QSEN Evidence-Based Practice Competency

Teaching Strategy Competency Category: Evidence-Based Practice

Learner Level: Graduate or Doctoral

Strategy Title: Sacred Cows

Learner Setting: Classroom or Assignment

Strategy Type: Problem based learning assignment

Learning Objectives:
- Determine the need for evidence based practice in the clinical setting
- Gain experience searching the literature using the PICO method

Assignment:

This assignment is called the “Sacred Cows Contest.” Have each graduate student (can be an individual assignment or they can work in pairs or small groups) choose a clinical area to visit. They can either ask nurses in the clinical area individually or in a group the following questions:

1. What is the most traditional nursing practice being done in this clinical area?
2. What is the least logical nursing practice happening in this area?
3. What is the most time consuming practice in your area?

Once the list has been compiled, have the students:

1. Search the literature and obtain evidence about the practices identified.
2. Develop an Evidence Based Project about the “sacred cows” identified.
3. Determine if a change in practice might be required based on the evidence.
QSEN Evidence-Based Practice Competency

**Teaching Strategy Competency Category:** Evidence-Based Practice

**Learner Level:** Graduate or Doctoral

**Strategy Title:** Improving Evidence Based Practice in Systems

**Learner Setting:** Assignment

**Strategy Type:** Problem based learning assignment; Case Study

**Learning Objectives:**
- Identify barriers to implementing evidence based practice in clinical areas
- Navigate systems in improving the level of evidence based practice in use
- Develop plans to improve systems access to evidence based practice

**Assignment:**

This assignment might be suitable for a Doctoral Capstone project, or if no real experience exists then use the case study here as the assignment.

**Case Study**
A chief nurse approaches you as the doctorally prepared nurse to lead a project in the hospital. She asks you to partner with her director of nursing continuing education. The nursing strategic plan has an objective to increase the use of evidence based practice to guide clinical decision making. There is very little infrastructure in place, and the Chief Nurse wants you and the Director of Education to develop a plan for the organization to improve evidence based practice. When you make rounds on the units, you find there is a large proportion of associate degree prepared nurses, practice that is traditional with many nurses responding that “we have always done it this way”, and as the chief nurse assessed, no infrastructure or support is in place. In addition, there is very little understanding from the clinical nurses what evidence based practice means.

Your job is to develop a plan to present to the chief nurse with the following elements in place:

- Design an evidence based practice structure to allow for shared decision making about clinical practice. This can include a shared governance structure. If a council, identify stakeholders you would include and a team charter for the council work.
Choose from the following strategies to include in your plan:

- Journal clubs
- Research critique rounds
- Library rounds
- E-Database and library search lessons
- Development of mentors in clinical practice
- Use of unit-based champions to educate about evidence based practice
- Participation in research studies
- Inservices and grand rounds
- Creative education strategies in the clinical arena
- Encouraging the development of clinical questions by staff nurses

Create an education, implementation, and communication plan to present to the chief nurse. If she decides to implement your plan, give her suggestions on how to evaluate the effectiveness of your plan.
QSEN Evidence-Based Practice Competency

Teaching Strategy Competency Category: Evidence-Based Practice

Learner Level: Graduate or Doctoral

Strategy Title: Development and Implementation of a Practice Change based on Evidence

Learner Setting: Classroom or Assignment; Capstone Project for DNP

Strategy Type: Problem based learning assignment

Learning Objectives:
- Experience the steps in creating an evidence based practice clinical policy or practice
- Develop practice recommendations taking into account:
  - Patient population being served
  - Organizational priorities
  - Resources available
- Differentiate when to use patient values and clinical judgement to deviate from guidelines
- Prepare an environment for changes in practice
- Doctoral level: Actually implement a practice change

Development and Implementation of a Practice Change based on Evidence

Strategy Overview
The assignment can be used for any size classroom group and can be done individually or in a group. Each student/pair/group needs to choose a clinical area and a clinical partner site. You can tailor this assignment to just include one part of the EBP process, or have the assignments be due over the course of the entire EBP course.

1. Once a clinical area is chosen, work with the clinical team to determine a clinical practice problem.
2. Develop the researchable question (ex: “what is the most effective pain management method”) using the PICO method (Patient Population, Intervention, Outcome, Time) Examples of PICO questions are at the end of this assignment
3. Search for the best evidence available and determine the strength of the evidence.
5. Develop recommendations for practice changes.
6. Develop an implementation plan to include key activities, education plan, implementation planning steps, and evaluation plan for the clinical area.

7. DNP Capstone project: Actually implement the clinical practice change in partnership with the clinical leadership team of the clinical area chosen.

8. Evaluate the outcome of the evidence based practice change.

Other areas to consider as assignments:

1. Barrier Identification:
   a. Once a clinical practice change is identified, identify barriers to successful implementation of change.
   b. Develop a plan to overcome those barriers.

2. Perform a rigorous evaluation of multiple sources of evidence
   a. Consider patient preferences and what clinical judgement might do to change the evidence
   b. Develop options (at least one) that might be different in the clinical setting based on a patient preference or clinical judgement

3. Have the student actually participate on a team that is working on a change in practice. Have the student develop a communication plan to articulate a change in practice that is being anticipated. If the change has already occurred, have the student evaluate the change in practice:
   a. At the graduate level – participate on a team
   b. At the doctoral level- lead a team

PICO Examples

Available at the Cochrane Library Tutorial:
http://learntech.physiol.ox.ac.uk/cochrane_tutorial/cochlibd0e187.php

Many clinical or research questions can be divided into these four components, which we call ‘P I C O’. Try to use all four parts of the question, if possible.

P  Population/patient
I  Intervention/indicator
C  Comparator/control
O  Outcome
Example:

A 28-year-old male presents with recurrent furunculosis (skin boils) for past 8 months; these episodes have been treated with drainage and several courses of antibiotics but keep recurring. He asks if recurrences can be prevented. To convert this to an answerable question, use the P I C O method as follows:

Question:

‘In patients with recurrent furunculosis, do prophylactic antibiotics, compared to no treatment, reduce the recurrence rate?’

P  Population/patient  =  patients with recurrent furunculosis
I  Intervention/indicator  =  prophylactic antibiotics
C  Comparator/control  =  no treatment
O  Outcome  =  reduction in recurrence rate of furunculosis

Example:

George wants to discuss the possibility of a vasectomy. He says he has heard something about vasectomy causing an increase in testicular cancer later in life. You know that the risk of this is low but want to give him a more precise answer.

Question:

‘In men, does having a vasectomy (compared to not having one) increase the risk of getting testicular cancer in the future?’

P  Population/patient  =  adult males
I  Intervention/indicator  =  vasectomy
C  Comparator/control  =  no vasectomy
O  Outcome  =  testicular cancer
Example:

Mabel is a 6-week-old baby at her routine follow-up. She was born prematurely at 35 weeks. You want to tell the parents about her chances of developing hearing problems.

Question:

‘In infants born prematurely, compared to those born at full term, what is the subsequent lifetime prevalence of sensory deafness?’

P Population/patient = infants
I Intervention/indicator = premature
C Comparator/control = full-term
O Outcome = sensorial deafness

Example:

Julie is pregnant for the second time. She had her first baby when she was 33 and had amniocentesis to find out if the baby had Down's Syndrome. The test was negative but it was not a good experience as she did not get the result until she was 18 weeks pregnant. She is now 35, one month pregnant and asks if she can have a test that would give her an earlier result. The local hospital offers serum biochemistry plus nuchal translucency ultrasound as a first trimester test for Down’s Syndrome. You wonder if this is as reliable as conventional amniocentesis.

Question:

‘For pregnant women, is nuchal translucency ultrasound plus serum biochemistry testing in the first trimester as accurate (i.e. - with equal or better sensitivity and specificity) as conventional amniocentesis for diagnosing Down's Syndrome?’

P Population/patient = pregnant women
I Intervention/indicator = nuchal translucency ultrasound plus serum biochemistry (first trimester)
C Comparator/control = conventional amniocentesis
O Outcome = accurate diagnosis (measured by sensitivity and specificity) of Down's Syndrome (trisomy 21)
Examples to assign to students:

Exercise: 2

"Is there evidence to suggest that the prophylactic use of vitamin B12 supplements is effective in improving the quality of life (specifically cognition) of apparently healthy older people?"

Exercise: 3

"Would you recommend self-monitoring of blood glucose levels for patients with Non-Insulin Dependent Diabetes Mellitus (NIDDM)?"

Exercise: 4

"In elderly patients with congestive heart failure, is digoxin effective in reducing the need for rehospitalization?"

Exercise: 5

"Is glucosamine sulphate an effective agent in the short-term treatment of osteoarthritis?"

Exercise: 6

"In a 70 year old woman with primary insomnia and a previous adverse reaction to hypnotics, can cognitive behavior therapy improve sleep quality and duration?"
Worksheet about Use of PICO: Accessing the Literature

MU Libraries, University of Missouri
1 Hospital Dr., Columbia, MO 65212

Available at: http://libraryguides.missouri.edu/content.php?pid=285471&sid=2367680, accessed 12/2/12

PICO is a mnemonic used to describe the four elements of a good clinical question. It stands for:

P -- Patient/Problem
I -- Intervention
C -- Comparison
O -- Outcome

Many people find that it helps them clarify their question, which in turn makes it easier to find an answer.

Use PICO to generate terms - these you'll use in your literature search for the current best evidence. Once you have your PICO terms, you can then use them to re-write your question. (Note, you can do this in reverse order if that works for you.)

Example:

Often we start with a vague question such as, "How effective is CPR, really?" But, what do we mean by CPR? And how do we define effective? PICO is a technique to help us - or force us - to answer these questions. Note that you may not end up with a description for each element of PICO.

P - our question above doesn't address a specific problem other than the assumption of a person who is not breathing. So, ask yourself questions such as, am I interested in a specific age cohort? (Adults, children, aged); a specific population (hospitalized, community dwelling); health cohort (healthy, diabetic, etc.)

I - our question above doesn't have a stated intervention, but we might have one in mind such as 'hands-only'
C - Is there another method of CPR that we want to compare the hands-only to? Many research studies do not go head to head with a comparison. In this example we might want to compare to the standard, hands plus breathing.

O - Again, we need to ask, what do we mean by 'effective'? Mortality is one option with the benefit that it's easily measured.

Our PICO statement would look like:

P - community dwelling adults

I - hands only CPR

C - hands plus breathing CPR

O - mortality

From our PICO, we can write up a clearer and more specific question, such as:

In community dwelling adults, how effective is hands-only CPR versus hands plus breathing CPR at preventing mortality?

Now that we've clarified what we want to know, it will be much easier to find an answer.

We can use our PICO statement to list terms to search on. Under each letter, we'll list all the possible terms we might use in our search.

P - Community Dwelling: It is much easier to search on 'hospitalized' than non-hospitalized subjects. So I would leave these terms for last. It might turn out that I don't need to use them as my other terms from the I, C, or O of PICO might be enough.

community dwelling  OR out-of-hospital

P - Adults: I would use the limits in MEDLINE or CINAHL for All Adults. Could also consider the following depending upon the population you need:

adult OR adults OR aged OR elderly OR young adult

I - CPR

CPR - cardiopulmonary resuscitation
I - Hands-only
Hands-only OR compression-only OR chest compression OR compression OR Heart Massage

C - CPR
CPR - cardiopulmonary resuscitation

C - Hands plus breathing Breathing is a tougher term to match.
breathing OR mouth to mouth OR conventional OR traditional

O - Mortality: If your outcomes terms are general, they may not as useful in the literature search. They will still be useful in your evaluation of the studies.
mortality OR death OR Survival

Putting it together - a search statement from the above might look like this:
cardiopulmonary resuscitation AND (hands-only OR compression-only OR chest compression OR compression OR Heart Massage) AND (breathing OR mouth to mouth OR conventional OR traditional)
Teaching Considerations:

- Enthusiasm is contagious. Approach the content in a positive and upbeat way.
- Role model the use of evidence based practice. Share examples from your own practice during lectures and small group report out.
- Whenever possible, the work should be interactive.
- Have the class work in small groups as much as possible.
- Consider experiential approaches. This will require a practice partner / clinical service partnership.
- Cite examples of clinical research in class.
- Allow the students whenever possible to choose their clinical interest area to conduct evidence analysis.
- Teach them how to critique a nursing research study using any of the research guides available. (reference here)
- Invite a guest speaker to share a case study of an experience where research was incorporated into clinical practice. Have the students review the 5 steps in the EBP process – did the case study touch on all of the steps?
- Develop researchable questions in a fun way – consider a contest, or a game show format for generating ideas for questions that they want answered or want to know more about.
- Millenial students want pedagogy of engagement – Don’t lecture at them – engage them in the work.

Assignment Ideas:

- Assign the students into pairs. Allow them to choose the clinical topic of their choice. Assignment is to create a video that is in a news show format that is a one minute “health spot” based on evidence.

Abstract:
The literature confirms that much confusion exists regarding the terms quality improvement (QI), evidence-based practice (EBP), and research. A multifaceted approach was used to provide clarity regarding these three equally important concepts. First, the authors present a synthesis of the literature that discusses differences between QI, EBP, and research. Second, the authors introduce a newly created comparative table that synthesizes current literature and showcases differences between QI, EBP, and research. Finally, the authors highlight uses of the comparative table within multiple settings. (Copyright 2011, SLACK Incorporated.)


Abstract:
Two sources commonly used for evidence-based practice include research findings and quality improvement (QI) reports. However, they often are implemented improperly. It is important for nurses to distinguish between research and QI. A tool for making such a distinction is presented.


Abstract:
The paradigm shift to evidence-based practice (EBP) in the United States has been slow. Evidence has supported that one barrier to accelerating this paradigm shift is that many nurses have negative attitudes toward research, in large part due to the manner in which they were taught research in their educational programs. The primary aims of this study were to (a) describe nurse educators' knowledge, beliefs, and teaching practices regarding EBP; (b) determine whether relationships exist
among these variables; and (c) describe major barriers and facilitators to the teaching of EBP in nurse practitioner curriculums. A descriptive survey was conducted with a sample of 79 nurse practitioner educators who are members of the Association of Faculties of Pediatric Nurse Practitioners (AFPNP) and the National Organization of Nurse Practitioner Faculties (NONPF). The 25 AFPNP participants completed the survey while attending a national conference in Orlando, FL. The remaining 54 NONPF randomly selected participants responded to an e-mail version of the survey. Participants' self-reported knowledge and beliefs about the benefits of EBP and the need to integrate it into academic curricula were strong, although their responses indicated a knowledge gap in EBP teaching strategies. Few academic programs offered a foundational course in EBP. Significant relationships were found among educators' knowledge of EBP and (a) their beliefs that EBP improves clinical care, (b) beliefs that teaching EBP will advance the profession, (c) how comfortable they feel in teaching EBP, and (d) whether EBP clinical competencies are incorporated into clinical specialty courses. CONCLUSION AND IMPLICATIONS: Graduate programs need to offer a foundational course in EBP and integrate EBP throughout clinical specialty courses in order for advanced practice nurses to implement this type of care upon entry into practice. There is a need to educate faculty to become proficient in EBP as knowledge of EBP is highly related to its teaching and incorporation into graduate education. Further research is needed to describe the knowledge and state of teaching EBP in graduate faculty who are not active in clinical practice.


Abstract:
In this department, Dr Newhouse highlights hot topics in nursing outcomes, research, and evidence-based practice relevant to the nurse administrator. The goal is to discuss practical implications for nurse leaders in diverse healthcare settings. Content includes evidence-based projects and decision making, identifying measurement tools for quality improvement and safety projects, using outcome measures to evaluate quality, practice implications of administrative research, and exemplars of projects that demonstrate innovative approaches to organizational problems. In this article, the authors discuss the need for knowledge translation to leverage improvements in healthcare quality and describe 3 frameworks that can be used to plan and implement translation of evidence to practice.

Abstract:
Background: Health care organizations exert significant influence on the manner in which clinicians practice and the processes and outcomes of care that patients experience. A greater understanding of the organizational milieu into which innovations will be introduced, as well as the organizational factors that are likely to foster or hinder the adoption and use of new technologies, care arrangements and quality improvement (QI) strategies are central to the effective implementation of research into practice. Unfortunately, much implementation research seems to not recognize or adequately address the influence and importance of organizations. Using examples from the U.S. Department of Veterans Affairs (VA) Quality Enhancement Research Initiative (QUERI), we describe the role of organizational research in advancing the implementation of evidence-based practice into routine care settings.

Methods: Using the six-step QUERI process as a foundation, we present an organizational research framework designed to improve and accelerate the implementation of evidence-based practice into routine care. Specific QUERI-related organizational research applications are reviewed, with discussion of the measures and methods used to apply them. We describe these applications in the context of a continuum of organizational research activities to be conducted before, during and after implementation.

Results: Since QUERI’s inception, various approaches to organizational research have been employed to foster progress through QUERI’s six-step process. We report on how explicit integration of the evaluation of organizational factors into QUERI planning has informed the design of more effective care delivery system interventions and enabled their improved "fit" to individual VA facilities or practices. We examine the value and challenges in conducting organizational research, and briefly describe the contributions of organizational theory and environmental context to the research framework.

Conclusion: Understanding the organizational context of delivering evidence-based practice is a critical adjunct to efforts to systematically improve quality. Given the size and diversity of VA practices, coupled with unique organizational data sources, QUERI is well-positioned to make valuable contributions to the field of implementation science. More explicit accommodation of organizational inquiry into implementation research agendas has helped QUERI researchers to better frame and extend their work as they move toward regional and national spread activities.
Evidence-based practice (EBP) has been the driving mantra of nursing for the past several years. Ever since the Institute of Medicine (IOM) (1999, 2001) called attention to the eroding quality of care provided in American hospitals, health care administrators and practitioners (Nerenz, Stoltz, & Jordan, 2003) have been intent on improving processes and outcomes for patients. This focused attention on quality has led to more systematic approaches to determine best nursing practices. Nurses realize that evidence of best practice no longer can depend on anecdotal accounts from the bedside alone, but must be substantiated with data. Nursing has endorsed EBP enthusiastically in an effort to establish rigor in everyday nursing practices. Two sources of evidence commonly used by nurses include research findings and quality improvement (QI) results. However, the differences between these two sources of evidence often are understood poorly and the sources themselves utilized improperly (Newhouse, Pettit, Poe, & Rocco, 2006).

Research and quality improvement initiatives both are important processes that have the potential to impact patient outcomes (Newhouse et al., 2006). However, as different processes, they provide different types of evidence. Numerous efforts have been made to summarize the strength of various types of evidence using grading scales (Hravnak & Blevins, 2006). These scales typically anchor expert opinion on one end of the evidence spectrum and randomized controlled trials on the other end (DiCenso, Guyatt, & Ciliska, 2005). Research has greater credibility than opinion, and its strength depends on the level of control and randomization present in a study’s design. Quality improvement projects either are represented on the low end of the scale or not mentioned at all. However, this does not mean that QI projects are not worthy endeavors for improving practice. On the contrary, they provide an entry level of building evidence, or add strength to numerous clinical studies already conducted (Campbell, Braspenning, Hutchinson, & Marshall, 2002). The danger of equating QI with research comes when QI projects are given the same weight as research, or when research is improperly designed as more of a QI approach than a controlled scientific inquiry (Newhouse et al., 2006).

The American Nurses Credentialing Center (2005) requires Magnet®-designated health care organizations to incorporate evidence-based practice (EBP) as the driving mantra of nursing for the past several years. Ever since the Institute of Medicine (IOM) (1999, 2001) called attention to the eroding quality of care provided in American hospitals, health care administrators and practitioners (Nerenz, Stoltz, & Jordan, 2003) have been intent on improving processes and outcomes for patients. This focused attention on quality has led to more systematic approaches to determine best nursing practices. Nurses realize that evidence of best practice no longer can depend on anecdotal accounts from the bedside alone, but must be substantiated with data. Nursing has endorsed EBP enthusiastically in an effort to establish rigor in everyday nursing practices. Two sources of evidence commonly used by nurses include research findings and quality improvement (QI) results. However, the differences between these two sources of evidence often are understood poorly and the sources themselves utilized improperly (Newhouse, Pettit, Poe, & Rocco, 2006).

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based decisions in all facets of nursing practice. This mandate provides a strong impetus for formal nursing research programs. However, without an established research infrastructure, many Magnet and Magnet-aspiring organizations struggle with implementing the research standards. Instead, they sometimes turn to a more familiar process — quality improvement. While QI provides needed evidence for quality care (Fain, 2005), it carries neither the strength nor the generalizability of research. The purpose of this article is to distinguish between research and QI results as sources of evidence, and to provide a tool for making such a distinction. The discussion will be limited to quantitative research designs because they align more closely with quality improvement methods and are employed more frequently in hospital settings than qualitative designs. However, qualitative research also provides important evidence for the clinical setting, and is often the starting point for the least understood phenomena.

Definitions

Polit and Beck (2008) defined research as a “systematic inquiry that uses disciplined methods to answer questions or solve problems” (p. 3). The U.S. Department of Health and Human Services (2005) adds that research is “designed to develop or contribute to generalizable knowledge” (section 46.102). On the other hand, quality improvement has been described as a “generic term for almost any sort of activity that has the desired effect of improving some aspect of the health care process, either in a single setting or in many settings” (Nerenz et al., 2003, p. 159). Casarett, Karlawish, and Sugarman (2000) more specifically described QI as “small-scale cycles of interventions that are linked to assessment and that have the goal of improving process, outcome, and efficiency of complex systems of care” (p. 2276).

These definitions for the two processes allow early conceptual differentiation between research and QI. However, as specific examples in practice are identified, the distinction can become blurred easily. This graying of the dividing line between the two has become a fairly recent phenomenon. Within the past 5 years, several important think tanks were convened specifically to address issues arising from the confusion between research and QI, including those at the Hastings Center (Baily, Bottrell, Lynn, & Jennings, 2006), the American Medical Association (AMA) (2002), and the Veterans Health Administration (National Ethics Committee of the Veterans Health Administration, 2002). All published reports emanating from the previously described meetings agree that research and QI processes are sometimes difficult to distinguish because both methodologies use systematic reasoning to address clinical issues. For example, one common guide for QI is the Plan-Do-Study-Act (PDSA) method (Institute for Healthcare Improvement, 2007). This sequence is repeated during ongoing tests of change, also known as rapid cycle testing. During rapid cycle testing, one develops a plan to test a new way of delivering care (Plan), carries out the test (Do), observes and learns from the outcomes (Study), and determines any modifications that need to be made (Act). Speroff and O’Connor (2004) noted that the PDSA model easily can be aligned with more formal research methods, even though it is usually done on a smaller scale:

- Plan = Formation of hypothesis
- Do = Study protocol and data collection
- Study = Analysis and interpretation of data
- Act = Implementation into practice

Because of this problem-solving parallel, Lynn (2004) determined that research and QI are becoming more similar as clinicians become more rigorous in their QI approaches. With the availability of sophisticated statistical computing programs, and modern QI approaches such as Six Sigma (Pyzdek, 2003) that train quality specialists to incorporate these analyses into their studies, QI is moving up in strength on the evidence scale, although it will never surpass research methodologies. In fact, Speroff and O’Connor (2004) advocate for more scientifically sound QI designs in order to demonstrate causation. However, caution is warranted if QI is used to determine causation, a factor traditionally associated with research, because the results can only be generalized to the study sample.

Traditional research carries inherent risks. Recent history contains examples of injustices performed in the name of research (Centers for Disease Control and Prevention, 2005; Wiesel, 2005). As a result of these transgressions, several national and international proclamations outlining the ethical conduct of research were written, namely the Nuremberg Code (Freyhofer, 2004), the Declaration of Helsinki (World Medical Association General Assembly, 1964), and the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). These documents show the international concern that has surrounded the conduct of research, and they form the ethical underpinning of current federal laws governing current clinical research. These laws require that research proposals undergo a rigorous review process and be approved by an institutional review board (IRB) authorized to supervise the research process.
and protect potential subjects from harm (Polit & Beck, 2008). Because QI processes have not undergone the same international scrutiny, and no current laws require QI projects to undergo IRB review, health care organizations must be clear about whether a project is research or whether it is QI. Legal and organizational sanctions, such as fines or job dismissals for research misconduct, can be imposed if projects are research by nature but have not undergone appropriate institutional review, even if the project owners consider their work QI (Baily et al., 2006). Simply stating that a project is QI does not make it so (Baily et al., 2006).

**Differences Between Research and Quality Improvement**

In the following section, the differences between research and QI are discussed. Research with a weak design and QI with a sophisticated design begin to mirror each other (Reinhardt & Ray, 2003). The discussion will focus on usual differences, as well as point out gray areas resulting in specific issues and concerns.

**Philosophical underpinning.** Quantitative research is guided by a worldview grounded in logical positivism (Morrison, Mobley, & Farley, 1996). This philosophical stance is guided by empiricism, the conviction that truth can be detected through the senses. The measurement of a phenomenon, therefore, is not only possible, but provides evidence for its existence. However, in order to ensure accurate measurement of only the phenomenon under study, all other variables must be controlled which can lead to artificial conditions (Polit & Beck, 2008).

Quality improvement methodology also is grounded in logical positivism, but it includes an equally important foundation of pragmatism (Morrison et al., 1996). Pragmatism is the useful and practical application of knowledge and values the practicality of observation performed in the natural setting (Polifroni & Welch, 1999). Therefore, QI studies usually are done in actual health care settings to determine the effectiveness of this intervention on this patient in this department.

**Purposes of research and QI.** Many researchers consider the purpose of a study to be the definitive indicator of whether a project is research or QI (Nerenz et al., 2003; Newhouse et al., 2006; Paxton, Whitty, Zaatar, Fairbairn, & Lothian, 2006). The purpose of research is to generate new knowledge (Beyea & Nicoll, 1998; Reinhardt & Ray, 2003). For scientists, no other empirical method will suffice for determining the answers to new clinical questions and problems. As a result, the care of the individual patient participating in the study is not of primary concern, only the knowledge that will be generated from the investigation (Newhouse et al., 2006).

Quality improvement studies, however, are interested primarily in improving processes, practices (Beyea & Nicoll, 1998; Nerenz et al., 2003), cost effectiveness, or productivity (Reinhardt & Ray, 2003) for a very specific group of patients (e.g., all the cancer patients on Department X in Hospital Y). The best practice may be known already, and the investigator wants to determine how well it is being implemented in a particular area. Problems of distinction can emerge when a QI study attempts to trial an innovative intervention in the clinical setting through rapid cycle testing (Reinhardt & Ray, 2003). Intervention testing normally has been regarded as a clear instance of research. However, interventional quality improvement projects call into question the traditional purposes of research versus QI (Reinhardt & Ray, 2003).

**EBP value.** The strength of evidence can be viewed along a continuum (DiCenzo et al., 2005). Consensus among clinicians usually is considered the lowest level of evidence. This consensus is often based on tradition, anecdotal knowledge, or the absence of negative outcomes. On the other hand, the randomized controlled trial (RCT), the strongest of the research designs, is the gold standard of evidence. Multiple RCTs with similar results aid the incorporation of new knowledge into practice. Between these two methods on the continuum are quality improvement projects and quasi-experimental research designs. The closer the project methodology approximates an experimental design, including effective sampling techniques, the stronger the evidence for incorporation into the discipline’s practice. The caution for nursing rests in the fact that many of nursing’s questions cannot be answered with an RCT (Mantzoukas, 2007). Therefore, QI studies may be a more appropriate methodology and achievable alternative than even quasi-experimental designs.

**Generalizability.** Findings from research are intended to be generalized outside the sample to the population of interest (Beyea & Nicoll, 1998; Fain, 2005; Hill & Small, 2006; Newhouse et al., 2006). Because the main purpose of research is to generate new knowledge (Polit & Beck, 2008), that knowledge must be applicable to other people or it is not very useful. This generalization can occur because sampling strategies are designed to match the targeted population, or the methods include randomization to control for differences between groups.

Quality improvement is not meant to be generalizable (Beyea & Nicoll, 1998; Hill & Small, 2006; Newhouse et al., 2006; Reinhardt & Ray, 2003). Because the focus is to improve care for a specific group of people, findings are not meant to be used outside the group.
(Reinhardt & Ray, 2003). QI projects usually address internal processes or practices that do not exist outside the specific organization (Nerenz et al., 2003), and application of findings may not be applicable in any other setting. However, generalization is being challenged as published national benchmarks incorporate multi-site data into one common data point (Morrison et al., 1996). This allows for some comparison across sites of various effective strategies to achieve or surpass benchmarked means. Others contend that the results of any QI study are generalizable to some degree, even if only to other departments within an institution (Casarett et al., 2000).

**Beneficiaries.** If implemented, knowledge gained from research generally benefits future patients (or whatever population was in the sample), and the scientific community that will implement the findings in practice (Newhouse et al., 2006; Reinhardt & Ray, 2003). Participants in a research study might benefit if they are in a treatment group that has better outcomes than the control group. However, that is not guaranteed, and they are informed of this possibility before the study begins.

Quality improvement subjects usually are patients in the hospital. Because the purpose of QI is to improve patient outcomes through assessment of best practice and rapid cycle changes, patients usually begin to benefit immediately from the focused attention on quality (Casarett et al., 2000). Future patients who are treated at the same hospital also will benefit from the improved efficiencies and outcomes that resulted from a change in hospital practice or protocol.

**Risks and burdens.** If there were no risks and burdens involved, few would care if a project was labeled research or QI. However, research almost always involves some risk to participants (Beya & Nicoll, 1998; Newhouse et al., 2006; Paxton et al., 2006; Reinhardt & Ray, 2003). This risk may be significant, such as the testing of a new drug on human subjects for the first time, but most nursing research carries minimal risk of this type (Polit & Beck, 2008). Minimal risk may be associated with the availability of confidential medical files to researchers who are not involved in the patient’s care, the inconvenience of having to answer questions not directly related to the treatment plan, or the possibility that a participant may be identifiable in a research report even when sufficient care is taken to group subjects. All these instances of minimal risk can incur significant harm when unintended results occur.

Quality improvement, on the other hand, rarely involves risk because the usual care remains the same (Newhouse et al., 2006; Reinhardt & Ray, 2003). The intent of QI is to improve the usual care given within a specific organization and ultimately benefit patients, not place them at risk. However, some experts argue that many QI projects carry the same level of minimal risk as other types of research (Baily et al., 2006; Casarett et al., 2000; Doyal, 2004), such as chart audits by quality specialists not involved with the patient’s care and unintended harm from rapid cycle interventions.

Given the potential for harm posed by some QI projects, some experts suggest that QI projects with the potential for any risk should be classified as research and undergo IRB review (Casarett et al., 2000). Because others worry that this would overload an already burdened review board, a separate review process for QI projects has been suggested (Doyal, 2004). Until changes are mandated, organizations must self-monitor their QI activities carefully for patient risks and burdens and voluntarily submit QI projects with any risks to the IRB.

**Sample size.** Research studies using inferential statistics determine sample size by conducting a power analysis (Newhouse et al., 2006; Reinhardt & Ray, 2003). This statistical process ensures that enough participants are included to find a difference between groups if one exists. Research studies also may recruit subjects from multiple sites. This strategy improves access to potential participants in order to obtain the needed sample size and improves external validity (generalizability) (Polit & Beck, 2008).

Quality improvement projects, on the other hand, use a convenience sample from one institution and often only one department within the institution (Reinhardt & Ray, 2003). It is usually a small sample, although large enough to observe change (Newhouse et al., 2006). In fact, it is not uncommon for a sample to be just one patient, as small tests of change are trialed and eventually expanded if successful (Speroff & O’Connor, 2004). For instance, a nurse may trial a new admission form with just one patient. The team may make changes to the form based on this nurse’s initial feedback. Then the revised form is trialed during an entire shift to get feedback from several nurses.

**Instruments.** Research uses instruments that are valid and reliable measures of the concepts of interest (Fain, 2005; Newhouse et al., 2006). A scientific process determines face, content, criterion-related, and/or construct validity (Gliner & Morgan, 2000). Reliability is determined through specific tests, such as test-retest, internal consistency, and interrater reliability statistics (Gliner & Morgan, 2000). For example, if a researcher wanted to determine the effect of hourly nurse rounding on patient anxiety, a sound instrument for measuring anxiety would be administered to each.
patient participating in the study (for example, the Hospital Anxiety and Depression Scale) (Zigmund & Snaith, 1983). QI, on the other hand, typically uses instruments developed specifically for each data collection episode. These instruments are not checked for validity or reliability, but are purely data collection tools that allow simple and easy recording of information (Newhouse et al., 2006).

**Design and methods.** Research often employs methodologies that require a strict protocol to implement interventions and administer instruments (Baily et al., 2006; Nerenz et al., 2003). A tightly controlled design limits the effect of extraneous variables on the variables of interest. This control adds support to determinations of causation (Polit & Beck, 2008). If extraneous variables are known but cannot be controlled, they often are measured and included in statistical analyses as co-variates (Newhouse et al., 2006; Reinhardt & Ray, 2003). In addition, randomization of interventions often is used to equalize groups in an effort to increase external validity (Polit & Beck, 2008). Analysis usually includes inferential statistics to show significant differences between and within groups (Lynn, 2004). The entire research process usually is time consuming and resource intensive (Newhouse et al., 2006).

Quality improvement uses a flexible design that often varies during the course of the project, depending on the incoming data (Baily et al., 2006; Nerenz et al., 2003). This cyclical design provides feedback to be used for ongoing changes to be tested at the next iteration (Speroff & O’Connor, 2004). Changes in the design are expected and encouraged for quick identification of the best process to achieve a desired goal. The decreased level of control lets the influence of the natural environment determine the best solution for a particular population in a particular setting (Speroff & O’Connor, 2004). Extraneous variables are acknowledged but no attempt is made to control them (Newhouse et al., 2006). The whole process may be quick and inexpensive. Data analysis most often employs descriptive statistics that demonstrate change, or graphs that show trends (Nerenz et al., 2003). As QI initiatives become more sophisticated, however, quasi-experimental designs and the use of inferential statistics with adequate power may become more common (King & Teo, 2000). This trend is suggestive of research because the use of quasi-experimental designs and inferential statistics indicates the comparison of different groups, which implies variance in the way care is delivered. This trend will need to be monitored closely to ensure that QI projects are not masquerading as research projects, and that patients are fully protected from any risks of participation.

**Implementation of findings.** Research results often are published or presented as papers or posters to inform others within the discipline (Baily et al., 2006). This allows the incorporation of findings into practice if appropriate (Baily et al., 2006; Hill & Small, 2006). Implementation often is slow, however, as publication can take many months; then the results must be read and applied.

Quality improvement results, however, usually are communicated only within the hospital or department setting. Practice changes are immediate as processes which have already been implemented and tested remain in place (Baily et al., 2006). Some delay may occur if implementation in practice requires hospital-wide policy changes and education. QI results often are not submitted for publication because of their lack of generalizability, IRB approval, and significance testing (Lynn, 2004). However, innovative QI solutions to common nursing problems often should be published. For example, nurses want to know how other institutions achieve national benchmarks for patient falls and pressure ulcers.

**Social acceptance.** Research is not considered part of the usual care when patients enter a hospital (AMA, 2002; Bellin & Dubler, 2001). If they are going to be included in research, patients want to know who will be conducting the study, and the goal. This right is acknowledged and accepted by health professionals, the lay public, and the federal government (AMA, 2002).

Processes that improve quality, however, are considered part of the ongoing responsibilities of all health care professionals (AMA, 2002; Bellin & Dubler, 2001). Patients expect outcomes of care to be monitored and improved (Bellin & Dubler, 2001). If a situation falls outside the established standard (e.g., a wrong medication is administered), patients expect the institution to investigate the occurrence and make immediate practice improvements (Bellin & Dubler, 2001).

**Discussion**

Differentiating research and QI may be difficult. As previously discussed, dangers are inherent in not identifying correctly which process is being used for investigation. When QI is considered research, the biggest hazard is placing participants at potential risk without informed consent (Newhouse et al., 2006; Reinhardt & Ray, 2003). Even when the risks seem minimal, unforeseen consequences can occur. Subjecting a study to IRB analysis ensures that the investigator is protecting participant rights within a sound study design. When patients are not adequately protected, the investigator and the institution may be sanctioned for not following federal, state, or internal policies (Newhouse et al., 2006). In
Table 1. The Research/QI Differentiation Tool

<table>
<thead>
<tr>
<th>Research</th>
<th>Quality Improvement</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Which phrase best describes the purpose of your project?</strong></td>
<td>To generate new knowledge.</td>
<td>To improve internal processes, practices, costs, or productivity.</td>
</tr>
<tr>
<td><strong>What are you trying to accomplish with this project?</strong></td>
<td>To test a new, innovative practice.</td>
<td>To measure an existing practice that is an approved procedure or that has been shown effective in the literature.</td>
</tr>
<tr>
<td><strong>Who will most likely benefit from your project?</strong></td>
<td>Future patients (or other targeted population) mostly will benefit.</td>
<td>Most of the subjects that participate in the study in the study, as well as future patients (or other targeted population), will benefit.</td>
</tr>
<tr>
<td>Will participants be placed at any risk during the project? Consider risks from disclosure of protected health information, or risks from changes in usual care delivery.</td>
<td>There will most likely be some risk incurred by participants. <strong>Will need IRB approval, even if QI study.</strong></td>
<td>There will be no risks beyond the usual care.</td>
</tr>
<tr>
<td><strong>How will you determine how many participants to include?</strong></td>
<td>Through a formal power analysis.</td>
<td>Will use a small sample size, but large enough to observe change.</td>
</tr>
<tr>
<td><strong>Will you try to randomize participants into different groups?</strong></td>
<td>Yes.</td>
<td>No.</td>
</tr>
<tr>
<td><strong>Could your project be done with participants outside your setting?</strong></td>
<td>Yes, having participants outside the setting would add strength to the project.</td>
<td>No, having participants outside the setting would not make sense because another setting would not provide care the same way.</td>
</tr>
<tr>
<td><strong>What kind of tool will you use to collect data?</strong></td>
<td>An instrument that is a valid and reliable measure of the concept to be tested.</td>
<td>A data collection tool that has been developed without rigorous testing.</td>
</tr>
<tr>
<td><strong>Will you be able to vary your protocol during the study?</strong></td>
<td>No, it will be a strict protocol that cannot vary.</td>
<td>Yes, it will be an evolving protocol with rapid tests of change to seek immediate improvement.</td>
</tr>
<tr>
<td><strong>Will you be using an experimental or quasi-experimental design?</strong></td>
<td>Yes.</td>
<td>No.</td>
</tr>
<tr>
<td><strong>How will you handle extraneous variables (factors that might interfere with your results)?</strong></td>
<td>Try to control them, or measure them.</td>
<td>Acknowledge them, but do try not not to interfere. They are a part of any real life experience.</td>
</tr>
<tr>
<td><strong>How will you analyze the data?</strong></td>
<td>With inferential statistics to test for significance.</td>
<td>With descriptive statistics that demonstrate change, or graphs that show trends.</td>
</tr>
<tr>
<td><strong>How long do you anticipate your project will take?</strong></td>
<td>It will take considerable time.</td>
<td>It will be done quickly through rapid cycles.</td>
</tr>
<tr>
<td><strong>Do you anticipate needing money or other resources to complete the project?</strong></td>
<td>Yes.</td>
<td>Minimal.</td>
</tr>
<tr>
<td><strong>What do you plan to do with your findings?</strong></td>
<td>Publish or present findings for others within the discipline.</td>
<td>Communicate findings within the hospital or department setting.</td>
</tr>
<tr>
<td><strong>How will your findings change practice?</strong></td>
<td>Will change practice slowly, often after multiple studies validate the results.</td>
<td>Will change practice in my setting immediately.</td>
</tr>
</tbody>
</table>
addition to legal ramifications, QI studies that pass for research often are designed poorly and do not lend themselves to interpretation, generalization, or publication (Newhouse et al., 2006). This practice “diminishes the credibility of nursing research” (Newhouse et al., 2006, p. 215).

On the other hand, when a research study is labeled QI, the IRB process is bypassed and ethical standards are violated (Newhouse et al., 2006). Whether intentional or not, this action places participants, the investigator, and the health care organization at risk (Reinhardt & Ray, 2003).

It is not always clear which process to use. Trying to dichotomize the two eventually will lead to frustration, as overlaps often occur. Project team members are encouraged to discuss their project purpose and design strategies fully before beginning any data collection. The potential for patient risk and burdens needs to be considered carefully. If risk exists, the proposal needs to be submitted to an IRB for review, even if the project appears to be a QI initiative.

Using an algorithm (see example in Hill & Small, 2006) may help to determine whether a project is research or QI. However, it can also lead to frustration if the answer to a “yes” or “no” question is “maybe” or “don’t know.” In addition, an algorithm does not allow for overlapping processes, which may be misleading or yield an incorrect conclusion. Another tool is offered instead to assist in the discernment between QI and research (see Table 1). By answering the questions in the grid, a pattern should be revealed which aligns with either a QI process or a research process. It is not necessary that every item fall under one domain. However, it should be clear which domain is dominant. If no pattern is revealed, the project leader is encouraged to discuss more fully the proposal with the team, calling in outside experts if needed. If the plan was to conduct a research project, consider tightening up the sampling plan, methodology, or dissemination procedures. If the plan was to do QI, consider eliminating risk to patients by removing any intervention variables, and focusing on improving current approved practice. If this is not an option, have the proposal approved by the IRB. Also consider turning the project into a full research proposal.

Research and quality improvement both offer crucial evidence to advance nursing practice. However, they are different processes and although some components may overlap, the processes should not be interchanged. Understanding the central purpose, as well as the philosophical, methodological, and ethical differences, will ensure that patients are not placed at undue risk, nursing research results are credible, and the discipline continues to be advanced with appropriate evidence for nursing practice.

References


King, K., & Teo, K.K. (2000). Integrating clinical quality improvement strategies with nursing research. Western Journal of Nursing Research, 22, 596-608.

Research and Quality Improvement: Different Processes, Different Evidence


