition.

The Johns Hopkins Nursing EBP 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

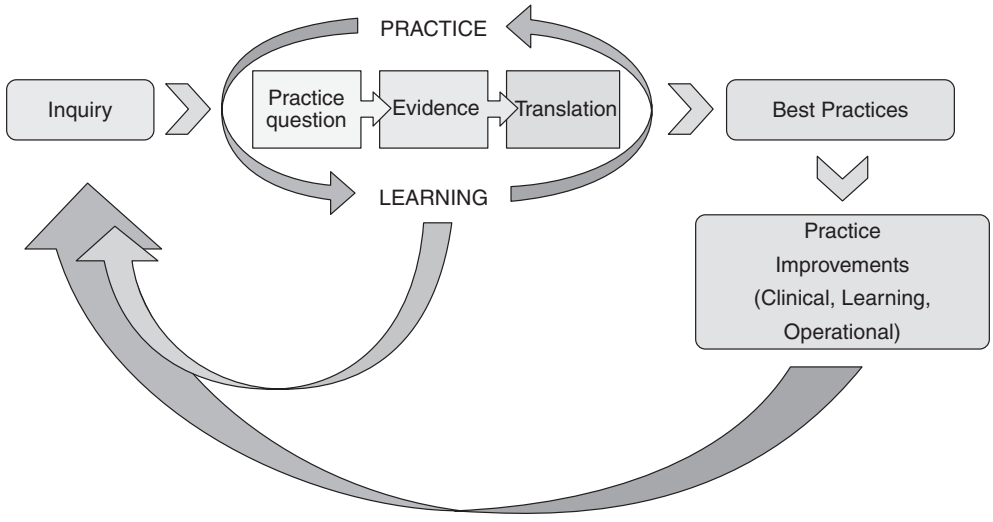

FIGURE 1.5 Johns Hopkins Nursing evidence-based practice conceptual model.

Source: From Dang, D., & Dearholt, S. (2017). *The Johns Hopkins nursing evidence-based practice model and guidelines*. Indianapolis, IN: Sigma Theta Tau International.

the Johns Hopkins University School of Nursing (JHUSON) asked to evaluate current practice, policies and procedures to ensure they were evidence-based. The team developed this practical model with accompanying guidelines and tools so 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 JHUSON are to:

- Ensure the highest quality of care.
- Use evidence to promote optimal outcomes or provide equivalent care at lower cost/time.
- 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 conceptual model was updated in 2017 to reflect more contemporary practice and terminology.

The JHNEBP model is defined as a problem-solving approach to clinical decision-making within a healthcare organization, which 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*, e*vidence*, and *translation*.

The first phase, or "P" in PET, is the *practice* question and involves six steps:

1. Recruit an interprofessional team.
2. Define the problem.

FIGURE 1.6 Evidence-based practice process.

Source: Reprinted with permission from Newhouse, R. P., Dearholt, S. L., Poe, S. S., Pugh, L. C., & White, K. M. (2005). Evidence-based practice: A practical approach to implementation. *Journal of Nursing Administration, 35*(1), 35–40. doi:10.1097/00005110-200501000-00013. Copyright by the Johns Hopkins Hospital/Johns Hopkins University.

3. Develop and refine the EBP question using the PICO format, which will help to identify key search terms for the evidence search (Richardson, Wilson, Nishikawa, & Hayward, 1995):
   P → Patient, population, or problem (age, gender, 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).
4. Identify stakeholders.
5. Determine responsibility for project leadership.
6. Schedule team meetings

The second phase, or "E" in PET, is *evidence* and involves another five steps:

1. Conduct an internal and external search for evidence: Think about key search terms for the evidence search and brainstorm about what databases and other places there are to search for the evidence.
2. Appraise the level and quality of each piece of evidence.
3. Summarize the individual evidence.
4. Synthesize the overall strength and quality of the evidence.
5. Develop recommendations for change based on evidence synthesis:
   - Strong, compelling evidence, consistent results
   - Good evidence, consistent results
   - Good evidence, conflicting results
   - Insufficient or absent evidence

The third phase, or "T" in PET, is *translation*, which includes the following nine steps:

1. Determine the fit, feasibility, and appropriateness of recommendations for translation path.
2. Create an action plan.
3. Secure support and resources to implement the action plan.
4. Implement the action plan.
5. Evaluate the outcomes.
6. Report the outcomes to the stakeholders.
7. Identify the next steps.
8. Disseminate the findings.

This model includes a set of tools for use during each of the phases discussed previously and a very important project management tool that delineates the 19 steps in the PET process for the user. These tools are a critical added dimension to the model and make its use very practical for the staff nurse. The eight tools are:

1. Development of a practice question
2. Stakeholder analysis tool
3. Evidence appraisal guideline—levels of evidence and quality-rating tool

4. Review tool for scientific evidence
5. Review tool for nonscientific evidence
6. Individual evidence summary table
7. Synthesis of evidence and recommendation tool
8. Project management tool (action-planning tool)

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, revised in 2001, and revised again in 2015 by the Iowa Model Collaborative. The revision was based on changes in the healthcare system, emerging evidence in implementation science, and questions from users (Cullen, Hanrahan and Kleiber, 2018). 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 consider the organizational context and the strength and quantity of evidence, while answering several questions:

- Is the evidence to change practice sufficient?
- Are findings across studies consistent?
- 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 EBP Change

Rosswurm and Larrabee (1999), at the University of West Virginia, developed a six-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.
5. Implement and evaluate the change in practice, including processes and outcomes.
6. Integrate and maintain the change in practice using diffusion strategies.

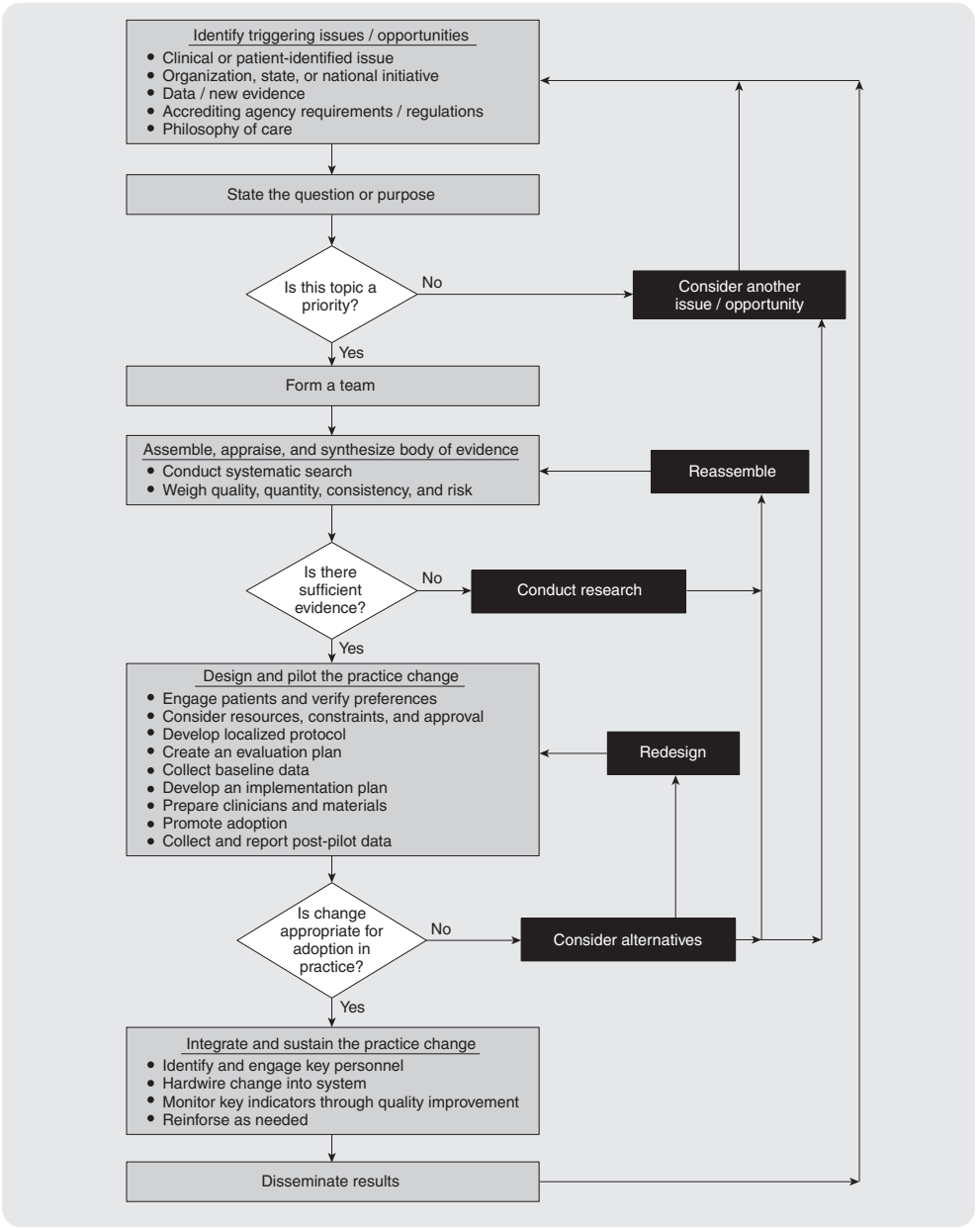

FIGURE 1.7 The 2017 Iowa Model—Revised: Evidence-based practice to promote excellence in healthcare.

Note: Used/reprinted with permission from the University of Iowa Hospitals and Clinics, Copyright 2015. For permission to use or reproduce the model, please contact the University of Iowa Hospitals and Clinics at 319-384-9098 or uihcnursingresearchandebp@uiowa.edu.

Source: From Iowa Model Collaborative. (2017). Iowa Model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14*(3), 175–182. doi:10.1111/wvn.12223

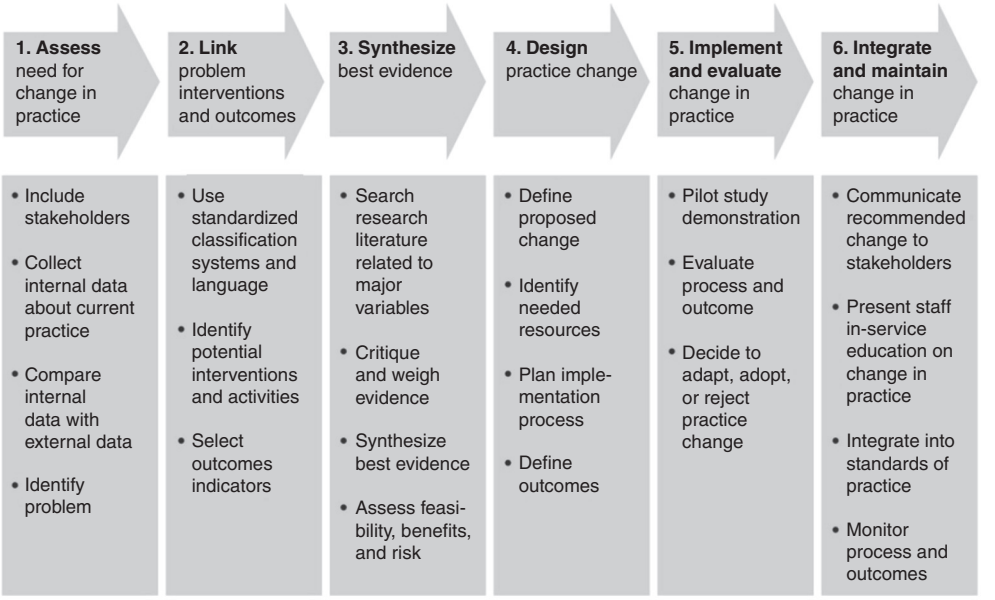

FIGURE 1.8 A model for change to evidence-based practice.

Source: Reprinted with permission from Rosswurm, M. A., & Larrabee, J. H. (1999). A model for change to evidence-based practice. *Journal of Nursing Scholarship, 31*(4), 317–322. doi:10.1111/j.1547-5069.1999.tb00510.x. Copyright by Blackwell Publishing.

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 (http://nursing.uthscsa.edu/onrs/starmodel/institute/su08/starmodel.html; Stevens, 2013). 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 using a five-pointed 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)

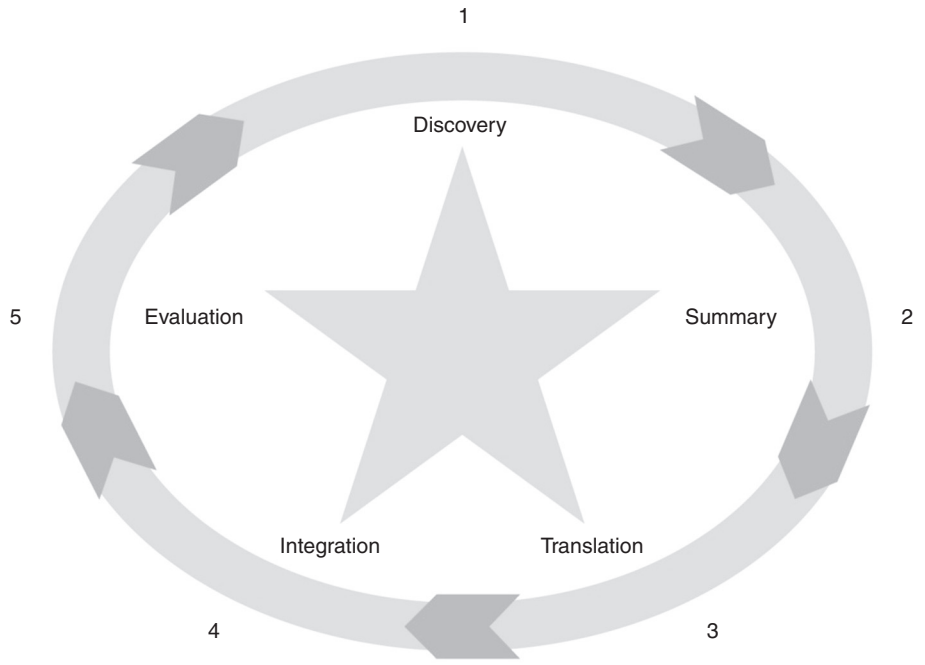

FIGURE 1.9 The ACE Star Model of Knowledge Transformation.

Source: Adapted from Stevens, K. R. (2004). *ACE Star model of EBP: Knowledge transformation*. San Antonio, TX: Academic Center for Evidence-Based Practice, The University of Texas Health Science Center at San Antonio. Retrieved from http://nursing.uthscsa.edu/onrs/starmodel/institute/su08/starmodel.html. © Stevens, 2015. Used with expressed permission.

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: Ask the clinical question.
Step 2: Search for the best evidence

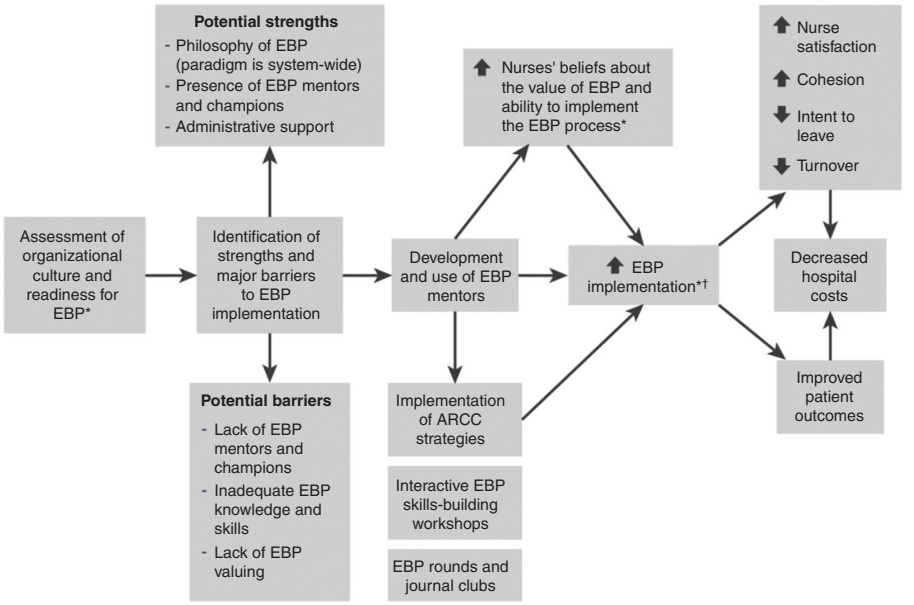

FIGURE 1.10 The Advancing Research and Clinical Practice Through Close Collaboration Model.

*Scale developed.

†Based on the EBP paradigm and using the EBP process.

ARCC, Advancing Research and Clinical Practice Through Close Collaboration; EPB, evidence-based practice.

Source: 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. doi:10.1016/j.outlook.2010.06.002

Step 3: Critically appraise the evidence.
Step 4: Address the sufficiency of the evidence: to implement or not to implement?
Step 5: Evaluate 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, 2005).

The Clinical Scholar Model

The Clinical Scholar Model is attributed to work facilitated by Alyce Schultz and a team of nurses at the Maine Medical Center in Portland, Maine (see Figure 1.11). The model is based on the assumption that "knowledge users produce better patient outcomes," and is a grassroots approach to developing a core group of point-of-care

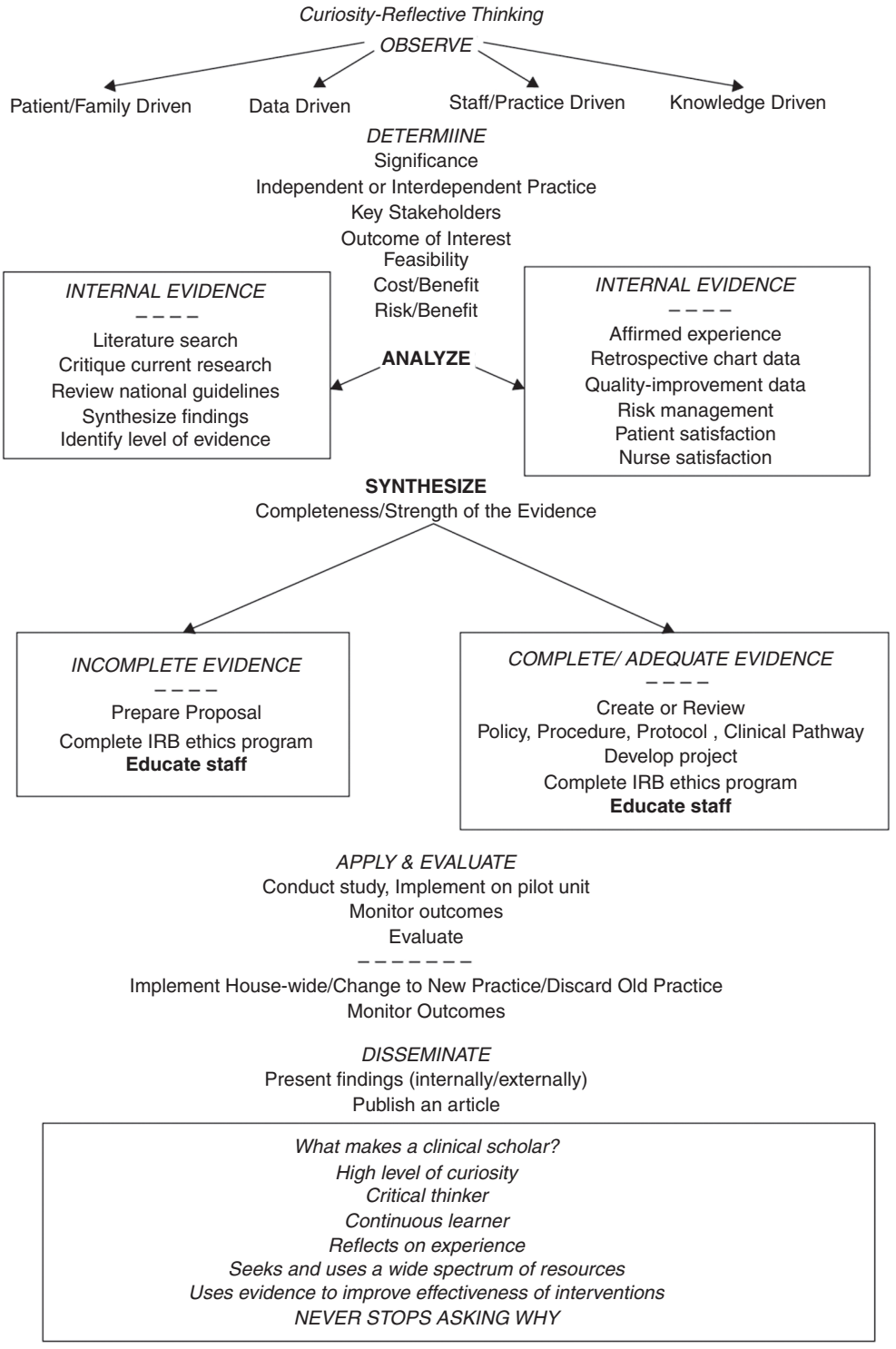

FIGURE 1.11 The Clinical Scholar Model.

IRB, institutional review board.

Source: Courtesy of Alyce A. Schultz RN, PhD, FAAN, Chandler, Arizona.

nurses who become clinical scholars and are committed to improving patient care through research, evidence-based practice, and quality improvement (Strout, Lancaster, & Schultz, 2009). The model uses an inductive approach to promote interdisciplinary EBP teamwork at the point of care by developing bedside nurses who mentor their colleagues to critique, integrate, implement, and evaluate evidence and build a cadre of innovators necessary to develop and sustain an EBP culture. The model proposes five major steps to the use of evidence in practice: observation, analysis, synthesis, application/evaluation, and dissemination.

Honess, Gallant, and Keane (2009) reported on three EBP projects that started at the point of care by staff nurses who questioned traditional practices; used the model to guide the identification, implementation, and evaluation of their current clinical practice; and used internal and external evidence to develop sound EBP changes.

Veterans Administration's Quality Enhancement Research Initiative Model

The Quality Enhancement Research Initiative (QUERI) Model (Figure 1.12) was developed by the Department of Veterans Affairs in 1998 to improve the quality of healthcare 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 (Stetler et al., 2008):

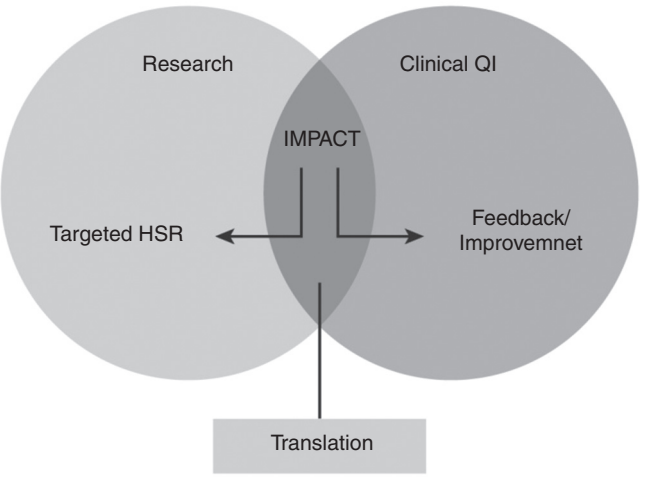

FIGURE 1.12 Quality Enhancement Research Initiative Model.

HSR, health services research; QI, quality improvement.

Source: From Feussner, J. R., Kizer, K. W., & Demakis, J. G. (2000). The Quality Enhancement Research Initiative (QUERI): From evidence to action. *Medical Care, 38*(6, Suppl. 1), I1–I6. doi:10.1097/00005650-200006001-00001

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 healthcare system processes and outcomes.
6. Assess improvement program effects on HRQOL.

The program has been implemented in a four-phase pipeline framework that begins with pilot projects for improvement and feasibility, then advances to small clinical trials, and moves to regional rollouts, and, finally, the improvement based on research becomes a national effort (Department of Veterans Affairs, 2011a, 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.

■ CONCLUSIONS

The EBP movement has made a tremendous impact on nursing clinical, administrative, and educational practices. As full partners in designing and transforming our healthcare system, nurses are critical to providing evidence-based, safe, effective, and efficient healthcare. The key to making these important contributions in today's complex healthcare environment is to understand the challenges and opportunities involved in developing, implementing, and sustaining EBP at every level of practice and setting. 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 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.

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