CHAPTER 3

Using Evidence to Support Clinical Practice

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What Is Evidence-Based Practice?

Sackett, Strauss, and colleagues (2000) define the elements of evidence-based practice (EBP) or medicine as "the integration of the best research evidence with clinical expertise and patient values" (p. 1). EBP demands a high level of scientific evidence at all decision-making points in a woman's care (Eisenberg, 2001; Sackett Strauss, Richardson, Rosenberg, & Hayes, 2000). The influence of EBP is increasingly evident in clinical practice, in the education of clinicians, and in management and health policy (Buse, 2008; Eisenberg, 2001; Guyatt & Drummond, 2001; Sackett, Hayes, Guyatt, & Tugwell, 2000; Sackett et al., 2000; Walshe & Rundall, 2001; Wuff & Gotzsche, 2000).

EBP begins with a clinical question (or query about best practice) and proceeds to identifying and evaluating the best research available to find the answer. To comprehensively and accurately answer the question, there must be integration of clinical experience and patient preferences with the research evidence. Every clinician is a researcher on some level. As a consequence, each person in clinical practice must solve clinical problems. Sometimes we use evidence generated by other researchers; at other times we conduct research personally. For some clinicians, conducting research may entail a small study to develop a clinical protocol. For others, it may be supervising a clinical trial. Regardless of the scope of the research, the underlying principles are the same. The focus of this chapter is to review research principles, methods, and critique techniques to assist clinicians in developing skills in practice-based research so they can provide care that is truly evidence-based.

Principles of Evidence-Based Practice

- Provides a foundation for practice guidelines, diagnostic testing, and changes in procedures or treatments
- Forms the evidence base for pathways of care and helps to standardize care or eliminate wide variations in care that may not be efficacious, may not be safe, or may be superfluous
- Assists with the development of clinical benchmarking and process- or outcome-based performance measures
- Eliminates unnecessary processes or procedures
- Sorts through research findings to find therapies that are effective or control costs

A Feminist Perspective on Research

This book is founded on a feminist framework that recognizes hierarchies are an oppressive reality in health care. These hierarchies are implicated in women's health disparities, as well as in the historical lack of research devoted to women's health issues (Doyal, 1995). Wuest (1994) notes that the major goal of feminist research is "seeing the world through the eyes of the other" (p. 578) to emancipate the world from systemic bias based on gender and class. By interpretatively studying social realities, we can move critically to change bias in our culture (Holland, 1990). Most feminists would agree that science is not acontextual or ahistorical—it must understand the woman's history and context of her life. Campbell and Bunting (1991) provide a helpful guide to critiquing research from a feminist perspective that we believe should be considered in the design and evaluation of research:

1. Research should be based on women's experiences.
2. Artificial dichotomies should be scrutinized.
3. The context and relationships of phenomena such as history and concurrent events should be considered.
4. The questions asked are as important as the questions answered.
5. Research should address questions women want answered.
6. The researcher's point of view should be described as part of the data to place the researcher on a plane with the researched.
7. Research should be nonhierarchal; participants and researchers should be partners.
8. Interpretations of observations should be validated and shared with participants.

The History of Evidence-Based Practice

Nursing science has a rich heritage of applying evidence to practice. Florence Nightingale (1859/1957) outlined the basic principles of nursing science in her best-known work, *Notes on Nursing*. The Nightingale method of nursing included rigorous monitoring of all treatments for their effectiveness—that is, an early version of EBP. Authority for Nightingale's

work in public health and hygiene was based on trial and error, intuition, clinical experience, as well as careful observation and discussion with patients (McDonald, 2004). This pioneer used statistical data to improve health, sanitation, administration of health services, and nursing education. Nightingale was not a romantic Victorian gentlewoman, but rather a bright, organized, tough feminist and mathematician. She applied statistics to the study of public health and mortality data and invented the polar diagram (pie chart) to display her research findings (Holliday & Parker, 1997; McDonald, 2002). Her work and that of other nurse theorists, researchers, and clinicians provided the foundation for a long tradition in nursing that combines careful scientific observation, sensitivity to the individual's needs, and recognition of the influence of context.

The initiation of the modern EBP movement in health care is attributed to a British epidemiologist, Dr. Archie Cochrane, who was concerned that clinicians often failed to evaluate the effectiveness of their own care and did not have widespread access to the scientific literature (Fullerton-Smith, 1995). His initial work in the 1970s led to the review of all randomized controlled trials in perinatal medicine and ultimately established the Cochrane Collaboration in 1992, which currently has a much wider scope covering reviews in many fields of health care. The Cochrane Database of Systematic Reviews (2004), an electronic database that is part of the Cochrane Library, remains one of the largest, most comprehensive reviews of evidence available.

The EBP movement is often described as a paradigm change in medicine, moving from reliance on expert opinion and experience to reliance on scientific evidence as the basis for practice (Eisenberg, 2001; Evidence-Based Medicine Working Group, 1992; Kuhn, 1970). The present paradigm shift to evidence-based care identifies the best drugs, clinical practices, and surgical procedures through rigorous study with randomized clinical trials, meta-analyses, and systematic reviews of the scientific literature forming the primary evidence base for patient care (Sackett, Strauss, et al., 2000). In response to this shift away from expert opinion, there has been a proliferation of articles, books, and websites instructing clinicians how to conduct, evaluate, interpret and apply the medical literature over the last decade (Guyatt & Drummond, 2001; Oxman, Cook, & Guyatt, 1994; Sackett, Hayes, et al., 2000; Sackett, Strauss, et al., 2000; Wuff & Gotzsche, 2000). (See also Appendix 3-A.) This compendium of resources on EBP supports a shift in the sort of evidence that is most valued for diagnosis, therapeutic decisions and interventions, and questions related to the patient's prognosis.

An examination of the state of the EBP movement, the philosophy of science, and the state of nursing science, however, suggests that the use of evidence is not a new or revolutionary paradigm shift and may explain only part of the science upon which the change is based (Sehon & Stanley, 2003). Quine (1952), another philosopher of science, describes the scientific worldview as a web of beliefs, like a spider web with an exterior edge or frame secured to an existing structure, and possessing an interconnecting interior of radii and connecting points. Using this metaphor, the web of scientific beliefs can encompass sensory information and new untested theories that now exist on the developing edge of the web. Foundational theories such as the laws of nature, logic, or mathematics form the center of the web. The interconnections between the center and the periphery are composed of well-

proven hypotheses about health and clinical practice. According to the Quinian metaphor, we use a vast network or web of healthcare beliefs with logical and evidential relationships to determine best practices, including the findings of experimental research, primarily randomized clinical trials (RCTs); intuition; and experience (Quine, 1952).

The sciences of medicine and nursing are composed of a vast network of beliefs, scientific observations, practices, hypothetical relationships, and theories. For example, in practice we include observations (blood pressure), hypotheses (how the blood pressure may need to be repeated before we accept that it is an accurate measurement), and theories (the psychophysiology of blood pressure regulation). Quine also suggests that scientific observations must be contextually examined as part of a whole, rather than being viewed in isolation from the rest of scientific knowledge. The concept of a web of knowledge, along with interconnected relationships between practices and underlying theories, supports a multiple-method approach to examining phenomena. The complexity of the human condition and human psychophysiology also demands multiple approaches to identify best clinical practices, interventions, and medications, and to identify basic scientific knowledge or antecedent plausibility (Goodman, 1999a, 1999b).

A more recent development in health care is the recognition that management of facilities and practices should also be evidenced based—an approach termed "evidence-based management." Managers of healthcare settings are beginning to realize that clinicians are not the only ones who should consider the importance of evidence in the provision of quality care. Walshe and Rundall (2001) note that management is obligated to oversee programs shown to be effective in terms of both quality and cost. Specifically, management has a key role in preventing the overuse of interventions not shown to be effective, the underuse of those interventions that are effective, and misuse when the evidence is unclear (Kohn, Corrigan, & Donaldson, 1999). Managers must work in concert with clinicians and women to provide evidence-based programs and an environment of care that will be most conducive to quality outcomes, as well as prove efficient and cost-effective.

Decisions about which evidence and which outcomes are most important should not be made in a vacuum. Studies have found that the clinical settings most effective in EBP implementation have a culture of adapting to change and encouraging strong nursing and obstetrical leadership (Graham, Logan, Davies, & Nimrod, 2004). Main and colleagues (Main, Bloomfield, & Hunt, 2004; Main et al., 2006) found that using a multidisciplinary task force to choose benchmarks grounded in evidence and most accessible for measurement was the most helpful strategy for effecting change. Buse (2008) specifically calls for prospective policy analysis using research and best information relevant to stakeholders in care to provide effective and efficient healthcare systems.

Much of our existing science in medicine and nursing comes from a variety of sources, not all of which are evidence based. There is not always "one best way" to obtain scientific information about clinical practice. For this reason, we must remain open to and creative about research methods that will give us the best answer or will help us better define the interconnected web of knowledge related to the phenomena of interest. Nursing science

values multiple ways of knowing because clinical practice is a complex and multidimensional process, and patients are unique human beings who each define health and illness differently (Mitchell, 1999).

Research and Clinical Decision Making

Research and practice are reciprocally linked in the web of healthcare knowledge (Lanuza, 1999). Clinical questions provide the basis for research; research provides a way to evaluate the safety and efficacy of practice. In other words, practice and science are mutually informative (Barrett, 2002). We also know that the knowledge needed for practice is based not only on research, but also on intuition, experience, tradition, and common sense (Ervin, 2002).

The educational preparation of clinicians usually includes core content on the research process. This can range from actual participation in research studies to general discussions about how to apply research findings to practice. Unfortunately, the word "research" can engender anxiety in many clinicians who are years removed from their educational experience. Research, like any skill, must be used on a regular basis to be effective.

Applications of Evidence-Based Practice

- Many types of evidence are used in a variety of clinical decision-making scenarios (e.g., assessments, diagnostic tests, therapies, and treatments).
- The evidence is scrutinized for validity and applicability to the circumstances and the individual patient (i.e., What works? When, where, and why does it work? For whom does it work?).
- Lack of evidence about efficacy is not the same as evidence that something is ineffective. There will be missing evidence about some things.
- EBP uses information technology to make evidence available when needed by the clinician and often the woman herself.
- Clinicians need to have ready access to evidence to support clinical decision making in women's health care.
- While working toward a common goal of providing or receiving the highest-quality health care, clinicians and patients need information they can both understand.

One basic premise that helps clinicians shed their tentativeness in either considering conducting research or applying research to clinical practice is the need to reformulate how they think about the entire subject. Research follows the exact same principles that any good clinician follows in everyday clinical management. These principles are ongoing and often circular in nature. One step usually leads to another, but can also raise new questions that take you either back to the beginning or in a new direction. **Table 3-1** outlines the steps in the clinical management and research processes.

TABLE 3-1 Alignment of Clinical and Research Processes

The Clinical Management Process	The Research Process
Gathering the Data	
• Focused toward individual clinical scenario.	• Focused on a broader perspective of a health issue.
• Historical, physical, and laboratory data may be gathered.	• Historical data, review of literature, and pilot study may be involved.
Identifying the Problem	
• Assessment is made of the individual's clinical problem.	• A research question and/or hypothesis is generated.
Development of the Plan	
• An evidence-based clinical management plan is developed to meet the client's needs.	• A research design is constructed that will best answer the research question.
Implementation	
• The management plan is implemented.	• The research study is conducted.
Evaluation of the Results	
• Clinical follow-up is conducted to assess the effectiveness of the treatment plan.	• Data are analyzed to provide answers to the research questions.

Types of Research Evidence

Research evidence comes in many forms. We prefer to call them "types" of evidence, rather than "levels," to dispel the notion that one is necessarily better than another, or to suggest linearity. As previously mentioned, clinical experience and patient preferences are two parts of the triad of clinical decision-making criteria; to complete the triad, they are combined with an evaluation of current clinical research.

The randomized clinical trial (RCT) is often held up as the "gold standard" in Western medicine, but not all clinical problems lend themselves to this kind of research. Whatever research method is used must serve the research question being asked, and the results should be evaluated in terms of the quality of the study and the potential benefit or harm to the patient. In the United States, the U.S. Preventive Services Task Force takes the lead on setting guidelines for evaluating healthcare research evidence (Harris et al., 2001). **Table 3-2** summarizes this approach.

Research Methods to Inform Clinical Practice

The historically defined parameters of science, particularly in the Western tradition, can create tension among researchers and clinicians as to what truly qualifies as scientific evidence.

TABLE 3-2 Recommendations for Using Research Evidence in Clinical Practice

U.S. Preventive Services Task Force Ratings—Strength of Recommendations

The U.S. Preventive Services Task Force grades its recommendations about specific health services or treatments according to one of five classifications, which reflect the strength of evidence and magnitude of net benefit (benefits minus harms).

A	Strongly recommended—There is good evidence that the service or treatment improves important health outcomes and benefits substantially outweigh harms.
B	Recommended—There is at least fair evidence that the service or treatment improves important health outcomes and benefits outweigh harms.
C	No recommendation for or against provision of the service or treatment—There is at least fair evidence that the service or treatment can improve health outcomes, but the balance of benefits and harms is too close to justify a general recommendation.
D	Recommends against—There is at least fair evidence that the service or treatment is ineffective and harms outweigh benefits.
I	Insufficient to recommend for or against—Evidence that the service or treatment is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

	Net Benefit			
Quality of Evidence	**Substantial**	**Moderate**	**Small**	**Negative**
Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.	A	B	C	D
Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.	B	B	C	D
Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.	Poor = I			

Hierarchy of Research Designs

I	Evidence obtained from at least one properly conducted, randomized controlled trial.
II-1	Evidence obtained from well-designed controlled trials without randomization.
II-2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.
II-3	Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the introduction of penicillin treatment in the 1940s) could be regarded as this type of evidence.
III	Opinions of respected authorities, based on clinical experience, descriptive studies and case reports, or reports of expert committees.

Source: Adapted from Harris et al., 2001.

Both quantitative and qualitative research approaches employ a variety of methods and techniques, and both aim to expand knowledge about a specific phenomenon. Attempting to pinpoint a defining difference between the two creates the possibility of oversimplifying the complexity of each. Our goal is to help you understand the differences, understand what is credible from both perspectives, and decide what is applicable to your practice and research. We do not seek to debate whether one approach is better than another, because such a judgment assumes one approach has more truth-value than the other. In reality, both approaches help us to fill in the "open spaces in the web of knowledge," according to Quine (1952).

Research often begins with a clinical problem or question that needs an answer. This problem or question usually arises from a broad topical area, so the first task of the researcher is to clearly define the problem. Research questions can be inspired by everyday practice or emerge from other research studies, especially where discrepancies, inconsistencies, or remaining questions about patient care practices, interventions, or products used exist. Social or policy issues, such as access to care, models of care, effects of racism or gender bias on health, health disparities, poverty, and violence, can also give rise to research questions.

The question is then translated into research aims, or what the study proposes to do. Minimally the aims should meet two criteria: reveal a gap in our current knowledge and be significant (National Institutes of Health, 2001). This means your exploration of the literature must reveal a lack of prior research in this area that could specifically address your questions. It also means that the results of the study could make a difference in the healthcare delivery or outcomes for the population being studied.

Quantitative Research

Quasi-experimental design is similar to experimental design but does not include random assignment of participants to an experimental or control group for practical, ethical, or other reasons. This weakness prohibits causal inference, because it can no longer be assumed that the two groups are equal. That is, the findings might be explained by differences between the groups or some other factor. Most researchers try to establish some control over these extraneous variables by matching groups or by establishing group equivalency with a variety of quasi-experimental designs and statistical analyses (Polit & Beck, 2008). The strength of the quasi-experimental design lies in its practicality and feasibility in the real world of health care and informed choice, where subjects often cannot be randomly assigned to groups.

Nonexperimental research answers questions that do not lend themselves to manipulation of a variable. For example, if we want to study the effects of the death of a child on the mother, the independent variable (the death of a child) is clearly not something that can be manipulated or controlled. Nevertheless, control and experimental groups could be identified, consisting of those mothers who did not experience the death of a child and those who did (as the death naturally occurs), respectively. Psychological and physical well-being could still be described and measured and compared in both groups, but cause and effect cannot be determined. In this kind of study, a vast array of human factors cannot be manipulated

and, therefore, cannot be studied experimentally (Polit & Beck, 2008). They can, however, be described and interrelationships can be examined with nonexperimental research.

Meta-analyses and systematic reviews are considered to be highly reliable forms of evidence. Meta-analysis uses the single study as the unit of analysis and statistically combines the findings of several similarly designed studies on the same topic. This method provides a standardized way to compare findings across studies, adding together larger numbers to observe patterns and relationships that might not have otherwise been observed in a single study (Polit & Beck, 2008). A well-conducted meta-analysis allows for a more objective assessment of the evidence obtained in RCTs, especially where findings from multiple studies have produced disagreement or uncertainty. This consideration might be important when testing a new drug, procedure, or intervention that may have different effects in subgroups or varying results in different studies.

Systematic review is the method used to analyze a general body of scientific data using clearly defined criteria. Systematic reviews can include meta-analyses, appraisals of single trials, and other sources of evidence. Great care is taken to find all relevant published and unpublished studies, assess each study, synthesize the findings, present a balanced and unbiased summary of the findings, and consider any flaws that may be present in the evidence. Many high-quality systematic reviews are available in journals and online, most notably the Cochrane Library. The need for rigor in systematic review has led to a formal process for their conduct. Although meta-analysis always uses a quantitative statistical analysis of the findings, systematic review may include a quantitative meta-analytic combination of study results, or a more qualitative summary of the aggregated data (Davies & Crombie, 2001).

Rigor in Quantitative Research

Just like clinical practice, quality research depends on adherence to standards to ensure that it is conducted accurately and ethically. The description of the research design must be clear so the reader can fully assess what took place and could replicate the study if desired. Errors in any step of the process will invalidate the results. This possibility can be minimized through careful attention to the accuracy of the instruments used for measurement, appropriate sample selection, and understanding of how to apply the findings in the acceptance or rejection of the research hypotheses.

Variables must be well defined—you must be sure you understand what is being tested and measured. Validity indicates how well the measurement actually measures the variable. For example, a sphygmomanometer must accurately reflect a blood pressure measurement. The reliability of the measure indicates how consistently it performs. For machines operated by humans, reliability includes how well the operator conducts the measurement (e.g., using the correct size cuff and positioning each time a measurement is obtained).

A research sample must reflect the population it is meant to represent. Error is minimized by use of appropriate sampling techniques and random assignment to study groups. For example, if you were measuring the reporting of menopausal symptoms, you might find

a difference in prevalence if you obtained your sample from a women's clinic (where women might be seeking therapy) versus shoppers at a local supermarket (where there might be a more representative population). In addition, where the supermarket is located might affect the outcome because of socioeconomic or cultural differences that may bias the results. These issues can potentially affect the generalizability of the study findings—that is, the ability to apply the results to populations other than the sample group studied. The size of the sample reflects its "power" and also affects the research findings. A sample that is too small will not have enough power to detect a significant difference between study groups. Likewise, a too-large sample may provide significant results related to size only, rather than producing meaningful findings (Munro, 2001).

There are two commonly cited types of errors in research—Type I and Type II (Polit & Beck, 2008). A Type I error is made when the researcher concludes that a relationship exists—Drug A is effective in treating Disease X—when it actually does not (a "false positive" in clinical terms). The differences observed between the groups are often due to a sampling error such as self-selection bias. Random assignment to groups controls for sampling error and associated Type I error. The level of significance, referred to as "alpha" (α) and reported as a *p* value, will also influence a Type I error. The most frequently used levels of significance (i.e., alpha levels) are .05 and .01. With a .05 alpha, the researcher accepts the probability that out of 100 samples, a true hypothesis will be falsely rejected only 5 times, and in 95 out of 100 samples a true hypothesis will be correctly accepted. With a .01 alpha, there is only 1 chance out of 100 that the true hypothesis will be falsely rejected, so this level of significance makes the incidence of Type I error lower. Usually, the minimal acceptable level of significance in quantitative research is .05.

A Type II error, also called "beta" (β), is made when the researcher concludes that no relationship exists when it actually does (a "false negative" in clinical terms). As the risk of a Type I error decreases, the risk of a Type II error increases. Researchers try to avoid both Type I and Type II errors. To do so, they frequently conduct a power analysis of a sample size, while taking into account the desired level of significance (alpha level) and the probability of Type II error (beta). Random sampling, random assignment to groups to avoid selection bias, and adequate sample size are all steps that can help researchers avoid these kinds of errors.

Confidence intervals provide more information than *p* values because they give a range of values and allow inference of the true placement of a parameter applied to the population (Munro, 2001). The range specifies where the parameter (e.g., the mean) is most likely to lie (Polit & Beck, 2008). Most confidence ranges are set at 95%; they provide a statement of the level of confidence the researcher has about the findings.

Qualitative Research

Qualitative research methods use different techniques and answer different questions than quantitative research methods. Guba and Lincoln (1998) propose that how we perceive reality provides the backdrop for how we conduct science. This sets the stage for understand-

ing the nature between the knower (researcher) and what can be known, commonly called epistemology. Together they form the question asked about method: How does one choose a way to learn about the world?

A person's view of the world shapes the answer to this question and influences his or her entire approach to science. Denzin and Lincoln (1998) suggest that scientists who value qualitative research believe that reality is relative and never completely apprehended. They believe there are many ways to tell and hear a story. The richness and details of the individual story provide the data we need to extend our knowledge of the world. The individual's point of view within the constraints of everyday life can only be known from the specifics of each case and cannot be controlled. Scientists using qualitative methods believe the researcher cannot be fully removed from the participants. For this reason, they sometimes call this type of research "naturalistic" because the testing usually takes place in a setting that is not controlled.

These perspectives differ in fundamental ways from the more objectivist stance of traditional Western science, in which quantitative methods—and particularly the RCT—are highly valued. Ultimately, however, the key features are the different language used and the different perspective assumed. Each has its place and role; each can inform the other. One induces why something happens, and the other deduces the reason or explanation of why it happens. A simple example is the development of a hypothesis from clinical observations and discussions with women that a specific method of contraception causes weight gain (qualitative findings). To support this hypothesis, a study using quantitative methods can be designed to examine whether this actually does occur.

The research questions most appropriate for qualitative methods are often exploratory. Why do things happen? What does it feel like? What does it mean? How should I interpret this result? All of these questions are excellent candidates for the use of qualitative methods. Such questions can arise from either clinical problems or specific gaps in clinical evidence.

A variety of lenses serve as the underlying basis for the traditions of qualitative research. The term "bricoleur" is often applied to a scientist who can navigate these traditions and lenses to answer the original research question and those that emerge as the study progresses. A bricoleur is characterized by his or her ability to "put together a complex array of data, derived from a variety of sources, and using a variety of methods" (Polit & Beck, 2008, p. 219). Skills required to accomplish this feat include astute observation, reflection, interpretation, and introspection.

Qualitative Research Design and Methods

Qualitative research explores a problem by induction and often moves toward hypothesis or theory development. Data are derived from multiple sources, such as interviews, fieldwork, observations, videotapes, art, media, and other documents, but are usually textual in composition rather than numerical. The researcher is considered to be the "instrument," and his or her role is closely tied to the collection and interpretation of the data. Sometimes the researcher is also a participant, such as in fieldwork where observations of specific clinical

practices are being conducted. This can lead to an increase in trust between the participants being observed and the researcher.

Qualitative studies are descriptive from the perspective of those who have experienced a particular phenomenon; therefore, samples are not random, but rather "purposive" (Speziale & Carpenter, 2003). This means specific research participants are sought who can shed the most light on the research problem. For example, if you wanted to learn about the experience of postpartum depression, it would be fruitless to interview people who had never been exposed to the phenomenon.

To refine ideas based on emerging findings in the data analysis, the researcher may "theoretically sample" to answer specific questions (Charmaz, 2000). Sample size is usually not predetermined, and the power of the samples used in qualitative studies reflects the robust richness of the textual data. Data collection usually continues until the researcher observes saturation or redundancy, or until nothing new is coming to light or being observed. Data analysis is conducted in a variety of ways, but usually produces findings that are richly descriptive in textual or thematic language.

Choosing from among the many qualitative methods requires that the researcher have an understanding of his or her disciplinary focus. Each area has its own complexity and methodology (a topic that goes beyond the scope of this chapter). For an easier understanding of some of the basic methods, the various qualitative research approaches have been organized here using general categories adapted from Polit and Beck (2008) to reflect the area of knowledge they explore.

Understanding the Experiences and Processes of Health and Illness

Many of our research questions address what it is like to go through a certain health event, for the purpose of helping us find ways to improve life for others who have similar experiences. These approaches focus on understanding the basic experiences and processes of how a person moves through the event. The methods come from the traditions of philosophy and sociology.

Phenomenology is derived from a philosophical tradition that provides a "textual reflection on the lived experiences and practical actions of everyday life with the intent to increase one's thoughtfulness and practical resourcefulness or tact" (van Manen, 1990, p. 4). The focus is on understanding what it is like for this person to be in this experience within the context of his or her life. The work is interpretative or hermeneutical. The findings are often presented as paradigm cases or exemplars, creating "a dialogue between practical concerns and lived experience through engaged reasoning and imaginative dwelling in the immediacy of the participant's worlds" (Benner, 1994, p. 99). The results provide a vivid description that can help us to better understand the social, political, or historical context of the individual's experience (Polit & Beck, 2008).

Asking questions from the tradition of sociology assists us in understanding how social structures and human interactions affect people's experience of health and illness (Polit & Beck, 2008; Speziale & Carpenter, 2003). These approaches range from understanding how

people make sense of their social interactions (symbolic interaction) to discovering how social processes are structured and developed (grounded theory). Charon (1992) describes four central foci of symbolic interactionism:

- The nature of the social interaction
- Human action that both causes and results from social interaction
- Present rather than past focus
- Actions of the person who is unpredictable and active in his or her world

Grounded theory was developed by Glaser and Strauss in the 1960s as a research method that addresses both the chief concern or problem for people and the basic processes available to address that concern (Glaser, 1978, 1992; Strauss & Corbin, 1998). The goal of this approach is to develop theory in a substantive area that is grounded directly from the data. Grounded theories "are likely to offer insight, enhance understanding, and provide a meaningful guide to action" (Strauss & Corbin, 1998, p. 12). One example is Quinn's (1991) work on the process women go through during perimenopause.

Understanding Human Behavior

The tradition of psychology focuses specifically on how and why people act; its aim is to describe behavior. Studying human behavior can help us understand how behaviors are related to health and illness. Ethology examines the evolution of human behavior in its natural context (Polit & Beck, 2008); observations of human behavior are used to expose structures essential to life. One example is the observation of attachment behaviors as necessary and instinctive to survival (Ardovini, 2002; Sable, 2004). This observational approach can also be used from an environmental perspective, as in ecological psychology. Ecological models examine the relationship of environmental influences with specific human attributes (Humpel et al., 2004). For example, immigration status (acculturation into a new environment) has been demonstrated to be a risk factor for psychological distress and unhealthy eating behaviors (Skreblin & Sujoldzic, 2003).

Learning how people communicate is another approach to learning about human behavior. Human communication has many processes and forms. Scientists explore the construction of meaning in the nuances of these processes. To do so, they use methods derived from both sociology and linguistics. Sociolinguistics is the examination of the forms and rules of conversation through discourse analysis (Polit & Beck, 2008). Mishler (1984) proposes that by examining the talk between clinicians and patients, we can encourage the development of noncoercive discourse and humane clinical practice.

Understanding Cultural Traditions and Influences

One of the oldest qualitative traditions comes from the field of anthropology, where scientists strive to understand cultural variations among the many peoples of the world. Although several approaches are used in this disciplinary area, ethnography is the most common.

An ethnographer's goal is to carefully describe a specific culture. Historically, grand ethnographies often explored indigenous peoples. In health-related research, smaller specific subsets are often the focus of study. For example, Ka'opua and Mueller (2004) studied how cultural values and social support practices relate to adherence to highly active antiretroviral therapy for HIV among Native Hawaiians, a group with historic difficulty in using Western healthcare services because of cultural conflict.

Synthesizing Qualitative Research Findings

Meta-synthesis is another qualitative method. This research method analyzes, synthesizes, and interprets a specified body of research and holds the potential to provide valuable insight and knowledge about the distinctive aspects of a phenomenon (Kennedy, Rousseau, & Kane Low, 2003). It shares some commonalties with the type of meta-analysis conducted in quantitative research, but is distinguished by some important differences. Meta-synthesis provides an organized, yet interpretive approach to a specific group of qualitative studies (Noblit & Hare, 1988). Sandelowski and her colleagues (1997) note that it is essential to systematically examine qualitative findings (about a specific phenomenon) to keep from repeating ourselves if we are to change practice and policy making. The meta-synthesis method involves identifying similar qualitative studies about a particular phenomenon, determining how they are related, and synthesizing the findings. This analysis entails more than a systematic review, however: It becomes an interpretative study itself.

Rigor in Qualitative Research

Just as in quantitative research, a clearly articulated study design is essential to understanding the purpose and results of any qualitative project. Because qualitative research uses textual rather than numerical data, relative terms such as "trustworthiness" or "dependability" are used to describe results, whereas "error" is used as the corresponding term with quantitative study results (Speziale & Carpenter, 2003). Specific terminology associated with qualitative research can help you assess whether the results of such studies are valid and reliable.

Credibility reflects how much confidence you have in the study results (Polit & Beck, 2008). It is enhanced by complete descriptions of the sample and setting, data collection, analytic procedures, the way in which decisions were made, and the researcher's role in the study. Preparation and experience with the methods and acknowledgment of preconceived ideas, sometimes called bracketing, are helpful in understanding the researcher's perspective and influence on the study. This practice is similar to evaluating whether a specific statistical test is appropriate in a quantitative study.

A qualitative study should provide enough documentation so that the results can be confirmed—a characteristic sometimes called "confirmability" (Polit & Beck, 2008). Confirmability helps to assure that later researchers can follow the analysis and understand how decisions were made. The findings are enhanced when there is evidence that a team of researchers was involved with peer debriefing and searches for negative cases (Polit &

Beck). These procedures allow the research team to reflect on their analysis and to check for bias and interpretative errors. Another approach, called "member checking," has study participants read and react to the researchers' analytic decisions to see if their findings reflect their personal experience with the phenomenon under investigation.

All research findings should make conceptual sense. The investigators should be enough thick, rich description to prove that the results clearly fit with the data provided. "Transferability" refers to how well the findings can be applied to another setting and is similar to the concept of "generalizability" in quantitative research (Polit & Beck, 2008). A study should provide enough evidence in the description of the study to help you assess whether the findings could apply to your setting.

Mixed Research Methods

Sometimes the research questions beg for a mixed method approach—that is, a combination of quantitative and qualitative methods. There are multiple ways to combine methods: Perhaps one method is more dominant than the other, or perhaps research is conducted sequentially using the various methods (Tashakkori & Teddlie, 1998). A helpful way to think about this issue is to consider how different lenses help you see different things. You might design a study that examines how a specific intervention affects a woman's perinatal outcomes and health behaviors (quantitative measures). Yet, within the same study, you could also interview women (qualitative methods) about the experience of the intervention—how it affected their lives.

Another term appropriate to this discussion is triangulation, which refers to the use of multiple referents to capture a more complete and contextualized picture of the phenomenon under investigation (Polit & Beck, 2008). This approach may involve the use of multiple sources of data, time collection points, sites, and samples, all providing different perspectives on the same research question.

Moving from Best Evidence to Best Practice

Research can improve practice by providing answers to clinical questions; evaluating the safety, effectiveness, or cost of therapeutics; refining practice guidelines; or testing theories relevant to practice (Lanuza, 1999). Increased access to research evidence that has been reviewed, compiled, and analyzed by a variety of credible resources enhances our ability to obtain and apply research findings. Resources that help us fulfill this goal include the Cochrane Collaboration, professional organizations, and government agencies. A comprehensive list of resources is included in Appendix 3-A. This information has been made available via the Internet so it is readily available to the busy clinician. Yet clinicians continue to struggle with the issue how to apply the results of research to practice: How do you actually make it happen?

As clinicians, we must be able to use the computer and must be familiar with the EBP resources in all fields of health. We must also be cognizant of the criticisms and limitations

of EBP, including over-reliance on RCT-derived results and systematic reviews, an emphasis on the routinization of practice, and the daunting effort required to stay current, as today's evidence may be tomorrow's inappropriate practice (Kim, 2000).

Clinicians must be able to critically appraise individual studies to determine how much faith should be put into their findings. The strengths and weaknesses of each study must be readily identifiable. Evidence hierarchies rank studies according to the strength of the evidence they provide (Polit & Beck, 2008). Most such hierarchies put meta-analyses of RCTs at the top and opinions of experts at the bottom. Owing to this tendency, there is some concern that using such hierarchies inevitably emphasizes a scientific and rational focus and assumes causation (the design of the tightly woven web structure) can be identified only by rigorous quantitative study. This approach fails to recognize the gaps in the web of knowledge and discounts qualitative research or naturalistic observations that focus on the understanding of the human experience. EBP attempts to escape this reductionist approach by integrating information from a variety of well-designed studies, clinical experience, existing resources, and the woman's preference. When developing clinical practice guidelines, protocols, or clinical pathways, all of these elements should be included (Camacho Carr, 2000). No single study or group of studies can provide an infallible answer to a clinical question.

The Stetler (2001) model of research utilization was designed to help individual clinicians, as well as organizations, move the best evidence into the practice setting. Individual clinicians or organizations can use this model to critically analyze the research evidence and apply the findings to real-world practice (see **Figure 3-1**).

The current model includes five sequential phases:

9. The preparation phase includes the identification of the purpose of the project and the searching, sorting, and selection of the research evidence.
10. The validation phase involves a critique of the evidence.
11. If the evidence is found to be sound, then the process continues to the comparative evaluation and decision-making stage. The evidence is synthesized, and four criteria—fit of the setting, feasibility, current practice, and substantiating evidence—are used to assess the applicability of the evidence. Fit with the setting examines the similarity of the study's environment with the one in which the findings will be applied and compares the characteristics of the study population with the client population where the evidence will be applied. Feasibility implies that potential benefits outweigh any risk to patients, resources for implementation are available, and the involved persons are ready for change. Congruency with current practice philosophy and values must also be considered.
12. The translation application phase is when a dissemination plan is developed and strategies that need to be changed are revised.
13. In the evaluation phase, the level of successful integration of the evidence into practice must be assessed.

Using a model such as the one proposed by Stetler (2001) can make EBP more focused and acceptable to those clinicians who assert, "This is the way we've always done it." Integrat-

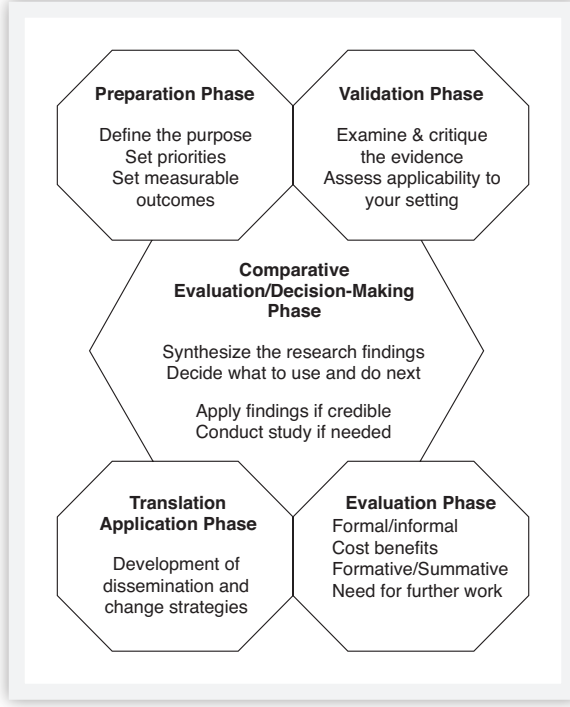

FIGURE 3-1 Conceptual Adaptation of the Stetler Model for Applying Research Findings into Clinical Practice

ing a methodical approach to applying evidence to practice can be effective in overcoming this all too frequently encountered mantra.

Barriers to Using Research Evidence in Clinical Practice

The two most common reasons clinicians (and students) cite for their failure to apply the latest research evidence are (1) lack of confidence in critiquing research studies and (2) lack of time to find the studies. We empathize with both concerns, and offer some practical strategies to overcome them in this section.

Critiquing Research Studies

Critiquing research studies takes practice and some basic knowledge about how research is conducted. We suggest that all clinicians have a basic research text on their bookshelf to look up unfamiliar terms and statistics. We have used Polit and Beck's (2008) *Nursing Research: Generating and Assessing Evidence for Nursing Practice* to provide some structure for this chapter and find it easy to read and practically written; however, many other good basic texts are available. *Journal of the American Medical Association* has also compiled an extensive set

of *Users' Guides to the Medical Literature* that are both instructive and illustrative (Giacomini, 2000a, 2000b; Guyatt & Drummond, 2001).

To assess applicability of any research findings to patient care, clinicians must evaluate the validity of the research, determine the practicality of implementing the findings, weigh any associated risks and benefits to the patient, and consider the ethical issues, available resources, and cost. Clinicians applying EBP guidelines must be able to recognize the limitations of the available databases as well as the limitations of scientific evidence. They must also know how to integrate clinical expertise, ethical considerations, patient individuality, and choice into the decision-making process. Additional objectives of EBP may include cost reduction, a desire to reduce wide variation in healthcare practices, and the desire to include clients as partners in their own care (Agency for Health Care Research & Quality, 2004; Gray, Hayes, Sackett, Cook, & Guyatt, 1997). None of these ideas is novel to clinicians.

Table 3-3 provides a brief summary of important points to consider when evaluating the quality of a research study and determining whether you should apply the findings to your practice.

TABLE 3-3 Practical Points in Critiquing Research Studies

Title
Does the title of the article accurately describe the study? Is the language that is used in the title understandable and informative?
Abstract
Does the abstract accurately present the study? It should state the purpose of the study, the problems that were investigated, the research question or hypotheses, a description of the study design and the methodology used, the sample, instruments used, other data collection procedures, and the results or findings.
Research Questions and Purpose of the Study
What are the research questions? Are these questions researchable in the sense that they can be carried out by the investigators? What is the significance of the study in terms of practice, adding to the body of scientific knowledge, etc.? Are the research questions stated in a concise and precise manner?
Research Variables
Can you delineate the independent and dependent variables if it is a quantitative study? Is the phenomenon of study clear if it is a qualitative study?
Review of the Literature and Conceptual Frameworks/Model
Is the literature review relevant to the study? Does it include timely as well as classic articles that pertain to the study? Does the review provide adequate background information? Do the authors state how this review provides support for their study, i.e., give background information for the identified research problem/question?

TABLE 3-3 Practical Points in Critiquing Research Studies *(Continued)*

Sample and Setting
Is there a description of how the sample was selected and the location of the study? What are the sources of bias, if any, that are associated with the sample selection process. Were power and effect size calculated for this study? In qualitative studies was the sample purposive, and when was sampling stopped?
Ethical Considerations
Do the authors address protection of human subjects? Did they obtain permission to conduct this study in the setting?
Method: The Design
Is the design appropriate for the research questions? Is it described? What extraneous variables are associated with the design, if any? Are they identified? Is the description adequate enough to allow replication of the entire study?
The Instrumentation and Data Collection Procedures
How are issues of scientific rigor addressed? Are validity and reliability of the instruments described? Was collection of data conducted in a standardized manner? In qualitative research, is the "researcher as instrument" described?
Data Analysis
Are the analytic techniques supportive and appropriate for the research design? Does the article include supportive graphs, tables, or charts? Do these help to describe the results? Are they easily understood?
Results
Do the results follow logically from the design and method? Do the authors describe the results in a way that is understandable and clear? Do the results answer the research questions(s) or hypotheses?
Summary and Conclusions
What is your overall impression of the study? Does the author convince you about the conclusions that are drawn? Do the conclusions seem logical in light of the method and procedures, etc.?

Source: Adapted from lectures and presentations by Judith Fullerton, CNM, PhD, FACNM at the American College of Nurse-Midwives Annual Meeting 2002, Atlanta, GA.

Finding the Relevant Research

Today's information-rich world places the most recent research virtually at your fingertips. It is important to realize, however, that published findings are inevitably outdated the minute they hit the press. Journal articles can take one to two years from first submission to printed page, and textbooks take even longer to hit the market. The advent of the Internet, however, has substantially improved our ability to keep up with the most recently published research.

Several excellent sources provide the best evidence in a succinct format for the busy clinician, including the Cochrane Database of Systematic Reviews from the Cochrane Collaboration, an organization that makes up-to-date, accurate information about the effects of health care readily available worldwide. It produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other well-controlled studies (Cochrane Database of Systematic Reviews, 2004). MEDLINE, the National Library of Medicine's database of more than 4500 peer-reviewed biomedical journals, is another excellent source for research findings, although the reader must evaluate most of the studies to determine their scientific merit and clinical applicability. The Agency for Health Research and Quality (2004) provides Evidence Reports and Technology Assessments, consisting of technical reviews on many clinical topics. The Database of Abstracts of Reviews of Effectiveness (2004) is another healthcare-related database, produced at the University of York in England; it provides quality-assessed evidence reviews. Many other agencies and organizations prepare evidence-based guidelines and protocols, which can usually be accessed conveniently on the Internet. Additional resources for EBP are listed in Appendix 3-A.

Conclusion

As a clinician, when considering the issue of research, it is helpful to look at what using evidence in practice actually means. Examples of applying evidence to clinical practice abound—from the choice of pharmaceutical versus alternative therapies for vaginitis, to whether women need continuous electronic fetal monitoring during labor. Every clinical scenario faced will need to be addressed from the perspective of your personal experience, the woman's desires, and the best evidence to support your recommendations. Your first challenge is to blend these considerations artfully in everyday practice. Your second challenge is to work within the healthcare system to influence management and policy makers to use the best information and evidence possible to provide the highest quality of care.

If you walk away with anything from this chapter, it should be the following lesson: Question everything. These questions need not immobilize you, but should set the stage for thinking critically about the causes of clinical problems and ways to search for the best evidence available. Women will be your partners on this path of discovery, as they access the Internet and come to you with questions about different strategies in their health care.

For example, a recent study by Johnson and colleagues (2004) surmises that the theory that women are born with a finite number of oocytes is questionable. If the results of their research on mice are extrapolated, they propose that we may actually use stem cells to continue reproducing oocytes—a finding that could significantly affect the way we look at fertility in the future. Dr. Allen Spradling of the Carnegie Institution in Washington was interviewed about this study on National Public Radio (Hamilton, 2004). His personal reaction to this rather stunning paradigm shift was chagrin with himself for never questioning the original theory of a finite set of oocytes: "I shouldn't have believed that. Why wasn't I more skeptical?" As clinicians and researchers, we should never be caught wondering, "Why

didn't I ask the question?" We owe it to women and to ourselves to search for the best evidence to support our healthcare practices.

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APPENDIX 3-A

Sources of Research Evidence

Agency for Research and Quality Evidence Reports and Technology Assessments
http://www.ahcpr.gov/clinic

American College of Physicians, ACP Journal Club (CD-ROM)
http://www.acponline.org

BMJ Best Practice (online database)
http://bestpractice.bmj.com/best-practice/welcome.html

Cochrane Database of Systematic Reviews
http://www.cochrane.org

Core Library for Evidence-Based Practice
Comprehensive website that is a virtual library with many links to full-text documents on all aspects of evidence-based practice, including texts, the Users' Guides to the Medical Literature (*Journal of the American Medical Association* articles), basic statistics for clinicians, systematic reviews from the *Annals of Internal Medicine*, and instructions for how to read various kinds of scientific papers series from the *British Medical Journal*.
http://www.shef.ac.uk/~scharr/ir/core.html

Database of Abstracts of Reviews of Effectiveness (DARE)
http://agatha.york.ac.uk/darehp.htm

MEDLINE
The peer-reviewed biomedical literature and review articles on the state of the science.
http://www.ncbi.nlm.nih.gov/entrez/query/static/overview.html

Useful Websites for Systematic Reviews

Bandolier: http://www.medicine.ox.ac.uk/bandolier
Center for Evidence-Based Medicine at Oxford: http://www.cebm.net
Cochrane Collaboration: http://www.cochrane.org/cochrane-reviews
NHS Centre for Reviews and Dissemination: http://www.york.ac.uk/inst/crd/welcome.htm
Systematic Reviews Training Unit: http://www.ich.ucl.ac.uk/srtu