Chapter 2: Evidence-Based Practice in Nursing:
Evaluating Research Findings for Effective Implementation

4 Contact Hours

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Learning objectives

- Define evidence based practice.
- Correlate the origins of evidence-based practice (EBP) as initiated by Florence Nightingale with contemporary EBP.
- Explain how EBP is used to improve nursing practice and patient outcomes in contemporary practice.
- Explain how nursing research is essential to EBP in nursing.
- Critique nursing research articles found in the healthcare literature.
- Explain how a research proposal is presented to the IRB.
- Describe how research is implemented, evaluated, and communicated.
- Explain how to reduce/eliminate barriers to EBP and nursing research.
- Summarize ways to implement EBP.

Introduction

Carolyn is the surgical intensive care unit (ICU) representative to the Nursing Research Council. She is proposing the design of a research study that focuses on the correlation between visiting hours and patient outcomes. Carolyn and her ICU colleagues believe that if they limit visitation to generous, but specific, blocks of time, patient care would be more efficient and effective, and patient outcomes would improve. They want to determine if there is evidence to justify their beliefs. They also agree to abide by the evidence obtained from a review of the literature and a well-designed nursing research project.

Evelyn is a nurse practitioner who works in a neurological rehabilitation center. Many of her patients are dealing with the effects of spinal cord injuries (SCIs). One of the center’s physiatrists (specialists in physical medicine and rehabilitation) recently published an article in a medical journal contradicting the center’s protocol for bladder retraining in SCI patients. The article is based primarily on his personal preferences and not on scientific research findings. This particular physician has a lot of power in the community and expects the rehabilitation center leaders to support his decisions and comply with his requests.

Even though patient outcomes pertaining to bladder retraining have been excellent, the center’s administrators are encouraging the rehabilitation team to consider making changes to the protocol based on this physician’s opinions, not on available evidence. Evelyn, as one of the nursing department representatives on the Evidence-Based Practice (EBP) Council has been asked to respond to administrative concerns. Evelyn is asking for the council’s support in gathering evidence to justify current practice.

As part of a community medical center’s pursuit of Magnet® accreditation, various nursing councils are being established. These include nursing research and evidence-based nursing practice councils. Formation of these councils has triggered both enthusiasm and resistance. Many nurses look forward to having more input into how nursing is practiced within their organization. They want to participate in research that helps to not only facilitate EBP, but to improve practice and enhance patient outcomes.

Some nurses, however, are not as eager to participate in research and formalize EBP. They are concerned about having to learn about the nursing research process and fear that formalizing EBP will create more work without enhancing practice. They also question if the amount of time and effort necessary to achieve and maintain Magnet accreditation is worthwhile.

These three scenarios illustrate some of the strengths of EBP, as well as some of the barriers to its implementation. The first scenario shows how research is necessary to the implementation of EBP. Carolyn and her colleagues ponder a change in protocol that they believe will ultimately enhance patient outcomes. They do not request or attempt to initiate such a change without objective evidence that supports their beliefs. Such evidence is obtained from a review of relevant studies in the health care literature and from well-designed nursing research projects. Note that Carolyn and her colleagues agree to abide by objective findings. One of the hallmarks of EBP is that its practitioners support the concept as a way of improving patient outcomes.

The second scenario is a bit more complicated and moves into an area with which nurses and other health care professionals are all too familiar. In this scenario, a powerful physician is proposing protocol changes without the benefit of objective evidence. Physicians are not the only persons who can wield influence—any member of the health care team may use influence to control, or attempt to control, health care practices. In this particular situation, a nurse practitioner is seeking help to gather evidence that will support current protocol; however, there may be additional actions necessary. It may be helpful to talk to the physician about his/her concerns about current protocol and why proposed changes might be beneficial. It may also be important to find any evidence that exists to support the physician’s viewpoint. Findings may indicate the need for further investigation, including a literature review and more research. It is important to keep an open mind about new and/or different ideas. Another hallmark of EBP is willingness to continually evaluate practice in patient outcomes.

In the final scenario, one of the barriers to successful implementation of EBP (and to nursing research) is described. Establishment of nursing councils that focus on EBP and nursing research necessitate changes in practice. These kinds of changes can trigger, as the scenario describes, both enthusiasm and resistance, fairly typical responses to change. There will be those who embrace change as an opportunity for career advancement and those who resist it. Why is there so much
The beginning of EBP: The influence of Florence Nightingale

Jonathon and a group of his fellow nursing students have been asked to prepare an oral presentation regarding the impact of Florence Nightingale on current nursing practice. He and some of his friends are not pleased with the assignment. Jonathon comments, “I don’t see how Florence Nightingale has any influence over what is happening in nursing now. All I see when I think of her is some lady in long skirts with a candle wandering around hospital wards. What did she really do for nursing except start some myth about ‘angels of mercy?’”

Brenda, another member of the group, protests, “Nightingale was so much more than that. If you read about her work, and read her book Notes on Nursing, you’ll see that she was really the first nurse researcher. And, even though she didn’t really know it, she was the first nurse to practice evidence based nursing. We need to focus on her real accomplishments, not on some idealistic notion of some kind of angel of mercy. This could be a great presentation if we really want it to be!”

EBP as initiated by Florence Nightingale

EBP in nursing is an ongoing process that relies on evidence (generated by observation and research findings) to practice nursing that best facilitates desired patient outcomes. EBP requires nurses to access, summarize, analyze, and apply information from professional health care literature and research projects to support and justify clinical decisions and actions [20].

Florence Nightingale was a nurse who believed strongly in observing, gathering, and analyzing data to improve patient care and outcomes. Born in 1820 to a wealthy British family, Nightingale benefited from a more thorough education than was typically given to girls during that era thanks to her father. Her father and other family members were not so progressive when it came to Nightingale’s determination to become a nurse, however. Nursing in the mid-19th century was not a profession. Indeed most women who called themselves nurses were uneducated and, for the most part, uninterested in promoting health and wellness. It was a means of earning some money and, just as often, a means of stealing from those who were sick or injured. There were no formal schools to educate nurses and Nightingale struggled to gain what meager education was available at the time. In 1853 she assumed her first position as a nurse in London as the superintendent of the Institution for the Care of Sick Gentlewomen. Within a year she was approached by the British Secretary of War to take command of a group of women who were going to Scutari in Turkey to care for wounded soldiers of the Crimean War. Upon arrival in Turkey Nightingale found conditions in army hospitals so deplorable that nearly half of the soldiers admitted died [3].

Nightingale was a brilliant statistician who used statistics and scientific research to justify the need for reforms not only in the British military hospitals, but in civilian hospitals, in workhouses, and in homes in England and throughout the world. She was also able to promote legislative changes in England and India to improve the health of these populations [3].

Nightingale not only nursed sick and wounded soldiers, but was able to correct the horrific, unsanitary conditions in military hospitals and significantly improve the survival rate among wounded soldiers. She also established nursing as a profession and created schools of nursing that had high standards and state-of-the art (for the time) education.

Decades ahead of her time in the use of statistical analysis, Nightingale documented countless health care observations, compiled and analyzed data, and used that analysis to initiate health care reforms [3]. These reforms were most likely the first EBP nursing initiatives.

EBP Alert! Nightingale used her analysis of statistical data on health conditions in the British Army to write a comprehensive report that showed more men died from the unsanitary conditions in the army hospitals during the Crimean war than from bullets on the battlefield. She also proved that sanitary conditions in barracks, even during peacetime, were so bad that the mortality rate of soldiers living in barracks was twice that of civilians [3].

In the United States, the Civil War provided a similar impetus for nursing reform. Nightingale’s Notes on Nursing was published in the United States in 1860 (one year after publication in England) and served as a means for nurses on both the Union and Confederate sides of the conflict to push for similar reforms, such as cleanliness of environment and ensuring that fresh air and light are in hospitals, in the care of sick and wounded soldiers [3].

Nightingale’s observations and reforms may seem relatively simple and even commonplace by today’s standards, but in the mid-19th century they were revolutionary. Her promotion of cleanliness, light, warmth, and pure air were ridiculed by many physicians. It was only through careful observation and data analysis that she was able to initiate health care reforms that saved many lives.

What makes Nightingale’s work worth studying in terms of current EBP? For one thing, her willingness to confront barriers to safe and appropriate patient care through objective, scientific research can serve as a role model for nurses participating in nursing research and incorporating findings from such research into EBP. Another factor is her precedent-setting emphasis on preventive health care [3].

In 1992, the J. B. Lippincott Company published a commemorative edition of Nightingale’s Notes on Nursing [3], including comments and reflections written by a number of contemporary nursing theorists. This edition helps readers to not only understand Nightingale’s genius as a nurse, administrator, statistician, and researcher, but to recognize the beginning of EBP and how her work can facilitate contemporary EBP in nursing.

Nightingale’s EBP and its impact on contemporary nursing

Arguably, one of the biggest disservices to the nursing profession has been the media transformation of Florence Nightingale from innovator, researcher, statistician, and reformer to the picture of a lady dressed in Victorian-era garb, carrying a candle, and wandering through darkened hospital wards while soldiers gaze lovingly at her as she makes her way among them. Nursing as Nightingale envisioned it moved from healthcare profession to “handmaiden” status for many, far too many, years.
Today the use of research and EBP has helped to return nursing to professional status. It is important to examine the beginnings of this approach so that advances in nursing practice can continue to be made. Nightingale was one of the first health care practitioners to speak of people holistically in terms of health and wellness. She viewed her patients’ needs as physical, intellectual, emotional, social, and spiritual. She was also one of the first to proclaim that a person’s environment is essential to the prevention of disease and the restoration of health [3].

These viewpoints were based on scientific observation and data analysis. Nightingale also used her skills as a statistician to refer to disease as a “reparative process...and effort of nature to remedy a process of poisoning or of decay [3, p. 5].” She also commented that the suffering related to disease is not always due to the disease itself. “If a patient is feverish, if a patient is faint, if he is sick after taking food, if he has a bed sore, it is generally the fault not of the disease but of the nursing [3, p. 6].” Nightingale observed that nurses have an obligation to assist in the reparative process, which includes prevention of complications and exacerbation of the detrimental effects of disease.

Nightingale would have supported the efforts of healthcare professionals to prevent avoidable conditions that arise as patients are being cared for within the healthcare setting. Problems such as catheter-associated urinary tract infections, vascular catheter associated infections, pressure ulcer development, (Nightingale referred to these as bed sores) and blood incompatibility would most likely be, in Nightingale’s opinion, problems that simply should not occur.

**Noise**

“Unnecessary noise, or noise that creates an expectation in the mind, is what hurts a patient [3, p. 25].” Nightingale understood the effect of noise on patients. Anyone who has taken care of a patient who has suffered a traumatic brain injury or undergone neurosurgery is aware of the negative impact noise can have on recovery. The importance of providing a tranquil environment for these patients was identified by observation, nursing input, and data analysis. Indeed, the adverse effects of noise are still under investigation for all patients and for nurses and other healthcare professionals alike.

Nightingale’s concerns about noise deal primarily with the “noise” of the mid 1800’s such as holding conversations about the patient outside his/her room, unnecessary closing of doors and windows, and, interestingly enough, the noise created by nurse’s clothing. (Remember that women’s clothing of that era consisted of heavy, long skirts and layers of crinoline undergarments). What would she have made of the noise in today’s hospital environment. Consider the current evidence pertaining to the phenomenon of “alarm fatigue.” Since 1983, the average number of alarms in an ICU has increased from six to 40—despite the fact that humans have trouble identifying more than six different alarm sounds [23]. The primary concern related to alarm fatigue is compromised patient safety. Nurses and other health care professionals are swamped with alarm sounds and can become desensitized to them. Since many alarms are false or do not require action, they are ignored. This can lead to real alarms being dismissed, which compromises patients’ safety [23]. Nurses should determine how noise affects their own patient populations and what actions should be taken to counter negative effects.

**Variety**

Variety, as part of health care services, is not a word routinely heard in contemporary practice. In *Notes on Nursing* [3] Nightingale talked about variety in terms of color, beauty, and the relationship between mind, body, and recovery. She advocated flowers in hospital rooms to increase oxygen in the air and to provide a more cheerful atmosphere. She spoke about both the mind’s effect on the body and the body’s effect on the mind.

Contemporary literature is full of references to the mind-body relationship and its impact on health and wellness. The effect of the environment on health and wellness is an ongoing concern. Toxins in the air, water, and land have been identified as detrimental to health, when only a few decades ago, such notions were not given much credibility. As for the “beauty” aspect of care, it was not too long ago that studies were conducted about nurses’ white uniforms having a negative impact on pediatric patients. These studies helped relax the dress code in pediatrics and, ultimately, throughout the health care community.

Nightingale would feel right at home among the contemporary EBP initiatives related to what she referred to as variety. Environmental factors and mind-body relationships are all under investigation. Issues such as what colors have a calming effect on patients, how noise levels can be decreased, or whether non-restrictive visiting hours enhance initiatives related to what she referred to as variety. Environmental factors and mind-body relationships are all under investigation. Issues such as what colors have a calming effect on patients, how noise levels can be decreased, or whether non-restrictive visiting hours enhance patient outcomes are all topics worthy of consideration for nursing research and, ultimately, making appropriate changes in practice based on evidence.
Diet

Nightingale made these points about diet [3]:

- Small, frequent feedings are often easier to digest than large meals.
- Patients should be provided with food when they feel they can eat, not according to specific timeframes dictated by the health care facility.
- Patients should not be rushed when eating.
- Other activities (e.g., cleaning the room, checking dressings, checking oxygen readings) should be kept to a minimum while patients are eating.
- Sound observation is important to providing proper nutrition.

These points are just as relevant to current nursing practice as they were in Nightingale's time. Note that she again commented on the importance of observation, a hallmark of research and EBP. In contemporary practice, nurses may ask about when meals are served, activities that occur during mealtimes, and how promptly digestive problems are identified and evaluated. These kinds of questions, based on observations, can evolve into data gathering and analysis that lead to changes in EBP.

Bed and bedding

Nightingale’s comments about bed and bedding are relatively brief, focusing on cleanliness and the position of the bed. These may not seem to be particularly earth-shattering pronouncements. But, given some thought, safety and infection control issues such as cleanliness of the bed and the patient environment come to mind. Some questions to ask are: How clean are bed linens? How often are they contaminated by urine, feces, blood, or other body products? How quickly are bed linens changed when soiled? What are the consequences of delayed changing of soiled linens? How are the beds positioned? How high are they positioned? How are side rails used? Is the head of the bed elevated to facilitate respirations when indicated? What, if any, adverse occurrences are associated with contaminated linens or improperly positioned beds? What practice changes are indicated because of these adverse occurrences?

Light

“It is the unqualified result of all my experience with the sick, that second only to their need of fresh air is their need of light; that, after a close room, what hurts them most is a dark room [3, pp. 47-48].”

Aspect, view, and sunlight are matters of first importance to the sick [3, p. 48].” These statements would trigger nods of approval from most nurses. In the not too distant past, ICU patients suffered from the constant barrage of artificial light and the relentless sounds of alarms. Contemporary hospital rooms are often designed to allow for natural light and for dim light or darkness at night to facilitate sleep. However, the issues of light as well as noise remain problematic. The human body needs light at the proper intensity and at the right time of day and night to trigger appropriate circadian rhythms of the body’s internal clock. Morning light can help to wake patients and help them to feel alert and even energized. Dimmer light (and quiet) facilitates rest and sleep.

Some questions that nurses should attempt to answer as they pertain to light include: Are rooms adequately lit in the morning and dim at night? If not, how are patient outcomes affected? What strategies could be used to provide adequate light, even if natural light is not an option? What evidence exists that lighting contributes to the success of (or failure to achieve) desired patient outcomes?

Personal cleanliness

Nightingale talked about personal cleanliness in terms of the patient and the nurse. Regarding patients, Nightingale wrote, “In almost all diseases, the function of the skin is, more or less, disordered; and in many most important diseases nature relieves herself almost entirely by the skin….If she (the nurse) allow her sick to remain unwashed, or their clothing to remain on them after being saturated with perspiration or other excretion, she is interfering injuriously with the natural processes of health just as effectually as if she were to give the patient a dose of slow poison by the mouth [3, p. 53].”

Nightingale was one of the first health care professionals to mention the importance of cleanliness among nurses and others who provide patient care. “Every nurse ought to be careful to wash her hands very frequently during the day [3].” Today, hand washing is still a hot topic. Using data that show how hand washing decreases the incidence of hospital-acquired infections, healthcare organizations initiated strict hand hygiene protocols. Because of information gathered by meticulous observation and analysis of infection control data, patient care providers were able to see how hand washing made a measurable difference in patient outcomes.

Chattering

Nightingale deplored what she called “chattering hopes and advice [3, p. 54].” She spoke against having patients bombarded by advice and directives from health care providers, family, friends, and even other patients. How does this correlate with contemporary EBP? The issue that quickly comes to mind is patient/family education. This issue provides a wealth of possibilities for nursing research. All patients and their families need some type of education regarding health and wellness. How to effectively provide such education and how to measure its impact on desired outcomes are questions that must be addressed.

Nurses may ask, “What if I changed the way I demonstrated a procedure that must be learned by patients/families? What would happen if I initiated follow-up teaching sessions via telephone or virtual interviews after discharge or office visits?” “What if” questions often lead to some of the most successful nursing research projects. The purpose of such research is to identify more effective ways of teaching, more accurate ways to measure learning and knowledge acquisition, and, ultimately, more precise ways of measuring the impact of education on desired patient outcomes. Fulfilling this purpose can lead to important changes in nursing practice.
**Observation of the sick**

“Sound and ready observation is essential in a nurse [3, p. 64].” Everything described thus far pertaining to EBP as well as nursing research relies on objective observations made by nurses. Sound observation, according to Nightingale, is not for the “sake of piling up miscellaneous information or curious facts, but for the sake of saving life and increasing health and comfort [3, p. 70].”

Most changes in nursing practice are the result of observations that trigger a “what if” question. Nurses rely on experience to observe.

**EBP: A foundation for improving nursing practice and patient outcomes**

*Sandra is a nurse manager at a medical center located in the center of a large rural area. The medical center is the only healthcare facility of significant size and stature for many miles. The facility is moving to a shared governance model. As such, Sandra has been asked to spearhead the development of a nursing council that will enhance EBP delivery and initiate nursing research. She will work closely with the newly hired Director of Nursing Research and EBP. Ultimately, leadership of the EBP will be placed under the direction of staff nurses who provide direct patient care at the bedside.*

As EBP and research expectations rapidly become the norm among nursing departments, it is important that ongoing continuing education be provided for all nurses in these areas. It is equally important that academic nursing programs incorporate the realities of implementing EBP and the fundamentals of nursing research as part of a nurse’s basic education.

First, what does shared governance mean and how does it, as a management model, influence EBP? There are a variety of definitions of shared governance that refer to it as a concept, a model, a system, and/or a philosophy. Swihart [24, p. 2] defines shared governance as “an innovative organizational management model; it is the structure for the process of shared decision-making and outcomes of shared leadership.”

Shared decision-making is the hallmark of shared governance. The locus of control in shared governance moves from management to direct patient care providers (e.g., staff nurses) for matters of practice, quality, and competence [24]. Four important elements of shared governance are [24]:

- **Partnerships:** Shared governance depends on collaborative relationships and partnerships among all persons involved in the patient care delivery process, including the patient and family.
- **Equity:** Equity demands that the focus remain on patient care services and staff members. It also mandates that no role is more important than another.
- **Accountability:** Accountability is the foundation of shared governance. It mandates a willingness to be part of the decision-making process and to accept ownership of those decisions.
- **Ownership:** In shared governance, ownership involves that each staff member, regardless of her/his role, to assume responsibility and “ownership” for what is done, how it is done, why it is done, and patient outcomes as they relate to patient care. In other words, management is no longer the focus of decision-making. Rather this right and responsibility rests with the direct patient care provider.

Shared governance should produce a culture of ownership where nurses are empowered to make appropriate changes in their practice based on the latest scientific evidence. Research shows that this type of culture enhances job satisfaction and patient care [22].

Shared governance and EBP go hand-in-hand. EBP requires that all health care professionals perform their roles and responsibilities safely and accurately, and assume responsibility for patient outcomes based on patient care grounded in scientific research findings, consensus of experts, and affirmed experiences [15]. Even if an organization is not espousing a shared governance model, EBP requires that many of its elements be incorporated for successful EBP implementation.

EBP is defined in various ways. However common elements of these definitions include [15, 25]:

- Emphasis on conducting nursing research.
- Emphasis on using findings from research, quality improvement (QI) data, and other operational data to identify best practice initiatives.
- Use of expert consensus and affirmed experiences to guide practice.
- Explicit and judicious use of current best evidence in making decisions about the care of individual patients.

In basic terms, EBP in nursing is described as a “process by which nurses make clinical decisions using the best available research evidence, their clinical expertise, and patient preferences [15, p. 4 ].” EBP facilitates the clinical decision-making process by helping nurses to [15]:

- Clearly identify the problem at hand through accurate analysis of current knowledge and practice standards.
- Conduct a literature review for relevant and appropriate research.
- Evaluate the research findings using appropriate criteria for scientific merit.
- Select and justify interventions based on the most valid and reliable current reference.

**EBP Alert! The primary benefit of EBP in nursing is that it allows nurses to implement high-quality patient care based on the most current, research-tested evidence. Such implementation improves patient outcomes and increases job satisfaction [25].**

EBP does not just happen because it is the latest fad or because an organization is seeking designation from the American Nurses Credentialing Center’s Magnet Recognition Program. EBP is part of a cultural shift that moves decision-making power away from management toward direct patient care providers [25]. EBP is not having a nurse researcher or manager identify clinical problems or questions pertaining to practice and searching for evidence to justify patient care initiatives. It is not having a nurse researcher identify and conduct nursing research and relay findings to the nursing staff. Instead, EBP is a way of delivering care that empowers those who provide it to play the biggest role in identifying problems, proposing solutions, participating in research, and determining best practice based on research findings and other sources of reliable evidence.

Some tips for successful implementation of EBP in nursing include [25]:

- Providing ongoing continuing education about advances in EBP.
- Providing ongoing continuing education about the nursing research process.
Facilitating staff nurses participation in the nursing research process.

Ensuring that staff nurses have easy access to computers.

Ensuring that staff nurses have time away from direct patient care responsibilities to participate in appropriate nursing councils or committees that empower their practice.

Ensuring that staff nurses have time away from direct patient care responsibilities to participate in nursing research.

Ensuring that the organization’s library provides swift and easy access to online editions of journals that serve as resources for clinical issues, EBP, and nursing research.

Facilitating organizational collaboration with experts in the fields of EBP and nursing research. If the organization’s budget does not allow for the hiring of such experts, consideration should be given to collaboration with local nursing faculty or with other organizations in the pursuit of nursing research and EBP.

Any organization that hopes to maintain a successful EBP culture must create appropriate staff nurse-led councils or committees. This is not to say that a staff nurse will not need help from nursing research experts or EBP experts who will also serve as committee members. But, the focus of EBP is that those who provide direct patient care should have not only the responsibility, but the power, to initiate investigation into changes in practice. This is not to say that a staff nurse prepared at the baccalaureate level should be “thrown” into a chairperson role for a nursing research council. Obviously she/he will need the help and guidance of an expert. But Staff nurses need to be groomed to assume leadership roles, rely on the assistance of experts, and assume the responsibility and authority of leading EBP and research initiatives. EBP is staff nurse, not nurse manager, driven.

Each nursing unit should have an EBP committee so that all nurses have input into the process, including the nursing research process. Thus, unit-based information, concerns, and projects are reported to the department-wide council or committee that oversees nursing EBP and research in its entirety. When creating councils or committees, or as their functioning is evaluated, consider implementing the following steps [25]:

- Identify council members. These should include staff nurses, professional development specialists, researchers, clinical nurse specialists, managers, and others whose input facilitates achievement of the council’s purpose. As appropriate, include members from other disciplines to facilitate the team approach to patient care.

EBP Alert! Be careful that managers, researchers, or others who are accustomed to having both power and formal authority do not take the leadership role from the chairperson, who is most likely a staff nurse. A true culture of EBP empowers nurses at the bedside and supports them in their roles as clinical leaders.

- Organize the logistics of council meetings. When and where are meetings to be held? Can members attend virtually via computer or other technological devices? Remember that membership is not the exclusive property of those who work day shifts. Meeting times and locations must allow for equal participation from all members.

- Write an agenda and stick to it, including the identified time frame for the meeting. All members are busy individuals and there is nothing more frustrating than making arrangements to attend a meeting and spend the majority of that meeting drifting from one topic to another. Councils will not succeed unless they achieve goals that enhance patient care and professional practice.

- Develop a template for presentation of EBP concerns or proposals for research depending on the council’s purpose. This will make it easier for members to organize their topics and concerns.

Consider a sample template of concerns that might be presented to an EBP nursing council:

The University of Hillside Medical Center has a smoking cessation program targeted to persons at high risk for smoking-related illnesses. The goals are for 80% of participants to stop using tobacco products at completion of the program and continue to avoid tobacco products when interviewed 6 months post-completion; 70% of participants will experience an improvement in health status or will fail to develop smoking-related diseases. High risk is determined by current health status and family history. Thus, participants vary widely in age and health status. Follow-up status after participants complete the program indicated that a significant number begin smoking within 6 weeks of completion or never stopped smoking at all. Further follow-up showed an alarming increase in smoking-related illnesses, even among the younger participants. The nurses who lead the program are concerned and ask for the EBP council’s help in determining how to solve problems associated with the smoking cessation program. Using a template, the council takes these actions [13,19,25]:

- Identifies the problem: Failure to achieve desired patient outcomes.

- Gathers data for analysis, including participant feedback and health status at the start of the program, at its completion, and 6 months after completion.

- Reviews contributing factors: What is the content of the program? How is the education delivered? How is learning measured?

- Conducts a review of relevant literature.

- Analyzes data obtained from identified sources. Seeks assistance of a nurse researcher to determine if there is sufficient need to conduct a research project.

- Develops and implements research project with the assistance of the nurse researcher.

- Evaluates the results of the research. How do these results compare with those identified in the health care literature?

- Identifies appropriate nursing practice changes.

- Disseminates findings to appropriate councils, along with recommended changes in practice.

- Institutes practice changes.

- Evaluates the changes in practice as they pertain to smoking cessation goals and makes modifications as necessary.

The preceding template is a simple example of a how to evaluate and initiate changes in practice based on objective evidence. Not all concerns will merit a research project. Some may not even trigger a change in practice. That is why it is so important to have a clearly defined plan of action for the evaluation of problems/concerns as part of EBP in nursing.

Research studies show that patient outcomes improve when best evidence is used in the delivery of patient care. Despite this evidence, achieving and maintain EBP can be a challenge. Its practitioners must be ever-vigilant to prevent EBP from becoming jargon instead of an actual method of patient care delivery.

An example of how nurses identified concerns and proposed practice changes based on acquired evidence can be found in a 2013 issue of Critical Care Nurse [13], which discusses four issues that are within the realm of nursing practice and that, if changed, might significantly improve patient care. These practices pertain to blood pressure measurement, oxygen administration in patients who have chronic obstructive pulmonary disease (COPD), intravenous (IV) catheter size and blood administration, and infection control practices that are (according to the authors) not necessarily supported by evidence.

The authors selected four practice issues that are within the realm of nursing and in which tradition and evidence fail to agree. Practice, however, continues to follow tradition. Following a review of the literature and research findings, the authors addressed their practice concerns about the following four issues. They concluded that [13]:

- Noninvasive blood pressure (NIBP) monitoring via oscillometric technique is used to obtain NIBP in both adults and children.

Evidence indicates that nurses should measure blood pressure...
in critically ill children aged one year and older by using the auscultatory method and comparing that measurement with an oscillographic measurement for continued monitoring of vital signs.

- Withholding oxygen from patients with COPD to prevent hypercarbia is dangerous and unwarranted. Oxygen should be provided to prevent hypoxia and organ failure.
- Using a smaller-gauge IV catheter to transfuse packed red blood cells increases patient comfort and may avoid the need for insertion of a central catheter. They recommend that nursing assessment guide the choice of IV catheter size in non-urgent packed red blood cell transfusion.
- Critical care nurses are in an essential position to lead infection prevention strategies including hand hygiene; barrier precautions; decontamination of environment, items, and equipment; and antibiotic stewardship.

EBP Alert! The preceding content summary is not meant to be a practice guide but an example of how nurses identified concerns and proposed practice changes based on their analysis of evidence.

Even with evidence, however, it may not be appropriate to suggest a complete practice change without conducting some type of scientific investigation. After analyzing available data, it is generally considered prudent to propose a research project to compare current and proposed changes in practice to determine how, or if, patient outcomes are affected. Practice change is not dictated solely by a literature review, but by analysis of data, observations, and a controlled investigation as to what nursing interventions best facilitate desired patient outcomes.

The impact of EBP in nursing and other disciplines is, and can continue to be, transformational. Nurses are called upon to transform new knowledge into clinically relevant behaviors. The Institute of Medicine recently published a vision for the future of nursing that recommends that nurses lead interdisciplinary teams to improve patient care delivery by using evidence-based knowledge in clinical decision-making and that they conduct research to provide evidence that enhances patient outcomes [19].

Much of the evidence used by practitioners of nursing EBP comes from well-designed nursing initiatives. Clinically relevant research is essential to advance nursing practice and promote the health and wellness of patients, families, and communities [18].

An understanding of the nursing research process (and the ability to participate in the implementation of such research) is essential to EBP. To effectively implement EBP in nursing, these three conditions must be met [15]:

- There must be a sufficient amount of scientific research published regarding the specific question or concern that nurses have regarding nursing practice and patient care.
- Nurses must have the knowledge and skills to access and critically analyze existing research studies.
- The Nurse Practice Act that governs nursing practice within a specific geographic location must allow the nurses to implement desired changes based on acquired evidence.

Nurses who practice within an EBP culture must be able to [15]:

- Clearly identify and articulate the issue or problem based on accurate and appropriate analysis of current nursing knowledge and practice.
- Conduct a thorough literature review for relevant research studies.
- Evaluate the research studies found during the literature review using established criteria pertaining to scientific merit.
- Select interventions for practice changes that are justified with objective, valid evidence.

In summary, EBP is the use of the best, most current evidence in making clinical decisions about the care, health, and welfare of patients, families, and communities. The research process is essential to nursing EBP. Nurses who practice within an evidence-based environment must be able to actively and knowledgeably participate in nursing research. This participation involves being able to differentiate between EBP and nursing research, identify appropriate nursing research topics, conduct a critical review of relevant literature, engage in the research process, and evaluate research findings. After all of these endeavors are accomplished, nurses must be able to identify necessary and valid practice changes. They must also be able and willing to continually evaluate the effectiveness of any and all practice changes and make further changes as appropriate.

This does not mean that staff nurses should be held solely accountable for designing and implementing nursing research projects. Such skills are gained with time, experience, and education. The majority of successful nursing research projects are conducted under the guidance of an expert in nursing research. But, it is essential that nurses who are at the bedside and have the best opportunities to identify problems, propose solutions, and evaluate practices be involved in every step of nursing research conducted in their clinical areas.

EBP Alert! Sometimes the terms EBP and nursing research are used interchangeably. This is incorrect. The two concepts are important to each other, but are definitely not the same!

**Nursing research and its place in the culture of EBP**

Debra is an RN with more than 30 years of experience in various health care settings. She recently completed her master’s degree in nursing and is eager to apply knowledge gained from her studies to nursing research endeavors. Matthew is a newly licensed RN who is especially interested in the nursing research process. He hopes to have an opportunity to participate in his organization’s EBP Council or Nursing Research Councils. He discusses his hopes with Debra, who has been serving as his mentor since he began work as an RN. Both Debra and Matthew are enthusiastic about their organization’s decision to move to a shared governance model and about opportunities to participate in nursing research. They have been asked to be part of a task force responsible for developing a Nursing Research Council. Although they are excited about the opportunity, one of their colleagues, also assigned to the task force, is definitely not pleased. Maura has been an RN for about 2 years, but has little interest in nursing research. She believes that the need to develop and participate on councils will just result in more work. Even though fundamentals of nursing research were a big part of her basic nursing education, Maura is uncomfortable with what she sees as increasing responsibility compounded with more work and no rewards. These three RNs must find a way to work together to help make nursing research an integral part of RN practice.

The preceding scenario shows that change is perceived both positively and negatively. Unfortunately, there will always be nurses who oppose change and they are one of the biggest barriers to both nursing research and EBP. Fortunately, nurses like Debra and Matthew will always embrace change as a way to improve patient outcomes and enhance their professional development.

Nursing research is integral to EBP, but it is not EBP. EBP is the process of using the best, most current, scientific evidence to make clinical decisions about the nursing care, health, and wellness of patients, families, and communities. This evidence can come from nursing observations, quality improvement data, risk management data, and, of course, nursing research.

Nursing research is defined as a detailed, systematic approach to solving and evaluating clinical problems. Nursing research is also described as the creation of new knowledge through studies or trials...
Nursing research is used to determine the effectiveness of current nursing interventions [26]. Research is used to generate new knowledge about a phenomenon or problems. It is also used to validate or disprove existing knowledge or theory [5]. EBP uses evidence generated from research and other evaluative data to justify existing practice and make changes to improve practice.

The key to encouraging nursing research is to show how it impacts nursing practice and patient outcomes. Staff nurses cannot be expected to want to participate in research if they do not see its practical value. A system for disseminating nursing research findings and a means for having staff nurses participate in determining how those findings will be used in their practice is absolutely essential. Communication can be achieved via unit-based nursing councils, department-based councils, and electronic communication. Most nurses will only support research if they can participate in its development, implementation, and evaluation and use findings to improve practice.

The research question

Ideas for nursing research often stem from an idea or concern that a nurse has regarding patient outcomes. A staff nurse may wonder:
- How can I increase patient compliance with medication regimens?
- What makes some patients comply while others do not?
- What kinds of complimentary treatments decrease asthma attacks in school-age children?
- What if elderly patients were routinely given cranberry tablets or other sources of vitamin C? Would that help to decrease urinary tract infections (UTIs) in that population?
- What makes some premature babies perform better developmentally later in life than others?

These general types of questions need to be narrowed and focused on a specific area of research. Focus is usually accomplished when nurses have ideas about how to improve patient care. The research question should be of importance to clinical practice, patient outcomes, and/or professional growth and development. For instance, suppose a nurse thinks:
- I believe that verbal follow-up via telephone at 2 and 6 weeks post-discharge to assess medication compliance and knowledge of medication regimen will improve compliance.
- I believe that relaxation training will decrease asthma attacks in school-age children.
- I believe the incidence of UTIs in elderly patients will decrease if they increase their daily intake of vitamin C.
- I believe that playing classical music for premature babies will enhance their development later in life.

Using PICO to formulate research questions

PICO is a method used by many nurse researchers to write and clarify research questions.

**P stands for Patient/Problem** [28]. What patient population is to be studied?

As an example, use the preceding issue regarding a nurse’s belief that UTIs in elderly patients will decrease if they increase their daily intake of vitamin C. The term “elderly patients” encompass too wide a range of patients. What group of elderly patients will be studied? Those who are part of a specific community setting such as a senior citizens center? Or those who are members of a specific medical practice? Or are elderly patients who are hospitalized among those to be studied? Are patients to be alert and oriented? Are patients with dementia to be included or excluded? How are the effects of chronic diseases to be dealt with? Are patients who are at high risk for UTIs to be included or excluded? Are patients who have difficulty obtaining and swallowing fluids to be included or excluded? Those who have difficulty obtaining and/or swallowing fluids are at higher risk for urinary tract infection since inadequate fluid intake increases that risk.

What age group is to be studied? How is “elderly” to be defined? Are both men and women to be included in the study?

What is the problem to be studied? How are UTIs to be defined? The definition must be consistent.

These are just some of the issues that must be addressed. The patient population must be specifically defined, as must the problem to be studied.

**I stands for intervention** [28]. What exactly is the proposed intervention that the nurses believe will decrease the incidence of UTIs? The original idea was that an increase in vitamin C intake will decrease the incidence of UTIs. How much vitamin C will be administered? How will participants’ intake of vitamin C be measured? What is the source of vitamin C that will be given to the patients? For example will they receive a specific amount of vitamin C via a tablet? Will they be given fluids or foods that are high in vitamin C? If so, how will the amount of vitamin C be determined? How will the researchers control the amount of vitamin C research participants receive from sources other than the one being given by the researchers? How long will the study last? How will data be collected? How will accuracy of data collection be ensured? Who will collect the data? How will consistency of data collection be ensured?

**C stands for comparison** [28]. What is being compared? In this case, the effects of the intake of a specific amount of vitamin C are to be compared with a population not given a specific amount of vitamin...
C. The participants who will not be given vitamin C must, in all other respects, have the same defining characteristics as those who will be given vitamin C. The researchers are comparing the incidence of UTIs among participants who receive the specified amount of vitamin C with those who did not.

### Literature review

After the research question is refined and clarified, a review of the literature is necessary. A literature review helps explain why the problem under investigation is significant and worthwhile. It is also necessary for an understanding of current research findings on the chosen topic [25,26].

Keywords from the research question guide the literature review. It is important that the research question be written so the focus of the search is appropriately narrow and concise. For example, in the UTIs example, the nurse would not search the literature for UTIs—this is far too broad. The nurse needs to search specifically for the issues identified in the research question guided by the PICO approach.

Most nurses begin their literature review by searching the Internet for appropriate professional journal articles. However, even though a research article is published, it does not necessarily mean that its methodology and findings are appropriate, or even the result of a well-designed research study.

So, how does one critique a research article for its appropriateness? Many nurses are unsure of their ability to critique a research article. In fact, nurses’ lack of knowledge pertaining to such critiques is one of the major barriers to participation in nursing research [29].

Some recommendations for reading and critiquing a research article [8,9,29] are:

- **Authors**: Who conducted the research? Are their titles and credentials indicative of expertise in the research that was conducted?
- **Bias**: Is the article free of bias? Were the researchers paid to conduct the research? If so, did this interfere with the ability of the researchers to conduct scientific, objective research and report the findings without bias?
- **Title**: Does the title accurately describe the article? A good title is intriguing and triggers interest. But before spending time reading the article, critically review the title. An appropriate title should communicate key concepts, methods, and variables. For instance, the keywords of the investigator’s research question should appear, to some extent, in the titles of the articles she/he is critiquing. Read the abstract to help determine if the title accurately describes the article.
- **Abstract**: Does the abstract accurately convey the key concepts of the article? A good abstract contains the purpose of the study, the pertinent research question or questions, and a brief overview of methodology, results, and conclusions. The abstract should help the nurse decide if the article is worthy of being included in her/his literature review.

**Research Alert!** Nurses must not make the mistake of reading only the abstract and not the entire article. The abstract is only a brief preview of the information to come. A good abstract is important, but does not automatically mean that the research described in the article is well done [9].

- **Introduction**: Does the article begin with an introduction? All good research articles have an introduction. The introduction is actually the foundation of the article. It should clearly state the purpose of the article, the problem statement, justification for the study, and the research question(s). If a hypothesis is part of the investigation it should also be stated, as well as anticipated results.

- **Purpose of the study**: Is the purpose of the study clearly stated in terms that are understandable? Does it provide a concise rationale for conducting the research?
- **Research questions**: Is the research question(s) explicit? Is it written in a way that novice nurse researchers (and not just expert researchers) can comprehend? Are the keywords in the research question similar to the keywords in the nurse’s proposed research study?
- **Theoretical framework**: Was the research described in the article based on a theoretical framework? If so, is the framework described? Is the framework one that the nurse might use in her/his study? The concepts of the theoretical framework should be appropriate for the research topic and provide a foundation for interpretation of the results? Not all research studies require the use of a theoretical framework. If one is included, it should be relevant to the purpose of the research.
- **Literature review**: Does the article provide an overview of the literature review that was part of the research process? Is the literature review appropriate to the study described in the article? Does the literature review provide justification for the study described in the article? What are the publication dates of the articles described in the literature review? Most articles included in a literature review should have been published within the last three to five years.
- **Timeliness**: When was the article written? Unless they are considered to be classics, articles included in the review of the literature should generally have been published within the last 3 to 5 years. However, older studies can be relevant, especially in areas where minimal or no research has been conducted.
- **Methodology**: Is the method of data collection appropriate for the study described in the article? Was a tool, such as a written survey, used to collect data? If so, is the tool valid and reliable? Is the tool adequately described? Was the method of data collection described in a step-by-step manner?
- **Sample size**: Is the size of the sample appropriate to the study? Is the size adequate to obtain valid results?

**Research Alert!** Caution nurses to be wary of articles written that make conclusions based on a very small sample size. Some investigators make broad conclusions based on results obtained from only a very limited sample.

- **Analysis**: How were the data analyzed? Is the method of analysis appropriate to the study described in the article?
- **Results**: Do the results make sense in terms of the research question(s)? Results should be clearly explained in the text and supplemented with tables, graphs, and/or figures as appropriate. Do the tables, graphs, and/or figures reflect what is explained in the text and vice versa?
- **Discussion**: Does the discussion adequately describe the major findings of the study described in the article? Is the discussion clearly linked to the theoretical framework (if one is used), research question(s), methodology, and findings? Is the significance to nursing practice clearly explained? Is the study described in the article relevant to the research the nurse wants to conduct? Is it relevant to the nurse’s practice?

**O stands for outcome** [28]. What is the outcome the researchers are looking for? In this case, researchers are looking for a decrease in the incidence of UTIs in persons being given a specific amount of supplemental vitamin C.
● **Limitations**: Are the limitations of the study described in the article discussed? It is essential that limitations be presented and the implications of the limitations discussed.

● **Conclusions**: Are the conclusions reasonable in terms of results? Are the conclusions relevant to the study’s purpose? Do conclusions include recommendations for future research, for nursing practice, and, as appropriate, suggestions for nursing professional growth and development?

In summary, conducting a literature review requires reading and critiquing research articles to establish a foundation for the reader’s own research. It may be a new skill or a skill that requires the nurse to learn more about the process. Most basic education programs introduce the student to the nursing research process. Conducting clinical research generally requires the guidance of experts in this field. Nurses whose organizations do not have nurse researchers on staff can and should find ways to collaborate with experts from outside the organization, such as faculty from colleges and universities that have student clinical placements within the organization and/or collaborating with researchers from other organizations.

It can be helpful for nurses to use reputable scales and tools to help conduct a thorough literature review. The American Nurses Association provides such help through their website at [www.nursingworld.org/Research-Toolkit/Appraising-the-Evidence](http://www.nursingworld.org/Research-Toolkit/Appraising-the-Evidence).

Another resource for nursing research is Sigma Theta Tau, International Honor Society of Nursing, at [www.nursingsociety.org](http://www.nursingsociety.org). In addition to information about nursing and various educational opportunities, the website offers links to its various chapters throughout the United States and the world. Regional chapters can provide contact information for colleagues who have interest and expertise in conducting research. These colleagues can help novice researchers participate in nursing research.

### Institutional review board and the research proposal

Research questions have been written. The research study has been formulated according to PICO. Nurses are eager to participate in an investigation that they believe will positively impact nursing practice and patient outcomes. But, before the actual process of data collection can begin, the research proposal must be presented to the organization’s Institutional Review Board (IRB) for review, discussion, and approval. No research can be conducted without IRB approval.

The IRB has policies and procedures that document what must be included in any research proposal presented for approval. These policies and procedures must be followed explicitly.

Reviews by the IRB are generally categorized according to potential risks to subjects (participants or patients). Some possible categories include [26]:

- **Full review**: These kinds of research projects pose greater than minimal risk for subjects.
- **Expedited review**: These studies have minimal risk for research subjects.
- **Exempt review**: These research projects have no evident risks for subjects.
- **Continuing review**: These research projects undergo ongoing review of an initially approved study on a specific schedule according to the level of risk that has been identified.

**Research Alert!** Many studies are approved for a period of one year, but length of approval depends on identified risk.

When reviewing a research proposal, members of the IRB focus on the appropriateness of the research design and subject risk, as well as ethical considerations. Minimally, the IRB is looking for evidence that the subjects gave informed consent and are not coerced into participation, the research benefits patient outcomes and professional practice, evidence that the subjects have been informed of their right to withdraw from the study at any time without adverse consequences, and, if a specific treatment is part of the research, subjects must be provided with such treatment if they choose to do so [26].

**Research Alert!** The IRB is not necessarily composed solely of health care professionals. Members may include non-health care professionals from the community, members of the clergy, representatives from community resources, and others.

A written research proposal, designed to meet the policies and procedures of the specific IRB, is presented to the board. It usually consists of [26]:

- A cover sheet listing the title of the research study and the names, titles, and credentials of the persons who will be conducting the research.
- An introduction to the study that includes the purpose, benefits, and justification of the study. A brief summary of literature review findings may be included.
- Objectives of the study explaining desired outcomes and what questions will be addressed and answered as part of the study.
- Significance of the study that explains benefits to the subjects, the researchers, the organization, and/or the population that is being studied. It should also include how the research will contribute to professional practice.
- Methodology to be used for the purpose of recruiting subjects, obtaining informed consent, collecting data, performing statistical analysis, and how long it will take to complete the research.
- Samples of informed consent forms and any other tools (such as surveys) that will be used to collect data.

**Research Alert!** Informed consent means that these issues have been fully explained to potential subjects (and included on the consent form):

- The purpose of the study.
- Potential risks.
- Potential benefits.
- Any costs involved or if subjects are to receive any type of compensation.
- The name and contact information of researchers so subjects can contact them if questions or concerns arise.

A copy of the informed consent must be given to subjects.

Sometimes, if there is no identified risk to subjects, the IRB may review the proposal and notify the researchers of their decision in writing without meeting with the researchers. In many cases, however, the IRB has questions that need to be clarified and the researcher, or the primary researcher if more than one investigator is involved, may be asked to appear before the board. At times, the IRB may ask that changes be made to some facets of the research process. The proposal may have to be edited and resubmitted. Researchers should not be discouraged or angered by such requests and should do their best to accommodate the board. Remember that everyone involved is working for the good of the subjects, the organization, and the professional discipline(s) involved in the research process.
Implementing the research study

The research study is implemented according to the research proposal approved by the IRB. Staff nurses can participate in many ways. In addition to helping develop the proposal and obtain IRB approval, staff nurses can help obtain informed consent, collect data, and, under the guidance of experienced researchers, help analyze data. Conclusions are formulated based on data analysis.

But no matter how much guidance is provided by experts, how much education has been provided to those nurses who are implementing or helping to implement the study, or how carefully the project has been planned, there will always be unexpected events that interfere with how smoothly the research process progresses. Some possible unexpected events that can interfere with nursing research include [25,26]:

- An unusually high number of participants choose to withdraw from the study. It is not unusual to have some participants decide to withdraw from a study, but if an unusually high number withdraw; the researchers need to determine the reason. Researchers may ask them why they decided to withdraw. This must be done in an objective, non-threatening manner, as part of informed consent is to tell participants that they can withdraw from the study at any time. But, researchers need to make every effort to find out if something in the research process upset them. For example, do they feel that their participation is dangerous? Have they experienced unpleasant effects from the intervention(s)? Have any of the researchers behaved unprofessionally?

- Time for staff members to conduct research has been decreased. Patient needs, staffing vacancies, and changes in management or administrative philosophy, are all factors that impact time allotted for research. Researchers may need to reevaluate the time it will take to complete the study. They may also need to address the organization’s commitment to nursing research with management and administration. Researchers need to identify if there is resistance to nursing research on the part of specific individuals.

- Results are vastly different from what was anticipated. It is not uncommon for researchers to obtain results that are different from what was anticipated. However, researchers must be alert to signs that the research process is not being conducted as mandated. For instance, researchers may notice that data seem to be skewed or interventions may not be carried out consistently. These types of issues demand that the process itself be more carefully monitored. For example, is informed consent being appropriately obtained? Are interventions being conducted accurately and consistently by all persons involved in the research process? Were the data analyzed accurately? Was statistical analysis accurate and appropriate for the study? Did all persons involved in the research study behave ethically and objectively? Were there any deliberate attempts to change data or alter subject responses? Researchers must constantly be on guard to ensure an objective, scientific inquiry.

Evaluating results and implications for nursing practice

Evaluating the results of the research study is, arguably, the most exciting and most nerve-wracking part of the research. Did the outcomes provide information that will help improve patient care, patient outcomes, and/or professional practice? If so, how will those results be communicated? If not, why not? Were interventions unsuccessful? Were there any adverse effects of the study? Did interventions that were thought to improve outcomes make no difference?

It is the hope of all researchers that results will provide information that is going to improve patient outcomes and professional practice. However, researchers must also be able and willing to accept that results may not prove to be what were anticipated. For example, suppose a new treatment that was thought to increase the lifespan of cancer patients has no positive impact on lifespan. Or consider some of the examples that have been used throughout this program. Remember the ICU nurses who thought that limiting visiting hours would improve efficiency of nursing care, as well as patient outcomes? Suppose findings show that unlimited visitation without restrictions is the intervention that actually improves care and outcomes. Or suppose relaxation techniques were found to have no impact on the rate of asthma attacks among children.

Researchers must be willing to accept that the results may be different from what they anticipated or hoped for. They must also be willing to admit that one study may not generate a sufficient amount of data. Therefore, studies may need to be replicated (and frequently are). Obviously, implications for nursing practice are of paramount importance for every nurse who helped design and implement the study. First, nurses want to gain knowledge that will help improve patient outcomes and professional practice. But they also need to know about how nurses at all levels of practice can contribute to the nursing research process.

Education is an integral part of the nursing research process. One of the implications for nursing practice of any research program is the need to provide continuing education regarding the research process. It is not enough to simply involve staff nurses in research under the guidance of research experts, nor is it enough for nurses to receive fundamental information about nursing research in their basic nursing education program. Health care organizations have an obligation to support nursing research and provide ongoing education so that all clinicians can continue to learn about conducting research, support and participate in nursing research, and add to the body of knowledge that is nursing practice.

Communicating the results

Communicating the results should be both formal and informal. Results should be given, in some form of written communication, to the IRB, the organization(s) where the research was conducted, the nursing department, and to research subjects as appropriate. Researchers should be available to answer questions from any or all of these groups and to clarify findings and implications for practice. Depending on the results of the study and its implications, other professional associations or organizations may be informed. For example, results from studies that have an impact on infectious disease control may be shared with organizations such as the Centers for Disease Control (CDC).

When sharing results, it is especially important to explain how results can be used to improve clinical practice. The best way to convince staff nurses of the value of nursing research is to show how findings can be applied, in a practical manner, to their practice of nursing. Findings from research studies can be shared in staff, committee, council, and departmental meetings. They can be communicated, with appropriate confidentiality safeguards, electronically. It is important to emphasize how results can be used in nursing practice to improve patient outcomes [26]. Results can also be shared informally as part of the continuing education process and, as appropriate, during professional interactions.
Research Alert! Research findings may necessitate changes in policies and procedures. If so, it is imperative that these changes are clearly communicated. It is also important to recognize what types of continuing education may be necessary to effectively implement these changes.

Researchers should also consider sharing their findings beyond their own organizations. Findings can be published in professional journals and shared as oral or poster presentations at professional conferences and conventions. To add to the body of knowledge that is nursing, share findings that will improve patient care and enhance patient outcomes, and provide information that facilitates professional growth and development. Findings from research projects provide a foundation for EBP.

Barriers to implementing nursing research and EBP

Members of the nursing department at a large community hospital have conducted a research study. Findings indicate the need for some procedural changes pertaining to treatment of surgical patients whose cardiac status is compromised. The nurses involved in the investigation, as well as the nurses who care for this patient population, are proud of the research conducted and look forward to applying findings to EBP. However, several of the nurse managers affected by the proposed changes are opposing their implementation. They are concerned that the changes will be expensive to implement and possibly require additional staffing. They are using their formal authority as managers to delay making practice changes based on evidence from the research study.

Janice has been a staff nurse for 30 years. She is respected by her colleagues for her knowledge of patient care and her patients usually achieve desired outcomes. However, Janice is not respected for her resistance to change. She has been heard repeatedly to downplay the importance of nursing research and even ridicule the organization’s efforts to formally implement nursing EBP. “This EBP stuff is just different jargon for what we’ve always done. And I don’t see why I should have to learn how to do research. I didn’t go to graduate school and don’t intend to. These fancy degrees and research stuff are just an excuse to get out of doing patient care.”

A large community medical center is pursuing Magnet® recognition and nursing leaders (both managers and staff nurses) are working to develop EBP nursing councils and nursing research councils. They are also working with the organization’s professional development department to design continuing education programs regarding EBP and research. Frank has been an RN for 2 years. He recently transferred from a medical-surgical unit to the coronary critical care unit, which is a career dream of his. Frank is concerned about the possibility of new responsibilities as EBP and nursing research become more formalized and expectations that staff nurses will assume more leadership roles. He has a lot to learn in his new role as a critical care nurse and is worried that he will be overwhelmed also trying to learn more about EBP and research.

The preceding scenarios illustrate just a few of the barriers to successful implementation of EBP and nursing research. No matter what positive motivators exist for implementation of EBP and research, barriers, if allowed to flourish, can stop these endeavors in even the best of health care facilities.

COMMON BARRIERS TO EBP

Resistance to change or the “negative” personality

There will always be resistance to change, and many of the barriers to EBP and nursing research are rooted in such resistance. There are many reasons for this opposition, including fear of increased work load, lack of time or managerial support, and lack of knowledge. However, there are people who have a negative outlook and oppose changes in the workplace, or even at home, just for the sake of opposition.

All too often, this negativity is ignored or simply put up with because they may have good clinical skills, managers do not want to deal with a vacancy, or the persons in question may be bullies whose followers support them out of fear [30]. Changing the behavior of negative personalities is one of the biggest challenges for managers and colleagues. A frank discussion may help, but is not usually successful without additional interventions such as [30]:

- The ability to work to facilitate change as it relates to patient care and professional growth and development should be part of every health care professional’s job description. All nurses should be held accountable for the success of EBP and nursing research. Constant efforts of sabotage in achieving accreditation, improving patient care, and enhancing nursing practice should be documented and appropriate action taken. This requires the support and action of managers and others who are responsible for the supervision of the negative person’s work.
- The benefits of EBP and nursing research should be shared, and shared frequently. Data regarding improvement in patient outcomes—for instance, after changes in EBP are implanted—can show their value in practical terms.
- Whenever possible, include the negative person in projects related to EBP and to nursing research. This may help decrease negativity if the practical value of both is made clear. Unfortunately, there is also a risk that this person’s negativity may spread to others. Therefore, it is important to monitor the effect that the negative person has on others.
- Finally, it may be necessary to discipline the negative person. This is a last resort because it may very well increase the negativity. Managers and colleagues should ask themselves if the benefits of having such a person on staff outweigh the adverse consequences of his/her behavior.

Lack of managerial support

Resistance from nurse managers and nurse leaders is a major problem in the successful implementation of EBP and nursing research [21]. Support for these endeavors involves a commitment from administrators, management, and staff. If any of these groups are significantly resistant, successful implementation is doubtful. Managers are instrumental in making sure staff nurses are not only involved in the process, but that they are allotted the necessary time to attend council and committee meetings and to participate in research. Some suggestions to facilitate managerial support are [21,30]:

- Outcomes related to the successful implementation of EBP and nursing research need to be part of the job description of every
manager. Managers need to be held accountable for the success of these endeavors.

**EBP Barrier Alert!** Administrators must support EBP and research or these efforts are doomed to failure. This requires support of managers as they work to provide adequate staffing and time allotment for staff nurses to become leaders in EBP and research.

- Managers must facilitate communication of the results of EBP and research. Employees need to know how new information is applied, in practical terms, in the workplace.

**Lack of time**

Some studies indicate that lack of time to participate in EBP and research is the major barrier to such involvement [16]. Staff nurses find it difficult, or assume that it will be difficult, to find the time away from patient care to participate in EBP and research endeavors.

Solving this problem relates to staffing issues and administrative, managerial, and leadership support, because these are the people who drive these factors. It also relates to the commitment of staff nurses and nursing assistants to help each other when time must be taken for meetings and research projects.

**Worries that workload will increase**

It is not uncommon for changes in roles and responsibilities to trigger concerns about workload. Nurses may worry that they will not have adequate time to fulfill their responsibilities safely and accurately.

Workload concerns are not unique to the United States. A study of Southeast Asian nurses showed that although more than 64% of the nurses surveyed expressed a “positive attitude” toward EBP, they pointed out that, due to heavy workload, they could not keep up to date with new evidence [12]. Some suggestions for alleviating worries about workload are [30]:

- It is important to be realistic. There may be times when workload is heavier as a result of research or EBP responsibilities, which means that teamwork becomes increasingly important. It is reasonable to assume that as the role of the professional nurse becomes more important, the number of responsibilities and the amount of work will increase. The way nurses work together as a team will dictate how well workloads are managed.

- It is also important to determine why there seems to be an increased workload. Are there nursing staff vacancies? How do vacancies impact workload? How long will it take to fill vacancies? Has census increased? Is this increase temporary or has the number of patient beds increased? How has this changed the workload of others? Is time management an issue? Is workload reasonable, but nurses are struggling with time management, priority setting, or even a lack of nursing knowledge? Are managers working with staff to distribute workload appropriately? Workload can be dealt with only after the reasons for perceived “overwork” are identified.

**EBP Barrier Alert!** Managers and staff may make the mistake of treating EBP and research responsibilities as “extras.” These responsibilities should be considered as important to the nursing role as patient care.

- How is the latest information about evidence communicated to the nursing staff? Are journals easily accessible? Is the organization’s library working with management and staff to provide accessibility? A system of distributing relevant nursing literature needs to be established.

**Insufficient education**

Nurses often comment that they feel uncertain about their skills and knowledge levels when it comes to EBP and nursing research [1,14,16,21]. Sadly, formal continuing education is something that may be overlooked when implementing EBP and/or nursing research.

To successfully implement these and any other skills that require new or additional knowledge, ongoing continuing education is imperative. When considering educational needs, it is essential to [30]:

- Make a commitment to the education process. This is essential throughout the organization. Education should include how to implement EBP, how to evaluate its impact, and how to access new evidence that is relevant to nursing practice. Education regarding nursing research design, writing a research proposal, implementing research, evaluating data, communicating results, and using results as evidence should be included.

**Education Alert!** Education is not a one-time effort. Education pertaining to EBP and research should be ongoing.

- Establish a mechanism for educating councils and committees about EBP and research. Members can be used to educate others about these critical issues.

- Work with the organization’s professional development department to facilitate education attendance. Education can and should be offered in a variety of ways as appropriate to content and desired learning outcomes. Education can be offered electronically for easy, on-demand access, and in person as appropriate.

- Work with the organization’s professional development department to measure the effectiveness of education. It is not enough to simply offer new information. Ways of determining if staff members have learned and are able to apply EBP and nursing research information must be designed. These can include mock EBP and/or nursing research endeavors and the assessment of experts in both processes.

Managers must participate in continuing education pertaining to EBP and research. They should never assume that, since staff nurses will ultimately be the clinical leaders who drive EBP and nursing research, managers will only need to focus on management issues. Education is imperative for all.

Managers should build rewards into the successful implementation of EBP and research. This should be reflected in performance evaluations and in criteria for promotion.
Fear of being unable to learn

Some nurses may be afraid that, no matter how hard they try, they will not be able to learn the skills necessary to fulfill expanding or new job responsibilities. Fear is a powerful barrier. Fear of embarrassment, fear of being unable to care for patients, and fear of losing one’s job can all impede the ability to gain the knowledge necessary to participate in the EBP environment.

How can managers and peers alleviate some of these fears [30]?
- Make sure that necessary and appropriate continuing education is offered.
- Facilitate attendance at continuing education offerings.
- Encourage mentoring by experts of those who are new to or unsure of EBP and/or nursing research.
- Establish a culture of support and teamwork.

Lack of resources

Lack of appropriate resources to implement changes based on new evidence is problematic. Lack of money, staff, equipment, etc., interferes with EBP and necessary research. Sometimes, lack of resources is referred to as organizational barriers [2].

To be fair, it is not possible for any organization to make major, expensive changes as the result of every new piece of evidence that becomes available. Therefore organizations should [2,10,21]:
- Prioritize needed changes based on patient safety and desired treatment outcomes.
- Establish mechanisms for reviewing new evidence and cost-effective ways to improve practice based on evidence. Establishment of these mechanisms should be part of the responsibility (in conjunction with management and administration) of EBP and Nursing Research councils.
- Determine how current interventions can be adapted (in a cost-effective manner) to comply with new evidence.

Lack of communication

As already mentioned, nurses need to know the results of nursing research and how they can be used to improve patient care and nursing practice. They also need to know where evidence for practice changes comes from and how using that evidence in their practice will benefit both patients and nurses. Putting a lot of work and effort into learning new skills means nothing unless these skills translate into practical benefits.

Methods of communication have already been discussed previously in the nursing research section. To summarize, communication regarding EBP and research should be [26,30]:
- Both formal and informal.
- Communicated promptly.
- Include information for contact persons so that questions and concerns can be addressed.
- Be part of an ongoing process.

Communication Alert! It is impossible to over-emphasize the importance of communicating, in practical terms, how EBP and nursing research impacts patient care and professional practice. Nurses need to see how these initiatives benefit their patients as well as themselves.

Summary of ways to implement EBP

An evidence-based practice requires the ability to evaluate and integrate the best available evidence into nursing practice [17]. EBP also requires an ability to review and reevaluate practice changes that were made to be sure that the changes actually benefitted the patient and nurse [7].

Using newly published guidelines as part of EBP

Guidelines for practice are updated by clinical experts on a fairly regular basis. Updates to standards of infection control, maternal-child health, cardiovascular treatment, etc., are all part of the evidence necessary for state-of-the-art EBP. Some ways to ensure adequate implementation of evidence from updated guidelines include [6,30]:
- Review the guidelines carefully. When were they written? Who wrote them? Are the guidelines free of personal and/or commercial bias?
- Review the literature about the topics related to the guidelines. Does the literature support changes made to the guidelines?
- Discuss the new guidelines with experts within the organization. Will the new guidelines meet with resistance? If so, is there an objective, scientific reason for the resistance?
- Determine costs associated with incorporating the new guidelines into EBP. Is it cost-prohibitive? What strategies can be developed to control costs while meeting necessary standards?
- Communicate how the new guidelines will affect practice and what changes in practice are to be made. Provide a timeline as appropriate. Explain how various nursing councils will assist with implementation.

- Evaluate how implementation of new guidelines has impacted practice. This may be an appropriate research topic. Compare desired patient outcomes before and after new guidelines.
- Include staff nurses and others who will be directly responsible for implementation in all facets of the process. These are the people who will best help to determine their practical application.

These recommendations are general in nature and must be adapted for individual health care organizations. It is important to remember that the practical elements such as cost, communication, and evaluation must be part of any implementation process. It is not enough to simply assume that new guidelines are the best possible standards. Guidelines must be evaluated according to available evidence in the literature and patient outcomes. Determining the impact of new guidelines on patient outcomes is imperative. Comparison of patient outcomes before and after new guideline implementation will provide evidence of their clinical value.
Using clinical evidence as part of EBP

The professional nursing literature is beginning to provide numerous articles about EBP and its implementation. Two recently published articles [4,11] offer suggestions about using evidence to reduce catheter-associated UTIs and to treat gastroesophageal reflux disease (GERD). Using these articles as a baseline, it is possible to examine some ideas for implementation of clinical evidence.

The author of the article pertaining to UTIs [11] followed a step-by-step process similar to what was discussed earlier in this education program. Steps she took to use EBP to reduce catheter-associated UTIs include [11]:

- Formulating clinical/research questions in PICO format. Current practice was reviewed to trigger these questions.
- Using the PICO question as a framework, conduct a literature search.
- Critically evaluating the evidence to determine whether the literature identified in the search is “relevant, valid, reliable, and applicable to the clinical question.”
- Combining research evidence with clinical expertise, patient assessments, outcome data, patient preferences, and patient values. Note that the author stresses the importance of including the patient in the process of EBP.
- Evaluating the outcomes. The most critical component of EBP is evaluation. In other words, did the practice changes, based on evidence make a positive difference in patient outcomes? If not, why not? It is never appropriate to implement EBP, even using the best and most appropriate evidence, unless a plan is in place to measure its impact on patient outcomes and professional practice.

EBP is an approach to patient care that is designed to maximize patient outcomes and professional practice. It relies on the nurse’s ability to acquire and evaluate the best available evidence.

Part of this approach is the ability to objectively critique such evidence. All nurses must be able to read publications critically, recognize the steps in the nursing research process, and participate in the process to some extent. But, both EBP and nursing research requires that all organizations support these endeavors by supplying adequate resources for their implementation. This includes monetary and emotional support.

Education is also an integral part of the support system for EBP and nursing research to be successful. A system of ongoing continuing education is imperative. This education must be delivered in various formats so that it is easily accessible. When in-person attendance at an educational offering is necessary, managers and staff must work together to facilitate the attendance.

Teamwork is an integral part of the EBP culture. Without professional teamwork, nurses will not be able to incorporate EBP and research endeavors into their work life. Participating in nursing councils and committees, conducting or participating in nursing research, and working to enhance EBP are just as important for nurses as direct patient care.

Nurses must work together to reduce or eliminate (whenever possible) the barriers to EBP and nursing research. The days when staff nurses could blame others for problems with scheduling, council attendance, and patient outcomes have all but disappeared. Shared governance is becoming the norm, not the exception. Likewise, the days when nurse managers could control practice issues and determine the course of nursing practice on their units are also gone. Managers must learn to relinquish control to maximize patient outcomes. Working together does not mean staff nurses working effectively with staff nurses, nor does it mean nurse managers working effectively with nurse managers. It means that all levels of the nursing department must work in a collaborative atmosphere.

EBP and nursing research should be part of the expectation of every nurse, regardless of title and job description. To foster this expectation, job descriptions must include criteria relating to EBP, research, and collaboration. Performance evaluations must include how effectively EBP is being implemented as measured by patient outcomes. Evaluations should also include how nurses participate in research, and how supportive they are of the EBP and research process in its entirety.

EBP and nursing research are imperative to the advancement of the nursing practice and to the provision of the best possible patient care as measured by patient outcomes. Barriers must be recognized and eliminated. Findings related to practice must be communicated. Hopefully, nurses will find that the EBP approach to patient care is one that fosters better patient outcomes and advances professional growth and development.

Conclusions

Communicating the results. As noted, communicating results and their practical value not only facilitates better patient care, but helps nurses and managers to embrace the EBP culture.

Evaluations should also include how nurses participate in research, and how supportive they are of the EBP and research process in its entirety.

The author of the article regarding GERD treatment using EBP stressed using evidence to determine treatment regimens. She discussed incidence and pathophysiology of the disease, which should be part of the literature review for any disease or disorder under scrutiny for EBP changes [4].

The author reviews best practice advice and summarizes evidence-based management recommendations. These recommendations are practical in nature and offer several treatment options depending on diagnostic findings and patient response.

This article helps the nurse see that EBP is not always a recommendation for one specific treatment or diagnostic tool. Rather, it is an overall presentation of best available evidence. One treatment option may fit the needs (both physical and economic) of one patient but not another. For example, for someone with adequate finances, taking brand-name medications that are expensive may be an excellent treatment option. For someone without those resources, other options must be found. For example, are generic brands available that achieve the same results but cost less? Does the manufacturer of the drug(s) offer a payment plan or reduced costs for patients who meet specific criteria? What financial help is available in the community? EBP is not only a clinical approach, it must consider the mind, body, and social (including expenses and emotional support) factors that are involved in the treatment of disease and achievement of wellness.

References

# EVIDENCE-BASED PRACTICE IN NURSING: EVALUATING RESEARCH FINDINGS FOR EFFECTIVE IMPLEMENTATION

## Self Evaluation Exercises
Select the best answer for each question and check your answers at the bottom of the page.

You do not need to submit this self-evaluation exercise with your participant sheet.

1. EBP in nursing is an ongoing process that relies on evidence (generated by observation and research findings) to practice nursing that best facilitates desired patient outcomes.
   - True
   - False

2. Although Nightingale was an innovator in terms of using evidence to improve patient care, she did not view emotional and social needs as important to patient wellness.
   - True
   - False

3. An EBP culture must create appropriate councils or committees that are led by supportive nurse managers.
   - True
   - False

4. Research questions must show nurses that the results obtained from the study will be of relevance to their practice.
   - True
   - False

5. Reading the abstract of a research article is generally enough to determine if the research is well done.
   - True
   - False

6. Informed consent should not include any costs involved since this does not impact subjects.
   - True
   - False

7. One of the unexpected events that may occur during implementation of a research study is that results are vastly different from what was anticipated.
   - True
   - False

8. Having a frank discussion of the problem of negativity with the negative person is usually enough to solve the problem.
   - True
   - False

9. Resistance from nurse managers and nurse leaders is a major problem in the successful implementation of EBP and nursing research.
   - True
   - False

10. Guidelines must be evaluated according to available evidence in the literature and patient outcomes.
    - True
    - False

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