Infusing Research into Practice To Promote Quality Care

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This article describes the Iowa Model of Research in Practice, a heuristic model used at the University of Iowa Hospitals and Clinics for infusing research into practice to improve the quality of care. The components of the model are presented with examples. The impact of the model on patient, staff, and fiscal outcomes is delineated.

Research is essential to advance the science of nursing. Application of research findings in practice is important to improve patient outcomes, enhance the professional practice environment, and contain costs of health care (Bergstrom, 1991; Downs, 1991; Smeltzer & Hinshaw, 1988; Titler, Goode, & Mathis, 1992). Unless research findings are applied in practice, however, nursing research is little more than an "ivory tower" exercise (Dracup & Brown, 1993). This article presents a heuristic model that has been effective in improving the quality of care at the University of Iowa Hospitals and Clinics (UIHC) through conduct and utilization of nursing research. The Iowa Model of Research in Practice, an outgrowth of the Quality Assurance Model Using Research (QAMUR) (Watson, Bulechek, & McCloskey, 1987), provides a pragmatic approach to infusing research into practice. (See Figure 1.)

Triggers to Improve Practice

Experiences with research at UIHC have led to the belief that several factors encourage nurses to think about their practice and to question the rationale for their actions. These factors, called triggers, arise from various sources, which are knowledge or problem focused. Triggers are a powerful impetus for stimulating changes in practice. They serve as catalysts for nurses to seek out the science of nursing and reject nursing care based on tradition. Peers soon begin to realize that the rationale, "because we've always done it that way," is no longer acceptable.

The effectiveness of using triggers to integrate research into practice is enhanced by creating an environment where inquiry and critical thinking are valued (Swanson, Albright, Steirn, Schaffner, & Leslie, 1992). Promoting innovations through data-based decision making and risk-taking behavior creates an atmosphere that supports nursing research activities (Pettengill, Knafl, Bevis, & Kirchhoff, 1988; Snyder-Halpern, 1991). The expectation that research can be appplied to practice is communicated by including research activities in job descriptions, clinical ladders, and merit programs (Pranulis & Driever, 1990; Simms, Price, & Pfoutz, 1987). It is likewise important that departmental standards and practice committees include these activities in their work.

Nurse executives at UIHC communicate the value of research by legitimizing research activities. Components of staff orientation and leadership development programs are devoted to nursing research, which reinforces the importance of participating in research and encourages staff to become involved (Kirchhoff & Titler, 1994). Clinical release time for doing research, recognition for participating in research, tuition reimbursement for the completion of research courses, and funding for attendance and/or presentation of research at local, regional, or national meetings all serve to convey to staff that research is considered important. At the unit level, a climate of scientific inquiry is fostered by encouraging staff to obtain research consultation, use research-based practice protocols, and arrange release time from patient care to participate in research activities such as attending journal clubs, collecting data, writing research-based practice protocols, preparing research abstracts, and participating in divisional research utilization committees.

The organizational structure that facilitates conduct and use of research by staff nurses at UIHC is the Department of Nursing Research Committee and seven Divisional Nursing Research Committees, one in each of the clinical nursing divisions. The departmental committee reviews research proposals, coordinates departmental research activities, disseminates research information to divisional

committees, provides leadership for strategic planning regarding research, and presents and publishes papers on various clinical research topics. Members of the departmental committee also act as consultants to divisional and unit-based research committees upon request. Divisional committees, composed of nurse managers, clinical nurse specialists, and staff nurses, identify practice issues that can be addressed through the conduct and/or use of nursing research. Work of divisional committees results in division-based practice changes, such as critique of research, development of research-based practice protocols, coordination of the change with appropriate committees, development of strategies for implementing the change, and evaluation of the change on patient outcomes. Many research utilization projects begin at the unit or divisional level and are then evaluated for applicability throughout the department. For example, use of saline flushes for peripheral heparin locks was initiated by the otolaryngology nursing division prior to being implemented department wide.

Divisional research projects are shared at meetings of the Professional Nursing Council, which provides a forum for discussing the applicability of the project to other units and divisions in the department. Our success in infusing research into practice is due, in part, to acting on the clinical issues that staff nurses identify at the division or unit level prior to making departmental changes. The research-based changes are made by staff at the bedside, with support of nurse administrators, rather than by top-level administration.

Problem-Focused Triggers: Problem-focused triggers include clinical problems repeatedly encountered in practice, risk management and quality improvement (QI) data, and total quality management (TQM) programs. Diarrhea in tube-fed patients is an example of a recurrent clinical problem encountered in practice. Nurses frustrated with this problem sought experts in this area and located a research base in the literature to address this practice. Likewise, lost revenue associated with high use of speciality beds resulted in formation of a TQM team to examine research on this topic and develop guidelines for appropriate use of specialty beds. Increased falls detected by a comprehensive risk management program heightened the interest of the staff, resulting in a review of research for interventions to decrease the incidence of falls. Similarly, QI data that demonstrated a high incidence of low body temperatures of newborns admitted to the nursery were an impetus to use research findings in developing corrective actions.

Once a practice problem is identified, individuals or groups accept the challenge of resolving the problem using a research base. QI committees are key in promoting research in practice by facilitating information flow to the appropriate staff or committees in the organization. For example, QI data indicated that only about 40% of vascular surgery patients surveyed, many elderly, maintained normal bowel function while hospitalized; about 35% of the charts that were reviewed indicated that patients' bowels were impacted. This problem was forwarded to a multidisciplinary committee composed of a geriatric clinical nurse specialist, dietary personnel, staff nurses, and a physician and resulted in the development and implementation of a research-based bowel protocol for this population of patients. Follow-up QI data showed that 95% of patients surveyed maintained normal bowel function while hospitalized, and 95% of the charts audited revealed that patients were free from impaction. In addition, patient requests for laxatives and enemas decreased from 59% to 0% (Hall, Carstens, Rakel, Swanson, & Davidson, in press). Similarly, informing members of the Critical Care Standards Committee that 50% of the patients had a mean pain intensity of 7.5 on a 0 (no pain) to 10 (worst possible pain) scale provided the basis for implementing research-based pain management protocols.

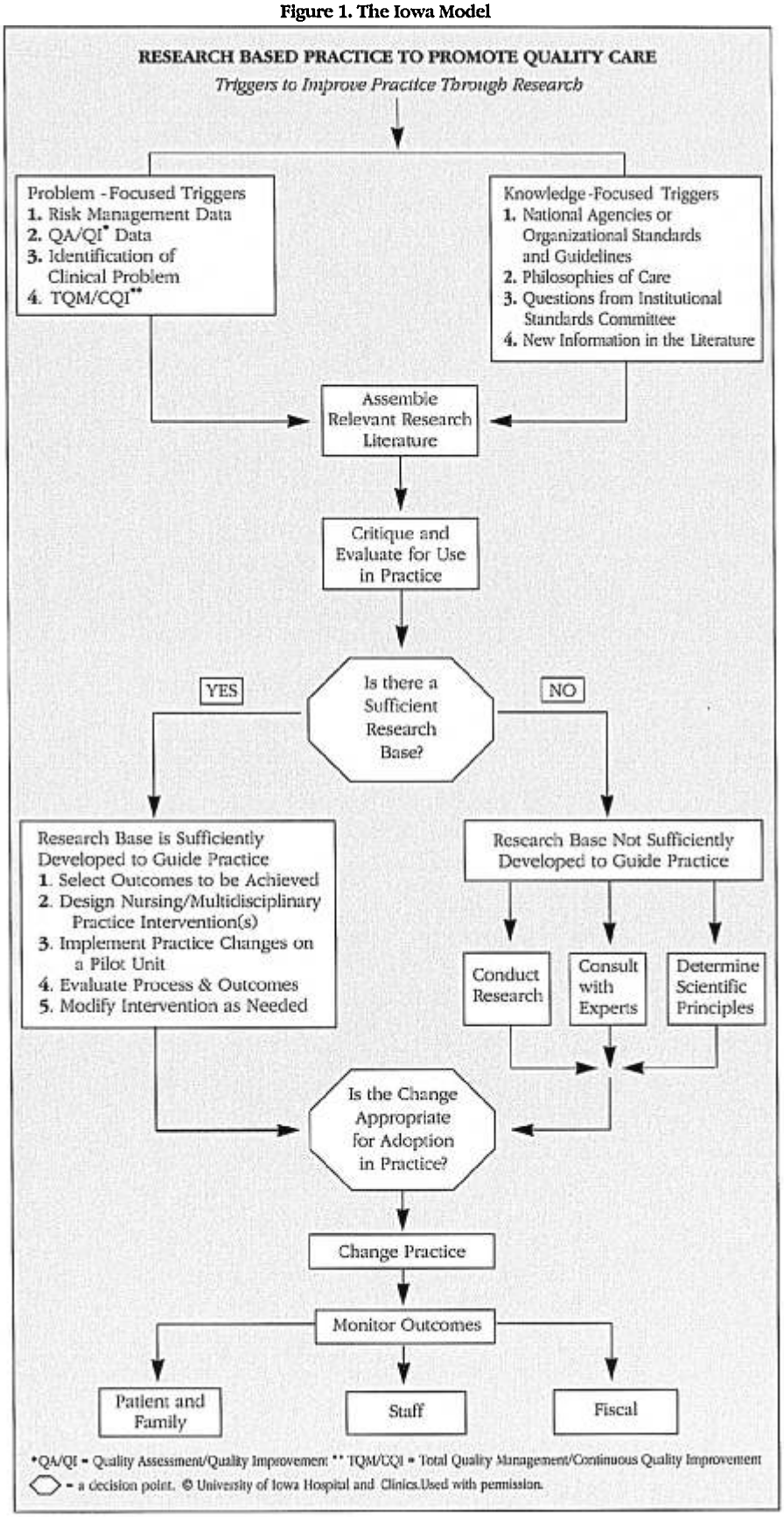
Knowledge-Focused Triggers: Knowledge-focused triggers stem from new or freshly recognized information. Important sources are standards and practice guidelines available from national agencies and organizations. National guidelines stimulate use of research findings, in part by presenting research-based knowledge in a practice-oriented form (American Hospital Association, 1992; Field & Lohr, 1990). For example, the Agency for Health Care Policy and Research (AHCPR) reviews available research on selected topics and makes recommendations for clinical practice in areas such as pain, urinary incontinence, skin care, and depression. The unique form in which AHCPR guidelines are published and distributed has great potential for stimulating their use by bedside caregivers because research findings are synthesized for health care providers. This format addresses some of the barriers to research utilization identified by staff, such as "the nurse is unaware of the research" and "statistical analyses are not understandable" (Funk, Champagne, Wiese, & Tornquist, 1991).

AHCPR guidelines are routinely ordered and distributed to the staff at UIHC. The appropriate standards and practice committees then review the guidelines for inclusion in practice standards. In addition, we host or co-host local and regional educational programs that focus on AHCPR guidelines as they are released. *Outcome Standards for Nursing Care of the Critically Ill,* published by the American Association of Critical-Care Nurses (Kuhn, 1990), and cardiopulmonary resuscitation standards, published by the American Heart Association, are additional examples of clinical practice guidelines set forth by professional organizations and used by our staff.

Other sources of knowledge-focused triggers include philosophies of care, recent research publications, and nurse experts within the organization. For example, the "Family Centered Care" philosophy, espoused by the multidisciplinary Association for the Care of Children's Health, is an example of a philosophy based on a combination of research findings and value statements. This philosophy, adopted by our Pediatric Nursing Division, is reflected in standards, included in orientation of new staff, and used in the development of practice guidelines and teaching materials for families.

Newly published research findings, integrative research reviews, and meta-analyses stimulate staff to question current practices and find additional studies on the same topic. After reading a study on the amount of discard volume needed to obtain accurate coagulation profiles from hep-

Figure 1. The Iowa Model



arinized arterial lines (Templin, Shively, & Riley, 1993), one of our nurses provided the leadership for her peers to review similar studies and recommend a change in practice. They sought consultation from a nurse scientist to assist with interpretation and synthesis of research findings. This scholarly inquiry by caregivers has resulted in a meta-analysis and an integrative research review (Laxson, 1993; Laxson & Titler, 1994). Similarly, a meta-analysis (Hoffman, Weber, Samsa, & Rutala, 1992) on types of dressings for peripheral IVs provided the trigger for staff in the Medical Nursing Division to look more closely at IV site-care practices.

New research findings can also stimulate interest in replicating a study using a larger sample size or a different patient population. The findings of a meta-analysis on use of saline to flush peripheral intravenous locks in adults (Goode et al., 1991) motivated staff to address this issue in children and neonates by conducting two studies using these patient populations.

We have also found that those nurses who are committed to innovation and participate in national review bodies or agencies are key individuals for generating knowledge-focused triggers in our organization. These nurses often ask if our clinical protocols, policies, and procedures are in line with current knowledge. They serve as catalysts of scientific inquiry and as role models for other staff in making research-based changes in practice. Members of trend-setting agencies who present their innovations and new knowledge at conferences are also instrumental in stimulating nurses in other agencies to question their practices and make changes accordingly.

Decision Point: Is the Research Base Sufficient for Practice?

After problem-focused and/or knowledge-focused triggers have heightened nurses' awareness of the need to improve practice, one must determine if a research base exists that can guide the practice change. To make this decision, the relevant research literature is collected, critiqued, and evaluated for applicability to the practice setting.

Nurses can retrieve this literature in a time-efficient fashion by using computerized databases (e.g., CINAHL,

MEDLINE, Healthnet) and other resources available in their settings. Nurses working in a university setting may request that undergraduate nursing students who are required to participate in a research project as part of their course work assist with retrieving articles from the library. Nurses in community settings can acquire assistance from their hospital librarians in finding and copying articles or arrange for nursing students from a nearby nursing program to assist with literature retrieval.

The search for relevant literature is followed by a critique of the studies, meta-analyses, practice guidelines, and integrative research reviews to determine applicability to practice, with special consideration for the population and setting to which the findings will be applied. This process of critique and evaluation is usually undertaken by a group of nurses and/or multidisciplinary health care providers with a mutual interest in the topic. In our setting, the committee usually consists of staff nurses, nurse managers, and clinical nurse specialists who consult with nurse scientists when necessary.

After the research literature is critiqued and evaluated, the individual or group responsible for the change decides whether or not a change in practice is warranted. Practice changes should not be based on a few studies with small sample sizes, if there is a disparity among studies with regard to research findings, if the research designs are questionable, if characteristics of the samples differ from the population of patients to which the research will be applied, or if use of findings in practice significantly increases the risk of adverse patient outcomes (Horsley, Crane, Crabtree, & Wood, 1983). When there is a sufficient and appropriate research base, the individual or group proceeds with changing the practice so that it is congruent with that suggested by the research. When the research base is not sufficiently developed to guide practice, conduct of research, consultation with experts, and/or application of scientific principles are considered.

Research Base is Sufficient: Several steps are necessary to translate research findings into practice. First, it is important to clarify the expected outcomes of the change and to document the baseline or current status of projected outcomes. If a knowledge-focused trigger initiated a change in acute pain management practices, it is important that current practices for managing pain be systematically documented and their effectiveness on patient outcomes delineated. When the change in practice is initiated from a problem-focused trigger, it is more likely that the nature of the problem has already been documented through quality improvement activities. However, these data are reviewed for completeness, and, if necessary, additional baseline information is collected for future evaluations.

As part of a research utilization project on pain management in critical care at UIHC, nurses were surveyed regarding their current knowledge and attitudes regarding pain management. In addition, a chart audit was conducted to determine the type and frequency of pain assessments and interventions used, and patients were interviewed to determine the nature and intensity of their pain. These quality assessment activities revealed an opportunity for improved pain assessment and management, and provided a baseline regarding nurses' knowledge and attitudes toward pain management (Greiner et al., 1993).

Second, the nature of the practice change determines whether the intervention is developed from a multidisciplinary or independent nursing perspective. For example, research-based pain management interventions include ensuring that the type and amount of analgesics prescribed and administered are appropriate. Therefore, implementation of practice changes for pain management must include physicians, pharmacists, nurses, and other providers who treat patients in pain. The nature of the practice change will also guide structure and process components in the organization that need to be revised, such as practice policies, standards, procedures, or documentation forms.

The third component of the actual change in practice is implementation of the research-based practice on a pilot unit. Piloting the change in one unit rather than instituting it on several units simultaneously facilitates testing the feasibility of the change, monitoring the effects on a small group of patients to minimize possible adverse occurrences, revising the research-based interventions if needed, and evaluating the process of the change at the unit level. Factors considered when implementing the change include education of staff, garnering support from nurse managers and informal leaders, and communicating the change to the entire staff through traveling posters and bedside educational rounds.

We have found that implementing changes in practice is easier when staff nurses are included early in the change process and enlisted as advocates for change in their units. Including staff nurses and other health care workers in the critique and evaluation of the research, development of the research-based practice protocols, and selection of outcomes strengthens their knowledge base regarding the practice change. Thus, they are able to respond to challenges from their colleagues with factual, research-based information.

Finally, it is important to evaluate the change in practice from both a process and outcome perspective prior to implementing it throughout the organization or in other units. Implementation methods may need modification based on feedback from staff and others affected by the change. Additionally, the research-based practice may need to be refined and outcome measures adjusted. For example, the implementation of research-based pain management practices was evaluated with regard to impact on pain intensity, improvement in nurses' knowledge of pain management, and the educational processes used in making the change. This evaluative information was helpful in refining the practice protocols and methods used for implementation prior to instituting the change in other critical care units.

Research Base is Not Sufficient: When there is an insufficient research base to change practice, consideration is given to conducting a study using an adequate sample size to answer the research question. When we decided to change our procedure for flushing peripheral heparin locks, there was an insufficient research base to change practice in the pediatric population. Therefore, pediatric nurses initiated a randomized double-blind study, in col-

laboration with the pharmacy, to test the efficacy of saline to maintain patency of peripheral locks in children over 28 days old. The results of this study (Kleiber, Hanrahan, Fagan, & Zittergruen, 1993), in conjunction with previous research, demonstrated that saline flushes were efficacious in maintaining patency. Subsequently, the change to saline flushes was implemented in the pediatric areas of the hospital. Another study, using neonates as subjects, is currently underway to determine if saline flushes can be used in peripheral locks of neonates.

Clinical research can be time consuming and expensive. Developing grant proposals to support the research is also time consuming. The time lag between identification of the practice problem and final data analysis can be several months to years. When practice issues have to be addressed in a more immediate fashion, nurses at UIHC seek expert consultation from colleagues currently investigating the problem, and/or use scientific principles to guide their practice.

In examining the literature on ways to minimize urinary tract infections and dysuria following removal of Foley catheters, we found little research regarding selection of the correct size of Foley catheter to use for urinary catheterization. Principles of infection control, however, support using the smallest size catheter possible to prevent trauma to the meatus while preventing leakage around the catheter. When nurses in the pediatric intensive care unit changed their practice to be in line with these scientific principles, the problem of dysuria following Foley catheter removal in the pediatric cardiac surgery population was reduced.

Similarly, in reviewing the literature on checking for placement of nasogastric/nasointestinal tubes, we found little research regarding the correct placement of tubes for continuous enteral feedings (i.e., stomach or duodenum). Therefore, we consulted Norma Metheny, a nurse scientist currently doing research in this area. She served as an expert consultant by presenting her research to our staff at the first annual Research Utilization Conference. She also reviewed our practice protocols and gave us feedback on our evaluative data.

Decision Point: Is the Change Appropriate for Adoption in Practice?

A second critical decision point is determining if practice changes should be made throughout the organization. Factors we consider at UIHC in adopting the practice change include costs and cost savings, impact on quality of care, increasing or decreasing patient risk of iatrogenic injury, competency of staff to carry out the research-based practice after they are educated, and support of nurse administrators in making the practice change.

Who makes the final decision about the practice change depends on both the nature of the change and the type of governance in the organization. In a self-governance structure, the information is presented to staff and consensus is reached about the practice change. Staff at all levels of the organization have a voice in the nature of the change and participate in implementing it. In a more autocratic organization, such decisions are likely to be made by nurse administrators with little or no input from unit-level staff. We have found that implementation of research-based practices is more difficult to achieve in an autocratic environment.

Changing Practice

Changing practice successfully requires using a process of planned change (Goode & Bulechek, 1992). Resistance to change may stem from being misinformed about the research base, perceived interference with individualized practice patterns, and perceived threat to one's autonomy. Therefore, communication with all involved is critical. Providing a rationale for the change in practice and for the research base that supports the change is often helpful in influencing the behavior of the resistors in the group.

Empowering staff with ownership of the change, including the tools and knowledge to make this change successful, is essential. Empowerment of staff comes about by having staff at the unit level make key decisions — including how best to introduce the change and how to educate others. Nurses responsible for implementing the change in each unit must know the research base or scientific rationale for the change in practice and be viewed by their peers as credible leaders. When research-based pain management protocols were instituted in critical care, staff decided that most education would be done through traveling posters and the education of a core group of staff in each unit, who in turn would educate their peers. Each unit also decided where pain assessments were to be documented on the flow sheet. The improvements in pain documentation and pain intensity ratings of patients, demonstrated through QI monitoring, were posted in each unit, and staff members from the units participated in presenting this project at local, regional, and national meetings (Greiner et al., 1993). This gave staff a sense of pride and ownership in the change, leading to increased self-confidence in making research-based practice changes in the future.

Administrative support for making the practice change is also critical to success (Clark & Hall, 1990). Such support is evidenced by recognizing staff who participate in making practice changes, assisting staff by trouble shooting problems, and rewarding those staff members who serve as advocates for change through positive performance evaluations.

Monitoring Outcomes

Practice changes affect patients, staff, and consumption of resources. Effects of practice changes on patient outcomes are monitored by staff in the unit for at least two consecutive quarters after implementation. This assists in maintaining the practice change and facilitates feedback to the staff. For example, a nursing-unit-based quality improvement committee identified the problem of inadequate sedation of children for noninvasive studies such as MRI and CT scans. After reviewing the literature, the committee requested that the medical staff try a new sedation protocol involving use of intranasal midazolam. A result of the new protocol was that a higher percentage of children were able to successfully complete their tests as scheduled, which decreased frustration for their families. A substantial cost savings

was also realized because each cancelled CT and MRI study costs the hospital about $600. Nursing staff on the unit were enthusiastic about piloting the new protocol and achieved a sense of accomplishment and mastery when the results of the project were favorable.

Attention is also focused on monitoring the change from a process perspective to ensure that the research-based change in practice is carried out as intended. It was found through QI monitoring that some nurses had reverted to using heparin rather than saline flushes because of perceived increased resistance at the peripheral lock when using saline. Further outcome monitoring and feedback of results to staff were used to demonstrate that an increased incidence of phlebitis or premature clotting of peripheral intravenous locks did not occur with the use of saline.

Monitoring the effects of change on staff can be very important. For example, moving from restricted to flexible visitation in adult critical care units may increase the level of patient and family satisfaction with ICU care, but also has an adverse effect on some nurses or physicians. It is important to know which components of the change they find bothersome, to modify the changes when appropriate, and to minimize the effects on those who may try to subtly sabotage the change. Providing staff with outcome data demonstrating improved patient satisfaction with nursing care subsequent to the practice change is one strategy to encourage delivery of family-centered critical care practice. If the change is consistently resisted by any members of the staff, it is important to involve them early in the next practice change, listen to their concerns about the current change, and clarify misconceptions they may have.

It is also important to monitor fiscal outcomes (Goode et al., 1991). Use of a preconnected closed urinary drainage system has been shown to decrease the incidence of nosocomial urinary tract infections (NUTI). Although the preconnected system is more expensive than the separately packaged components that are assembled at the bedside, a cost benefit analysis shows that the cost of this change in products is defrayed by the prevention of just one NUTI (V. Steelman, personal communication, May 1993).

Outcomes of practice changes at UIHC are reported not only to staff involved in the practice change but also to administrators responsible for cost and quality issues. The reports itemize practice changes and the process involved, the improvements in quality of care, the cost savings, and the impact of the change on staff.

This heuristic model of promoting quality care through incorporation of research into the practice setting has been used for several years in a 900-bed tertiary care hospital. We have found that this approach to research in the clinical arena challenges nurses to think critically about their practice, to become active participants in the conduct and use of research, and to view research as an important part of nursing practice that promotes quality care.

Use of this model has resulted in over 30 research utilization projects, 15 studies initiated by nurses in the practice arena, and numerous collaborative studies with faculty in the College of Nursing. Three research utilization projects have been funded by the American Association of Critical Care Nurses (AACN), and several studies have received local, regional, and national funding. Additional benefits realized include publication of manuscripts, numerous local, regional, and national presentations by staff, and several national and international awards, such as the 1992 completed research award from *Pediatric Nursing*, the 1993 award-winning research utilization abstract from AACN, and the 1993 Sigma Theta Tau Regional and International Research Utilization Award. These accomplishments have enriched the professional practice environment for staff and have cultivated enthusiasm for nursing research in the practice arena. **NR**

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References

American Hospital Association. (1992). *CPG strategies. Putting guidelines into practice.* Chicago: Author.

Bergstrom, N. (1991). Scientific base for nursing practice is goal of ANA. *Council Nurse Researchers, 18* (2), 1, 7.

Clark, P. C., & Hall, H. S. (1990). Innovations probability chart: A valuable tool for change. *Nursing Management, 21* (8), 128V–128X.

Downs, F. S. (1991). How to make a difference. *Nursing Research, 40,* 323.

Dracup, K., & Brown, C. W. (1993). Creating change in the ICU: The battle with tradition, tenure, and tenacity. *American Journal of Critical Care, 2* (1), 1–2.

Field, M. J., & Lohr, K. N. (1990). *Clinical practice guidelines.* Washington, DC: National Academy Press.

Funk, S. G., Champagne, M. T., Wiese, R. A., & Tornquist, E. M. (1991). Barriers to using research findings in practice: The clinician's perspective. *Applied Nursing Research, 4,* 90–95.

Goode, C. J., & Bulechek, G. M. (1992). Research utilization: An organizational process. *Journal of Nursing Care Quarterly* (Special Report), 27–35.

Goode, C. J., Titler, M. G., Rakel, B. A., Ones, D. Kleiber, C., Small,

S., & TRIOLO, P. (1991). A meta-analysis of the effects of heparin flush and saline flush: Cost and quality implications. *Nursing Research, 40,* 324–330.

GREINER, J., ALPEN, M., MOSS, L., OLSON, K., MOSER, L., JONES, G., MEGIVERN, K., HAUER, M., & PHILLIPS, C. (1993). Research utilization in pain management. *American Journal of Critical Care, 2,* 261.

HALL, G. H., CARSTENS, M., RAKEL, B., SWANSON, E., & DAVIDSON, A. (in press). Managing constipation using a research-based protcol. *Medsurg Nursing.*

HOFFMAN, K. K., WEBER, D. J., SAMSA, G. P., & RUTALA, W. A. (1992). Transparent polyurethane film as an intravenous catheter dressing. *Journal of American Medical Association, 267,* 2072–2076.

HORSLEY, J. A., CRANE, J., CRABTREE, M. K., & WOOD, D. J. (1983). *Using research to improve nursing practice: A guide (CURN project).* Philadelphia: Grune & Stratton.

KIRCHHOFF, K. & TITLER, M. (1994). Responsibility of nurse executives in conducting and using research in the practice setting. In R. Spitzer-Lehman (Ed.), *Nursing Management Desk Reference* (pp. 606–628). Philadelphia: Saunders.

KLEIBER, C., HANRAHAN, K., FAGAN, C. A., & ZITTERGRUEN, M. (1993). Heparin versus saline for peripheral IV locks in children. *Pediatric Nursing, 19* (4), 405–409.

KUHN, R. C. (1990). *Outcome standards for nursing care of the critically ill.* Laguna Niguel, CA: American Association of Critical Care Nurses.

LAXSON, C. (1993). Adequate discard volumes from arterial lines for accurate PT and aPTT: A meta-analysis of existing literature. Unpublished master's thesis, University of Iowa, College of Nursing, Iowa City, IO.

LAXSON, C., & TITLER, M. G. (1994). Drawing coagulation studies from arterial lines: An integrative literature review. *American Journal of Critical Care, 3,* 16–24.

PETTENGILL, M. M., KNAFL, K. A., BEVIS, M. E., & KIRCHHOFF, K. T. (1988). Nursing research in midwestern hospitals. *Western Journal of Nursing Research, 10,* 705–717.

PRANULIS, M. F., & DRIEVER, M. J. (1990). A conceptual framework for analyzing influences on research productivity in clinical settings. *Western Journal of Nursing Research, 12,* 563–565.

SIMMS, L. M., PRICE, S. A., & PFOUTZ, S. K. (1987). Creating the research climate: A key responsibility for nurse executives. *Nursing Economics, 5,* 174–178.

SMELTZER, C. H., & HINSHAW, A. S. (1988). Research: Clinical integration for excellent patient care. *Nursing Management, 19* (1), 38–41.

SNYDER-HALPERN, R. (1991). Attributes of service-based nursing research programs useful for decision-making. *Nursing Administration Quarterly, 15* (4), 82–84.

SWANSON, J. M., ALBRIGHT, J., STEIRN, C., SCHAFFNER, A., & LESLIE, C. (1992). Program efforts for creating a research environment in a clinical setting. *Western Journal of Nursing Research, 14,* 241–245.

TEMPLIN, K., SHIVELY, M., & RILEY, J. (1993). Accuracy of drawing coagulation samples from heparinized arterial lines. *American Journal of Critical Care, 2,* 88–95.

TITLER, M. G., GOODE, C. J., & MATHIS, S. (1992). What happens to nursing research in times of economic cut-backs. *Series on Nursing Administration. IV,* 324–330.

WATSON, C. A., BULECHEK, G. M., & MCCLOSKEY, J. C. (1987). QAMUR: A quality assurance model using research. *Journal of Nursing Quality Assurance, 2* (1), 21–27.

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