



Diffusing Confusion Among Evidence-Based Practice, Quality Improvement, and Research

Robin Purdy Newhouse, PhD, RN, CNA, CNOR

In this department, hot topics in nursing outcomes, research, and evidence-based practice relevant to the nurse administrator are highlighted. The goal is to discuss the practical implications for nurse leaders in diverse health-care settings. Content includes evidence-based projects and decision making, locating 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 a recent evidence-based practice (EBP) workshop, a nurse executive asked: "What is the difference between EBP and quality improvement (QI) and benchmarking?" In a different workshop, another asked: "Do I need an institutional

review board approval for my EBP project?" It becomes confusing when organizational EBP, QI, and research activities are all referred to as EBP. The issue is that these activities often overlap. This column assesses the unique and overlapping relationships among EBP, QI, and research. Definitions are provided in Figure 1. Using an organizational problem of increased pressure ulcer rates, examples of each approach are provided in Figure 2.

Research

Research is a systematic investigation, including research development, testing, and evaluation designed to develop or contribute to generalizable knowledge.¹ Because nursing research is underdeveloped in a number of areas, scientific evidence (research) is not available to inform practice when a problem emerges or questions are raised about nursing processes included in organizational policies.

The research process includes identification of the problem, selection of a conceptual framework or theoretical model that describes the relationships between study variables, generation

of hypotheses or research questions, and a plan for the study design and method. The design and method are based on the state of knowledge of the problem and the gap in the evidence.

The design frames the appropriate research approach (experimental, quasi-experimental, or nonexperimental). The sample consists of the number and type of subjects needed to identify a statistically significant difference if one exists. The method includes appropriate controls, including measures or instruments with adequate estimates of reliability and validity. Standard research procedures are established that include a plan for interventions, measurement, data collection, and statistical analysis. Institutional review board approval is obtained before implementation of the research protocol.

The design and methods of research seek to control as many variables as possible so that a link is established between the intervention (or concept of interest) and effect (or outcome). Using a well-planned and implemented research approach to solve a clinical, administrative, or education

Author Affiliation: Associate Professor and Assistant Dean, Doctor of Nursing Practice, University of Maryland, School of Nursing, Baltimore, Maryland.

Correspondence: University of Maryland, School of Nursing, 655 W. Lombard Street, Room 516B, Baltimore, MD 21201-1579 (newhouse@son.umaryland.edu).



<p style="text-align: center;">Research</p> <p>A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. (1)</p>
<p style="text-align: center;">Quality Improvement</p> <p>Quality improvement is a process by which individuals work together to improve systems and processes with the intention to improve outcomes. (2)</p> <p>A data driven systematic approach to improving care locally. (3)</p>
<p style="text-align: center;">Evidence-Based Practice</p> <p>A problem-solving approach to clinical decision-making within a health care organization that integrates the best available scientific evidence with the best available experiential (patient and practitioner) evidence, considers internal and external influences on practice, and encourages critical thinking in the judicious application of such evidence to care of the individual patient, patient population, or system. (9)</p>

Figure 1. Definitions.

problem informs decisions in healthcare organizations, extending beyond lessons learned in one organization, to generalizable knowledge that can be applied in similar settings.

Quality Improvement

Quality improvement is a process by which individuals work together to improve systems and processes with the intention to improve outcomes.² An alternative definition is that QI is a data-driven systematic approach to improving care locally.³ The distinction between research and QI has been recently reviewed, defined, and debated.³⁻⁵

One familiar framework to guide the QI process is plan-do-study-act.⁶ Examples of approaches to data presentation from QI efforts include control, radar, Pareto charts, and cause-and-effect diagrams.⁷ Although approaches to QI have undergone an evolution to improve the sys-

tematic approach, publications of results are usually limited to lessons learned, instead of generalizable results. In addition, there has been an increase in investigators who conduct health services research with their research activities focused on QI interventions. These investigators intend to generalize results and approach the organizational improvement intervention as a research study.

Evidence-Based Practice

An often-cited landmark definition of EBP is: "Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research."^{8(p71)}

This definition is appropriate for nursing research utilization,

but insufficient for EBP because the best evidence available to address nursing problems is often not research. In addition, nursing practice is nested within organizations, and appropriate organizational infrastructure fosters system and individual uptake and use of evidence. The definition of EBP can be expanded to the following: EBP is a problem-solving approach to clinical decision making in a healthcare organization that integrates the best available scientific evidence with the best available experiential (patient and practitioner) evidence, considers internal and external influences on practice, and encourages critical thinking in the judicious application of such evidence to care of the individual patient, patient population, or system.⁹ Note that this approach uses the best available evidence, *not* one source of evidence that supports current practice. A rigorous search strategy is used, followed by retrieval and review of evidence that includes grading the strength and quality, and then applying the results through implementation and evaluation of the recommendations. This definition includes the organization's experience.

Experiential evidence extends beyond the individual provider or patient, to activities such as QI, benchmarking, or organizational or program outcome monitoring. Rycroft-Malone et al¹⁰ call this organizational evidence "local context" and suggest that far more work is needed to understand how this type of evidence is collected and incorporated with other types of evidence to inform healthcare decisions.



Problem

Pressure ulcer rates in one unit are higher than national benchmarks or other units in the organization. The nurses have observed that surgical patients seem to develop pressure ulcers more often.

Research

A staff member questions what factors are associated with pressure ulcer formation. A retrospective chart review is planned. The nurses review the literature to identify appropriate data elements and create and pilot a data abstraction tool. Next, a list of 300 surgical patients with cases that lasted over 2 hours is generated. They retrieve the patient records, then review medical records to collect data using the data abstraction tool. Data collected includes patient characteristics (demographics, lab results and assessment data and skin assessment), organizational care processes (positioning and positions devices) and outcomes (pressure point skin assessment normal or abnormal). Data is entered into a statistical program, and analyzed using a logistic regression.

Quality Improvement

The staff want to determine if patients who develop pressure ulcers are operating room (OR) patients and if the pressure ulcers develop at pressure points that could be related to OR positioning. Eight surgical patients who developed pressure ulcers were identified. The nurses reviewed the 8 medical records to determine where skin breakdown occurred. No patient identifiers or additional information are collected. They determine that 5 of the 8 pressure ulcers formed in locations that are pressure points associated with the patient's position on the OR table. Current OR practices are reviewed, a specific plan developed, and the incidence of abnormal skin assessments at OR pressure points evaluated at the end of surgery and at five days post operatively.

Evidence-Based Practice

OR nurses reviewed their current practices in light of Association of PeriOperative Registered Nurses standards, finding wide variations. The OR nurses asked the question: For surgical patients with procedures longer than 2 hours in supine position, what positioning devices should be used to reduce skin pressure? They completed a literature search, contacted similar organizations to inquire about their standards for positioning, and reviewed their organizational outcome data. Based on the results of this work, they made recommendations for use of positioning devices.

Figure 2. Examples of research, QI, and EBP.

The Overlapping Relationships

Research and QI (as a form of experiential evidence) both inform EBP. Research provides a higher level of evidence than QI and is the major source of evidence in the medical discipline. Quality improvement provides real-life experience and descriptive data within the context of the organization, making the rapid cycle approach and evaluation of outcomes very actionable.

However, there are 2 major problems with using QI data as a source of evidence.¹¹ First, usually, the QI process does not meet fundamental standards for the conduct or publication of research.

Second, the interventions used in QI processes often are not based on theory that predicts their success. These deficiencies in the QI process produce results that are not transferable to other organizations (generalizable) and do not measure variables or data that are needed to explain the results, designs that lack the ability to draw causal inferences, and a number of additional weaknesses (threats to internal validity).

Research and EBP processes both inform QI. When developing strategies to improve outcomes in QI initiatives, research evidence is reviewed, and an intervention or interventions are selected to im-

prove the likelihood of success for the change. Individual research studies may be used to inform QI action, as well as the recommendations from an EBP evidence review. The evidence review may contain scientific (such as experimental studies) or experiential (such as consensus or expert opinion) sources. Scientific evidence (research) provides a higher level of generalizability or application to similar settings than experiential evidence.

Evidence-based practice and QI both inform opportunities for research. As the team evaluates the QI outcomes and lessons learned in their rapid cycle



improvements, they may identify descriptive improvements in areas where there are gaps in the evidence to support the need for research to test a new intervention. Likewise, during the evidence review and synthesis phase of the EBP process, gaps in knowledge are identified. These gaps provide the opportunity to generate research questions or hypothesis and design a research study to measure the association or differences between variables.

Conclusion

Major forces drive the need for nurses to demonstrate basic and advanced competency in EBP, QI, and research. These forces include disparities and deficits in quality of care for patients, increasing evidence to support the effectiveness of interventions, national efforts to standardize performance measures, and a focus on improving the health-care work environments.

Efforts to improve work environments necessitate that we apply evidence to healthcare delivery, align payment policies with QI, and prepare the workforce.¹² Applying evidence to practice requires that we apply scientific knowledge systematically, building infrastructure to support decision making, setting goals for improvement, and developing measures to assess quality.¹² Preparing the workforce involves developing competencies in QI, EBP, informatics, patient-

centered care, and interdisciplinary collaboration.¹³

To advance quality, an interdisciplinary common vision, language, and processes are required. Research, QI, and EBP are tools to identify and describe problems, explain relationships between factors of interest, and implement interventions or strategies with a clear rationale. Nurse executives have an important role in diffusing the confusion between EBP, QI, and research; building collaborative relationships; and establishing organizational infrastructure to support continued improvements in healthcare quality.^{14,15} A precursor to leading is understanding the distinct differences, yet overlapping associations, between these 3 important activities.

REFERENCES

1. Department of Health and Human Services. *Code of Federal Regulations. Title 45. Public Welfare. Part 46: Protection of Human Subjects (45 CFR 46.102(d))*. Washington, DC: Department of Health and Human Services; 2002.
2. Committee on Assessing the System for Protecting Human Research Participants. *Responsible Research: A Systems Approach to Protecting Research Participants*. Washington, DC: The National Academies Press; 2002.
3. Bailly MA, Bottrell M, Lynn J, Jennings B. *The Ethics of Using QI Methods to Improve Health Care Quality and Safety: A Hastings Center Special Report*. Garrison, NY: The Hastings Center; 2006.
4. Newhouse RP, Pettit JC, Poe S, Rocco L. The slippery slope: differentiating between quality improvement and research. *J Nurs Adm.* 2006;36(4): 211-219.
5. Wise LC. Ethical issues surrounding quality improvement activities: a review. *J Nurs Adm.* 2007;37(6):272-278.
6. Langley GJ, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. San Francisco, CA: Jossey-Bass; 1996.
7. Brassard M, Ritter D. *The Memory Jogger: A Pocket Guide of Tools for Continuous Improvement and Effective Planning*. Salem, NH: GOAL/QPC; 1994.
8. Sackett KL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ.* 1996;312:71-72.
9. Newhouse R, Dearholt S, Poe S, Pugh LC, White K. *The Johns Hopkins Nursing Evidence-Based Practice Model*. Baltimore, MD: The Johns Hopkins Hospital, Johns Hopkins University School of Nursing; 2005.
10. Rycroft-Malone J, Seers K, Titchen A, Harvey G, Kitson A, McCormack B. What counts as evidence in evidence-based practice? *J Adv Nurs.* 2004; 47(1):81-90.
11. Shojania KG, Grimshaw JM. Evidence-based quality improvement: the state of the science. *Health Aff (Millwood)*. 2005;24(1):138-150.
12. Committee on Quality of Health Care in America, Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press; 2001.
13. Committee on the Health Professions Education Summit Board on Health Care Services. In: Greiner AC, Knebel E, eds. *Health Professions Education: A Bridge to Quality*. Washington, DC: The National Academies Press; 2003.
14. American Nurses Association. *Scope and Standards for Nurse Administrators*, 2nd ed. Washington, DC: Nursebooks; 2004.
15. American Nurses Association. *Nursing: Scope and Standards of Practice*. Washington, DC: American Nurses Association; 2004.