PART I

Nursing Research

The level of knowledge required to understand research reports published in clinical journals is somewhat akin to being a savvy computer user. To be a competent computer user, you do not have to understand binary arithmetic, circuitry, program architecture, or how central processing units work. You just need to know some basic computer language and be familiar with the features of the hardware and software programs you use.

Similarly, as a professional nurse in clinical care, you do not need to know all the different ways of obtaining samples, how to choose an appropriate research design, or how to decide on the best statistical test. But you do need to know the basics of how various types of research are conducted and what results mean. You also need to know how good data are obtained and how incorrect conclusions are avoided.

The goal of the first part of the book is to introduce you to research methods and different kinds of research evidence. To accomplish this, seven research articles have been reprinted in full. I chose this learning strategy because I have found that explaining research methods by pointing them out in an actual study is more vivid than explanations without an example at hand.

Importantly, a grasp of the basics of research methodology lays the groundwork for evidence-based practice. For readers who like to know where their learning will take them, an overview of the book's learning progression is graphically displayed in **Figure PI-1**. The main learning goals are in the diamonds on the left side. More specific learning issues associated with each goal are shown to the right.

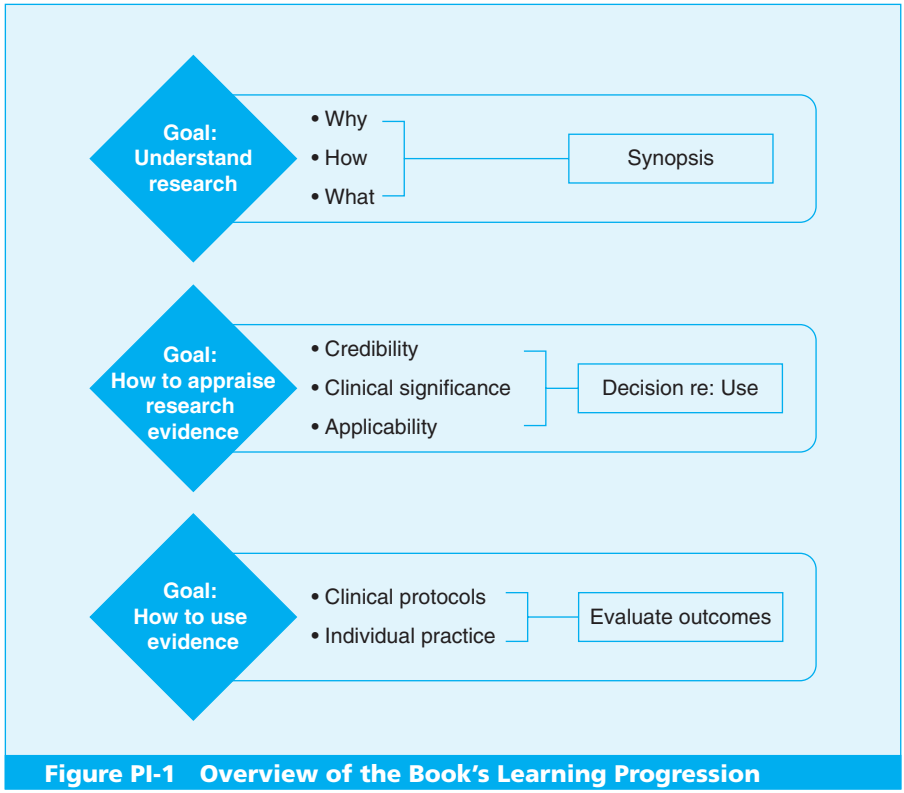

Figure PI-1 Overview of the Book's Learning Progression

CHAPTER ONE

The Research–Practice Connection

Effective nursing practice requires knowledge, information, judgment, skills, caring, and art. This book is about the knowledge component—more specifically, about knowledge used to make decisions regarding the care patients should receive. An important part of the knowledge used in making decisions about care is produced by research. Ideally, all key decisions about how patients are cared for should be based on **research evidence** (Institute of Medicine, 2001). Although this is not a completely attainable goal, large bodies of healthcare research provide considerable guidance for the design of nursing care.

Research to Practice

The **findings** of a research study are raw materials, like petroleum and iron ore that must undergo transformations to become everyday products such as gasoline and steel. Similarly, research findings undergo several transformations before they become the basis for **clinical protocols** that guide clinicians' decisions and actions. The path from researchers conducting studies to clinicians giving care based on what has been learned from research is a long one with many transformations—which you will learn about in detail in later chapters.

Evidence

To produce effective and useful clinical protocols, research evidence must be used in combination with other sources of information. Thus, when developing nursing protocols, project teams actually use several different sources of evidence, including the following:

- Research findings
- Agency quality monitoring data
- Data from national databases
- Expert opinion
- Scientific principles

There is wide agreement among healthcare providers that research evidence is the most trustworthy source of evidence and that clinical protocols should be based on it to the extent possible. However, when research evidence is not available or does not sufficiently address the clinical issue, the other forms of evidence come into play. In recognition of the fact that multiple sources of knowledge and information are used to develop clinical protocols, they are commonly called *evidence-based* protocols—as opposed to calling them research-based protocols. Thus, from here forward I will use the descriptor *evidence-based* to describe protocols and practice that rest to a large degree on research evidence.

Having said this, the focus of the book is on research evidence. The fact that this book focuses on research evidence is not meant to devalue the other forms of evidence; rather, a focus on research evidence allows a close consideration of this very important source of information for clinical practice.

Evidence-Based Clinical Protocols

Clinical protocols are standards of care in that they define care that should be given to patients who are part of a defined population. (A **population** is a group of patients who have the same health condition, problem, or **treatment**. A population can be defined broadly, for example, persons having surgery; or narrowly, as elderly persons having hip replacement surgery.) Some clinical protocols set forth a comprehensive plan of care for the specified population, for example, perioperative and postoperative care of elderly persons having hip surgery, whereas others address just one aspect of care such as body temperature maintenance in the elderly having hip

surgery. Still others are even narrower and could be called a clinical procedure, for example, blood salvage and transfusion during hip surgery. Generally, multidisciplinary groups produce protocols that address many aspects of care, whereas nursing staffs produce protocols that address clinical issues that nurses manage.

Clinical protocols can be set forth in various formats: plans of care, standard order sets, clinical pathways, care **algorithms**, decision trees, **care bundles** —all are guides for clinicians regarding specific actions that should be taken on behalf of patients in the specified population. An appropriate committee or authority in the agency, nursing department, or clinical service line endorses each clinical protocol.

In short, clinical protocols are tools for achieving consistent, high-level care; they set forth clear standards of care for a defined patient population by specifying the care actions that should be performed.

Evidence-Based Care

When research findings are used to develop a protocol and the protocol is followed in daily practice, everyone involved (patients, healthcare professionals, the agency, third-party payers, and accrediting agencies) can be confident that patients in that population are receiving nursing care that is based on the best available scientific evidence.

The protocol approach to **care design** and delivery is in contrast to each nurse deciding what care she or he will give to patients—an approach to caregiving that often results in considerable variability in care because of omissions and differing opinions regarding the best method of care. Evidence-based protocols are increasingly being used as standards of care and being integrated into computerized clinical information systems.

Using Clinical Protocols

In any care agency, there is not a care protocol for every patient population and every care situation. Agencies develop protocols to promote effective clinical management and to reduce variability in the care of their high-volume and high-risk patient groups. If a protocol exists, it should be followed unless there is a good reason for not following it. Generally, following scientifically based protocols is in the best interest of patients because doing so increases the likelihood that patients will achieve good outcomes. This is

the case because the recommended actions have been scientifically studied, and people with expertise in the field have considered their application.

Protocols Are Not Recipes Protocols should be adhered to when they exist, but they should not be blindly followed. Nurses are patient advocates and as such look out for patients' welfare; this requires that nurses be constantly aware of patients' responses to protocols. If a nurse observes that a protocol is not producing good results with a patient, she should discuss this with a nurse leader and decide if a different approach to care should be used. A protocol may be evidence based and it may work well for most patients, but it may not be right for every patient.

Consider this scenario: Suppose you are providing care to a patient who had a cervical fusion and recognize that he does not seem as comfortable as he should be even though the pain protocol is being followed. This recognition should cause you to ask yourself questions such as, "Why isn't he getting good pain relief? Should we be doing something different?" The advisable course of action would be to talk with a nurse leader so as to get better pain relief for the patient.

If, however, you notice the same problem with two or three similar patients, you would have cause to wonder if some aspect of the protocol is not effective. You would then look into when the protocol was written and on what evidence it was based. If further investigation reveals recent research literature indicating that a different positioning approach is helpful or a different medication dosing schedule is more effective for this population, you should bring this information to the attention of your nurse manager or the quality improvement council for your unit.

Even when a protocol is being carried out and is effective for most patients, there are still many aspects of care that nurses do at their discretion. Some of these discretionary acts are nursing art—that is, personal style, whereas others are actions taken to fulfill a protocol's recommendations. For example, a protocol regarding fall prevention required assessing newly admitted elderly patients for orthostatic hypotension. However, the protocol did not spell out exactly how to do this assessment. The staff nurse asked an advanced practice nurse, who told her about a research article comparing four procedures for evaluating positional/orthostatic blood pressure changes (Guss, Abdelnur, & Hemingway, 2008). The article reported that arm positions while supine and upright affect the blood pressure values obtained; therefore arm position should be held constant from

measurement to measurement. Thus, the gap in the protocol's recommendation could be filled by a research-informed decision made by the individual nurse. The take-away message is that care protocols are not detailed recipes for care; rather, they are guides to care that should be followed in conjunction with patient preference, attentive observation, clinical judgment, and additional research information.

Protocols ≠ Recipes

As a Student

At this point in your career, as a student nurse with placements in several hospitals, clinics, and agencies, you will find that some clinical settings have care protocols that clearly are based on research evidence, whereas others have care protocols, but their rationale is not clear. You might wonder: Do the required actions represent the opinions of nurses on a practice committee? Were they based on an article someone read in a professional journal? Did the chief doctor on that service stipulate how things should be done? Did the salesperson for a piece of medical equipment recommend the care actions? As a person who will enact the protocol, you have a right to information about its basis, and for that reason clinical protocols are more frequently being written in ways that provide a description of the amount of research support for the recommended actions and/or references of supporting research articles.

As a Staff Nurse

After you start to work as a professional nurse, you may be asked to participate in a project to develop or update a care protocol or procedure. Often, your agency will be adapting an evidence-based guideline that was issued by a professional association, leading healthcare system, or government organization. Other times, an evidence-based guideline will not be available, but a research summary relative to the clinical issue has been published, and its conclusions will be used in developing the protocol. To contribute to a protocol project, you will need to know how to read and

understand research articles published in professional nursing journals and on trustworthy healthcare Internet sites.

Let us assume that you are working in a well-baby clinic and are asked to be a member of a work group revising the protocol for preventing and managing diaper dermatitis in infants. You may be asked to read, appraise, and report to the group about an evidence-based clinical guideline produced by a nursing specialty association. To fulfill this assignment, you should be able to formulate a reasonably informed opinion as to the extent to which the guideline recommendations are evidence based and were produced in a sound manner. If the recommendations are deemed credible, then the work group will rely heavily on them while developing their protocol.

Another scenario could be that you read in the specialty journal for your area of practice a research report about an effective way of managing fever in young children. You note that the recommended sequence of actions is different from that used in the clinic where you work. You look in a nursing database and find a research summary article about the issue that brings together the findings from six studies. It offers conclusions about the temperature level at which antipyretic drugs should be given that are different from the standard of care in your clinic. You and your colleagues now have an opportunity to improve the care you give by designing care that is based on nursing research.

GUIDELINE: A set of recommendations for the care of a patient population that is issued by a professional association, leading healthcare center, or government organization. Guidelines are not agency specific.

PROTOCOL: A set of care actions for a patient population that has been endorsed by the hospital, agency, clinic, or healthcare facility. Protocols are agency specific.

Regardless of whether you come to question the effectiveness of the care being provided through clinical observation, by reading a research article in your professional journal, or by learning of a possibly better way at a conference, the next step is to act on your insight. Talk with your nurse manager, nurse leader, or a member of your unit's quality council. From this discussion, you will learn how the protocol came to be as it is and stimulate dialogue regarding its effectiveness.

Short History of Evidence-Based Nursing Practice

The nursing profession—*discipline* to use the more academic term—has been conducting scientific research since the 1920s, when case studies were first published, and calls for research about nursing practice were first issued in the *American Journal of Nursing*. Now, nursing research is being conducted in countries around the world, and reports of clinical research studies are published in research journals and clinical journals in many languages. In many countries, nursing research is funded by the government, and over 30 countries have doctoral programs in nursing. The growing cadre of nurses with doctoral degrees has jettisoned both the quantity and quality of clinical nursing research being conducted. In the United States, the National Institute of Nursing Research (www.ninr.nih.gov), a component of the National Institutes of Health, is a major source of funding for nursing research. Many other countries have similar organizations.

In the mid-1970s, visionary nurse leaders realized that even though clinical research was producing new knowledge indicating which nursing methods were effective and which were not, practicing nurses were not aware of the research. As a result, several projects were started to increase the utilization of research-supported actions by practicing nurses. These projects gathered together the research that had been conducted on issues such as preoperative teaching, constipation in nursing home residents, management of urinary drainage systems, and preventing decubitus ulcers. Studies were critiqued, evidence-based guidelines were developed, and considerable attention was paid to how the guidelines were introduced into nursing departments (Horsley, Crane, & Bingle, 1978; Krueger, Nelson, & Wolanin, 1978). These projects stimulated interest in the use of nursing research in practice throughout the United States; at the same time, nurses in other countries were also coming to the same recognition. By the 1980s and 1990s, many research utilization projects using diverse approaches to making nurses aware of research findings were under way.

During this time, interest in using research findings in practice was also proceeding in medicine. In the United Kingdom, the Cochrane Collaboration at Oxford University was formed in 1992 to conduct rigorous research summaries with the goal of making it easier for clinicians to learn what various studies found regarding the effectiveness of particular healthcare interventions. At the McMaster Medical School in Montreal, Canada, a faculty group started the **evidence-based practice** movement. This movement brought to the forefront the responsibility of the individual clinicians to seek out the best **evidence** available when making clinical decisions in

everyday practice. The evidence-based practice (EBP) movement in medicine flowed over into nursing and reenergized the use of research by nurses.

Three other things were happening in the late 1990s and early 2000s:

- Considerably more clinical nursing research was being conducted.
- The EBP movement was proceeding in a somewhat multidisciplinary way.
- National governments in the United States, United Kingdom, Canada, and many other countries funded efforts to promote the translation of research into practice.

Today, high-quality evidence-based **clinical practice guidelines** and research summaries are being produced by healthcare organizations around the world, and nursing staffs are increasingly developing agency clinical protocols based on those guidelines and summaries. Also, individual clinicians are increasingly seeking out the best available evidence to use as a guide for the care they provide to patients.

The most recent development is a new area of research called implementation research or **translational research**. These studies examine how to implement evidence-based changes in practice so the changes become part of routine care and bring about good patient outcomes. That's all I will say about this new area of study for now—more in Chapter 17.

Your Path to Evidence-Based Practice

This book and your classroom experiences should help you acquire a solid base of research knowledge to launch you into becoming a 21st-century professional nurse. I want to emphasize that the point of this book and of the course you are taking is not to make you into a nurse researcher, but rather to help you be an informed consumer of nursing research.

Clearly, there is a lot for you to learn. As you read this book, you will learn how to do the following:

- Get comfortable reading research articles
- Locate evidence-based guidelines and research summaries
- Develop basic skills in judging whether a clinical practice guideline or research summary was soundly produced
- Decide if the research evidence available is strong enough to use as a basis for nursing care
- Participate in the development and implementation of evidence-based protocols in the agency, unit, or clinic in which you work

The research articles you will be reading in Part I were published in clinical journals, not research journals. They were written for clinicians; thus they emphasize the clinical implications of the findings, not the fine points of research methodology. In Part I your goal in reading the reports is to grasp *why* the study was done, *how* it was done, and *what* was found.

Because the book is a primer, only the most widely used and important types of research are presented. Also, the information provided is selective, which means that it is not a comprehensive reference source regarding research methodology. It does not delve deeply into methodological issues; it does not explain all research designs, methods, and statistics. However, it does provide an introduction to methodological issues that must be appreciated to understand most nursing research reports.

In Part II you will learn about using research evidence in nursing practice. You will revisit the studies you read in Part I, learn to critically **appraise** their soundness, and consider their **applicability** to a particular setting You will also learn about how to use research evidence in your own individual clinical practice. I call individual use of research evidence *research-informed practice*. Most often, individual practice is *informed* by research, not solidly *based* on it.

Evidence-based practice is designed by clinical project teams.
Research-informed practice is engaged in by individual clinicians.

Assumptions About You, the Learner

The exploration of evidence-based nursing in this book assumes that you (1) have had an introduction to statistics; (2) have some experience in clinical settings; and (3) are committed to excellence in your professional practice. Becoming a nurse who contributes to evidence-based **quality improvement** on your unit or in your agency requires that you be an active learner by developing the following professional habits:

- Questioning what you see in practice
- Seeking additional knowledge when care protocols seem less than effective
- Reading research articles in clinical journals
- Thinking about the application of new knowledge to your practice

- Participating in evidence-based quality improvement projects on your unit or in your agency
- Adopting evidence-based protocols when they are introduced into your work setting

Other Learning Resources

In reading this book, and indeed in your later reading of research articles, you may want to have a statistics book handy to look up statistical terms and tests you have forgotten or never learned. Your statistics text need not be new. Earlier editions are often available very inexpensively—and statistics do not change much from edition to edition. Do make sure you use a basic book, not an advanced one written for researchers. If in doubt, ask your instructor for a suggestion.

For a full suite of learning activities and resources, use the access code located in the front of your book to visit this exclusive website: http://go.jblearning.com/brown3e. If you do not have an access code, you can obtain one at the site.

References

Guss, D. A., Abdelnur, D., & Hemingway, T. J. (2008). The impact of arm position on the measurement of orthostatic blood pressure. *Journal of Emergency Medicine, 34*(4), 377–382.

Horsley, J. A., Crane, J., & Bingle, J. (1978). Research utilization as an organizational process. *Journal of Nursing Administration, 8*, 4–6.

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century.* Washington, DC: National Academy of Sciences. Retrieved from http://www.nap.edu/html/quality_chasm/reportbrief.pdf

International Network for Doctoral Education in Nursing (2012). Directory of International Doctoral Programs. Retrieved from: http://nursing.jhu.edu/academics/programs/doctoral/phd/inden/programs.html

Krueger, J. C., Nelson, A. H., & Wolanin, M. O. (1978). *Nursing research: Development, collaboration, and utilization*. Germantown, MD: Aspen.