

## An Integrated Model of Nursing Using Evidence-Based Practice

Judith K. Payne, PhD, RN, AOCN®

From diagnosis to palliation, oncology services are being challenged at every point along the continuum of care. Although managed care has led to some positive changes, such as supporting standardization of oncology care, promoting development and use of guidelines, and, in some cases, reducing costs, the reality is that in some areas of care, quality has been diminished within a tightly managed environment. Perhaps the most detrimental cost of managed care, however, is an environment that promotes less than optimal nursing care. Current nursing shortages have contributed to the loss of nursing's presence, and that void, coupled with shrinking fiscal reserves, has added to the potential loss of continuity of care for patients with cancer (Mooney, 2001).

According to Jassak (2001), evidence-based practice is an approach to clinical decision making that can improve patient care and outcomes, thus ensuring nurses' leadership roles on healthcare teams. Evidence-based practice has created a mechanism to establish nursing as a pivotal force in contributing to healthcare decisions with the ultimate goal of improving patient outcomes. The purpose of this article is to describe a model of care implemented at a large, academic, tertiary healthcare organization in an effort to promote excellence in nursing practice. Evidence-based nursing practice provided the foundation for the standardization of oncology services with subsequent enhanced nursing care, measurable nursing outcomes, and continuity of care.

This article will describe assumptions that guided the evidence-based practice project, then explain how the practice changes were prioritized at the cancer center. Next, it will describe the implementation phase, including a review of strategies that were used to make the change successful. Finally, the evaluation process will be delineated, followed by implications for practice and future directions.

Based on priority, clinical need, and staff consensus, the staff chose three nursing interventions as initial projects: care of central lines, competency-based chemotherapy administration, and development of research-

based fatigue indicators. These projects will be described in detail.

### Project Assumptions

Planning for a significant change in the delivery of oncology services included the need for open communication between nursing staff, the director of clinical services and research, the medical director, and medical staff. The chief administrative officer was updated regularly on progress and potential barriers to changes in practice. The team made several assumptions during the planning stage prior to implementation.

- The team acknowledged that the organization's mission focuses on the core values of patient care, research, service, and education.
- Practice changes would be derived from evidence-based practice.
- The ultimate desired outcome would be to create a culture of excellence with standardized nursing care for patients with cancer.
- Advanced practice nurses (APNs) would play an important role in the implementation and success of the evidence-based practice model.

Rogers' Diffusion of Innovations Theory (Rogers, 1995) provided the broad framework for the project, along with concepts extracted from Benner's Model of Novice to Expert (Benner, 1984; Benner, Hooper-Kyriakides, & Stannard, 1999).

**Rogers:** According to this theory, diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. The actual innovation, communication channels, time, and the social systems within an organization are the four main elements of the theory. According to Rogers, an innovation presents an organization with a new alternative or new way to solve problems. The diffusion of an innovation essentially is a social process during which perceived information is communicated.

An innovation is a thing, idea, or practice perceived as new by an individual or group. The key point is the perceived newness to the

intended audience, not the length of time that has lapsed since the idea or object first was used or discovered. Evidence-based practice is not a new idea but was new to oncology practice at this institution and, thus, was an innovation.

Communication channels are the means by which information or messages are delivered from one individual to another. According to Rogers (1995), communication is more effective when two or more individuals within a group are homophilous rather than heterophilous. Homophily refers to two or more individuals who are similar in certain attributes, such as beliefs, interests, or social statuses. Heterophily is defined as the degree to which two or more individuals who interact are different in certain attributes, such as beliefs, interests, and varying educational and social statuses. The very nature of diffusion requires that at least some degree of heterophily be present between the participants because when two individuals are identical in their technical grasp of an innovation, no diffusion can occur because no new information exists to exchange (Rogers).

A practice change requires communicating new ideas and forming new attitudes and behavior. To be most effective, basing practice on evidence requires communicating the ideas and the value of the innovation to a basically homophilous group with an element of heterophilous behavior. The nursing profession is congruent with this operational definition.

Time is involved in the innovation-decision process in the sense that five steps usually occur: knowledge acquisition, persuasion of others, decision to go forward with an idea or

*Judith K. Payne, PhD, RN, AOCN®, is an assistant professor at Wayne State University in Detroit, MI, and continues part-time in her role as director of clinical services and research at the University of New Mexico Cancer Research and Treatment Center in Albuquerque.*

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project, implementation of an idea, and confirmation of an innovative idea. In this organization, practice change processes are determined and controlled by nurses rather than a larger "system," which is important because potential complications can result from changes being imposed on or demanded of a subsystem within a larger system. The change process from usual nursing care to a model based on evidence required lengthy, concentrated efforts on the "knowledge acquisition" and "persuasion of others" steps to enable participants to reach a consensus and, finally, confirmation.

Rogers (1995) defined a social system as a set of interrelated members who are working jointly to accomplish a common goal. Members of a social system may be individuals, groups, organizations, or subsystems. The social system referenced in this project was individual nurses from different oncology practice areas working collectively for quality cancer care.

**Benner:** Although concepts from Benner's Model of Novice to Expert (1984) are applicable for several reasons, the main reason is the nature of work performed within the area of practice. Oncology nurses are highly specialized, and training occurs over long periods of time. The multitude of clinical trials available within this area of practice has created a subspecialty of oncology nurses (research nurses) who also learn clinical research skills over time and, thus, were included in the project. Benner's model is ideally suited to develop and maintain nursing's presence in today's delivery of cancer care because the ability of nurses to learn new concepts is central to oncology. Oncology nursing frequently relies on mentoring as the primary way to develop the diverse skills and knowledge base that is critical to this practice area. Mentoring is one way to facilitate moving a nurse from a novice to an expert clinician in any highly complex environment that promotes excellence and incorporates evidence-based nursing care.

As mentioned previously, evidence-based practice provided the foundation for this integrated patient-care model. Cancer care continues to evolve with constantly changing treatment modalities. Basic science, clinical trials, and the Human Genome Project generate new information, so oncology and research nurses must revisit and modify standards of practice in a systematic and ongoing manner. Thus, having an infrastructure in place that could readily adjust to such changes was imperative. One of the mandates of professional nursing is to question current practice and existing guidelines and, if necessary, develop research studies to answer questions about the efficiency of current practice. Evidence-based practice is a model that guides continuous standardized care while focusing on providing continuity of care to patients with cancer.

## Planning and Implementation

Newly appointed to director of clinical services and research at the University of New Mexico Cancer Research and Treatment

Center (CRTC) in 1997, the author concluded that effective communication and team building would be critical to the success of this project. Subsequently, she created a CRTC nursing task force comprised of herself, staff nurses, and APNs. The group agreed on a semistructured infrastructure to encourage open and ongoing communication focused on goals and objectives, standards of care, and evaluation processes. The group also agreed that the concept of continuity of care was critical to the oncology practice because of compliance issues with clinical research protocol requirements, follow-up with clinical trial management, and comprehensive, multidisciplinary patient care. Requirements of external regulatory agencies, such as the Joint Commission on Accreditation of Healthcare Organizations and the American College of Surgeons, also mandate that cancer centers demonstrate an ability to deliver care by competent staff and ensure continuity of care to all patients. Thus, a model that provided an infrastructure for a systems approach was deemed necessary.

After a literature review, the team concluded that no manuscript or manual existed to provide specific guidance or direction on how to implement evidence-based practice. However, literature was available on a variety of practice changes implemented in different healthcare settings, which provided helpful information about what has worked for other organizations.

The CRTC task force initially aimed to identify key people who could become sustaining members of a core group that would evolve into expert faculty. The first step was to establish brief daily nursing rounds to create a dialogue that would facilitate open communication among nursing staff and immediately emphasize existing clinical expertise and leadership available to new staff. Thus, a culture of mentoring from novice to expert was formed from the beginning as faculty (including APNs) functioned as expert clinicians, educators, consultants, change agents, and research participants.

Efforts to collaborate with APNs from the community and professional organizations were made by networking at local and national meetings and through staff interactions. A survey of nursing, pharmacy, social services, dietary, and medical staff interests explored areas of expertise. From the survey, the task force compiled a list of individuals and their areas of expertise.

Key practice issues, important to both inpatient and outpatient areas, were identified to formulate standards of care. Initial areas that the task force determined should be evidence-based and facilitate continuity of care were chemotherapy administration (competency-based, daily weights, intake and output of all patients receiving chemotherapy), assessment and documentation, fatigue, discharge planning (case management), admission and discharge criteria, standardized chemotherapy

orders, and guidelines describing care of central lines. From this list, the CRTC task force prioritized nursing practice needs and selected three as initial projects: care of central lines, competency-based chemotherapy administration, and fatigue indicators.

Initial efforts were focused on care of central lines because nursing staff agreed that it directly affects patient care and needs to incorporate evidence-based practice. A subgroup of nurses, chaired by an APN, was formed to complete a thorough literature review. After the review, the group wrote a policy and procedure guideline to validate evidence-based practice. The finalized version was based on information from *Cancer Chemotherapy Guidelines and Recommendations for Practice* (Fishman & Mrozek-Orlowski, 1999) and pertinent articles from the *Journal of Intravenous Nursing*. Finally, expert staff conducted one-on-one competency demonstrations with individual nurses to ensure that the procedure for care of central lines was demonstrated correctly and standardized throughout the staff.

The second project selected was competency-based chemotherapy administration. This also entailed a review of existing literature, including *Cancer Chemotherapy Guidelines and Recommendations for Practice* (Fishman & Mrozek-Orlowski, 1999). Based on these sources, the team decided that new graduates and nurses without oncology and chemotherapy training would complete a one-to-two-day chemotherapy class followed by expert mentoring and verification of demonstrated competence.

Finally, a second subgroup conducted a literature review on the development of possible fatigue indicators. Physiologic variables identified in the literature, CRTC nursing research findings, and clinical observations were included in a fatigue assessment form and piloted for further development. This part of the project has resulted in the development of a patient fatigue indicator assessment form, which currently is being used for data collection.

An unanticipated benefit of the evidence-based practice project has been an increase in staff awareness of how identified practice issues can be approached more easily through the model of practice used in this project. The existing infrastructure has been used successfully to identify the issues, review the existing literature and guidelines, formulate groups, and determine whether practice changes are desirable.

## Evaluation

Outcome measurements were anticipated prior to implementing changes. For example, outcome measurements of decreased line problems, patient satisfaction, and cost were tracked in relation to care of central lines. Outcomes that demonstrated chemotherapy competency included verification of attendance at a chemotherapy course, a 95% or higher grade

on a written examination developed by experts at the institution, and each nurse's completion of five hands-on demonstrations with an expert nurse faculty member's verification of competence.

Patients complete satisfaction surveys quarterly at the organization. These surveys were tracked before implementation of evidence-based nursing practice through completion of the project, and a slight increase in patient satisfaction was recorded. Line problems decreased significantly after implementation of evidence-based practice and standardized care of central lines. Specifically, hard-to-draw lines and line occlusions were almost resolved, and the number of central line infections decreased. When patients seek healthcare services at a variety of points of care, tracking line care and arriving at relevant numbers to perform accurate statistical analyses is labor intensive and difficult. However, documentation generated from the operating and minor procedure room, which tracks all central lines placed at the CRTC, and from the multidisciplinary clinics, where line assessment is included as part of the nursing assessment, indicates a significant decrease in overall line problems.

Costs associated with central line placement and care also have decreased. This decrease might be related to increased staff awareness of central line care and also likely is linked to staff actually following the institute's newly created "Care of Central Lines" guidelines, which are based on a review of literature and existing research.

Unexpected, but welcome, benefits included an overall increase in staff satisfaction and a significant increase in staff participation in professional activities such as local Oncology Nursing Society (ONS) functions, a substantial

increase in OCN® certification, and increased attendance at the ONS Institutes of Learning and the ONS annual Congress.

Specifically, OCN® certification at the CRTC (ambulatory outpatient oncology) has increased from less than 30% in 1997 to 70% by the fall of 2001. Furthermore, one more CRTC oncology RN is scheduled to write the OCN® certification examination in September 2002.

The presence of oncology nurses in leadership roles is difficult to measure, but several areas are evident, including increased staff participation on nursing councils and in community volunteer activities, as well as increased numbers of nurses precepting new staff. Staff retention also has improved, with outpatient oncology experiencing a less than 20% vacancy rate, including an additional, recently budgeted oncology nurse position. Also of special interest: 85% of CRTC registered nurses now have a bachelor of science in nursing, compared with less than 50% in 1997. In addition, 40% of CRTC nursing staff are master's prepared, compared with less than 10% in 1997.

### Implications and Future Directions

Nursing is responsible for developing key strategies to document and track outcomes related to nursing interventions. Introducing evidence-based practice has resulted in a number of positive outcomes, including standardized nursing care for select practices, increased patient satisfaction, decreased costs, and improved staff recruitment and retention. An increase in overall nursing professionalism was observed as measured by increased OCN® certification, level of nursing staff education, and involvement in community activities.

Future plans include building on the increased awareness and interest in developing staff-initiated evidence-based practice projects. One example is in the area of central line care. A research nurse is reviewing patient-education materials (videos and written information) and developing an evidence-based project revising them in English and Spanish based on current literature reviews and input from expert staff. Such projects are encouraged and supported by the entire staff. The presence of nursing is supported strongly by the administration and the medical community and has made a significant difference in the organization's outcome measures. Most importantly, it has enhanced the culture of excellence.

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