Research connections

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This column focuses on research utilization in future issues. In this article, the coeditors of this column review the differences between the conduct of research and research utilization, describe the decision-making process for research utilization, and discuss the Agency for Health Care Policy and Research Clinical Practice Guidelines. Key words: *practice guidelines, research utilization*

FOCUS ON RESEARCH UTILIZATION

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THE COEDITORS of "Research Connections" will be expanding the column to include research utilization. In the past, one to three studies were reviewed and critiqued in each column. In future issues the coeditors or authors will synthesize a body of knowledge and judge its readiness for practice. The coeditors believe this new approach will help the clinician evaluate a body of knowledge for practice recommendations or decisions. This new format will begin with Volume 9, issue 4 (Cardiovascular Assessment, Part I: Acute Care).

Clinicians must understand the process of research utilization and know available resources for putting findings into practice. Therefore, the purposes of this article are to review the differences between research and research utilization, describe the decision-making process for research utilization, and discuss the Agency for Health Care Policy and Research (AHCPR) Clinical Practice Guidelines.

Is it research or research utilization?

The conduct of research is a different process from research utilization. Although all nurses have a responsibility to use research findings in practice (research utilization), not all nurses are expected to conduct research.

The conduct of research is the use of systematic inquiry to generate new knowledge. The box "The Research Process"

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shows the basic steps or phases used in quantitative research. An example is also shown. Research utilization is the use of research findings to change or validate practice. Several models of research utilization have been published.[1,2] The steps to research utilization typically include those shown in the box "Research Utilization"[3,4]; again, an example is described.

Similarities in both research and research utilization are found in steps 1 and 2 of both processes; formulating the problem and the literature review. However, the processes differ after step 2. Clinicians who are investigating the unknown are conducting research; clinicians who use research findings to change practice are incorporating research utilization.

The Research Process

Steps of the research process

1. Formulate the problem
2. Review the literature
3. Develop a theoretical framework
4. Plan the study design
5. Obtain approval for use of human subjects
6. Collect data
7. Analyze data and interpret results
8. Communicate findings

Example

Nurses wanted to change the practice of drawing coagulation tests from heparinized arterial lines. The standard practice was to draw the blood samples via venipuncture. They reviewed research that showed that these samples could be reliably drawn from heparinized lines. At first, the nurses thought there was enough research documentation to make a change in practice (ie, how much discard blood volume had to be drawn from the arterial line before the sample was collected). However, after critical evaluation of the research, they were not able to make a specific practice recommendation because of the variation in reported results. Therefore, they decided to conduct their own study. The investigators developed a quasiexperimental, repeated-measures design to determine the accuracy of these tests.[5]

Judging the research: Is it ready to put into practice?

An important skill for research utilization is judging the readiness of research findings for practice. This requires the ability to critique individual research reports as well as synthesize multiple studies.

Critiquing studies

Duffy[6] developed a useful checklist for critiquing single quantitative research reports and judging the scientific merit of a study. Staff nurses find this checklist helpful, especially when they are first learning to evaluate research reports. The major items listed are the problem, literature review, methods (subjects, instruments, design), data analysis, discussion, form, and style.

Tanner[9] goes beyond the critique of a research report and gives criteria for clinical decision making in an effort to fill the gap between knowledge development and knowledge utilization. Criteria include clinical relevance, scientific merit, and patient risk– and cost–benefit issues.

Meta-analysis

One method for evaluating several studies or a body of literature is meta-analysis. Meta-analysis is a quantitative approach to literature review. There are several techniques for meta-analysis. These techniques have been widely used in the social sciences for integrating and synthesizing the literature and are becoming more frequent in nursing.

There are several meta-analyses that focus on nursing interventions. One example

Research Utilization

Steps for research utilization

1. Identify the clinical problem
2. Assess research relevant to the problem
3. Design an innovation based on research
4. Conduct a clinical trial
4. Evaluate innovation and modify as needed; decide to adopt, alter, or reject innovation
6. Develop ways to extend and sustain innovative practice

Example

Nurses were discussing the practice of flushing intermittent intravenous devices (heparin/saline locks). They did an informal survey in their local community to determine the standard of practice. A few hospitals still had a flushing protocol that used heparin. However, a substantial body of research indicated that saline flushes are as effective as heparin in terms of patency, prevention of phlebitis, and duration of the devices. Two meta-analyses regarding heparin and saline flushes corroborated these findings.[6,7] Therefore, the nurses decided that they had enough evidence to change to saline flushes. To facilitate the change, a multisite research utilization project was initiated to help hospitals change their practice to saline flushes. The nurses designed a saline flush protocol based on the research, conducted a clinical trial of the protocol on selected units, and evaluated the change from heparin to saline. The next step is to decide whether to adopt the saline flush protocol for all units in each hospital.

is the work of Devine[10] on the effects of psychoeducational care on pain, distress, and the recovery of adult surgical patients. She reviewed 191 studies done between 1963 and 1989 and extended earlier meta-analyses on this topic and found beneficial effects on recovery, pain, and psychological distress.

Massey and Loomis[11] had graduate nursing students use meta-analysis to evaluate the readiness of findings for practice in three areas:

1. Can diabetic patients be taught to perform self-monitoring of blood glucose at home?
2. What are the physiologic and psychological benefits of exercise to the cardiovascular patient?
3. What is the impact of self-regulatory interventions on hypertensive patients?

Overall effect size was calculated to evaluate the impact of each intervention. Clinical judgment related to scientific merit and risk–benefit was used in conjunction with the meta-analysis to make decisions about using the findings in practice.

DECISION MAKING IN RESEARCH UTILIZATION

Environmental and institutional factors

How do institutional variables affect this decision-making process? From an institutional perspective, Stetler's[12] refinement of the Stetler/Marram Model provides a framework for the application of research findings.

The updated Stetler/Marram Model[12] for the application of research findings to practice provides the clinician with an overview of environmental and institutional variables that may affect knowledge or research utilization. Variables include the characteristics of the clinical practice setting, time constraints to investigate the problem, organizational expectations, the availability and accessibility of specific research findings, resource requirements associated with change, the degree of organizational decentralization, staff empower-

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ment, the competency of the individual clinicians, and situational need.

The ability of the clinician to interpret and evaluate research findings may serve as a barrier to effective research and knowledge utilization.[12] Liehr and Houston[13] provided research utilization guidelines for practicing nurses. Fit, flow, feasibility, and focused observation are major concepts addressed.

Decision making regarding the use of research findings usually results in one of four outcomes:

1. use of available findings,
2. consider use of available findings,
3. delay use of available findings, or
4. rejection of available findings.[12]

Use of available findings

This outcome or choice infers that there is sufficient knowledge to utilize findings immediately. A plan to evaluate a proposed change in policy or practice should accompany this choice. The decision to use research findings immediately should be based on the strength and nature of available research findings. Implementation of change based on research findings may be mandatory throughout the institution or prescribed at the unit level and may involve a specific policy or procedure. Mandatory institutional change may be necessary if research results suggest that current practice is ineffective or places the patient at risk. Institutional and environmental variables should be considered before choosing this option. Mandated changes may require a concerted effort to change staff beliefs and attitudes through use of change theory.[12]

Consider use of available findings

This choice infers that additional information is needed before actual use of findings is implemented. It should be selected when only a limited number of study results are available. Input from other disciplines is anticipated.[12]

Delay use of available findings

This choice infers that more research in the area is needed. The research findings are minimal, excessive conflict exists, or too much risk is associated with the proposed change. No change should be made until findings are replicated.[12]

Rejection of available findings

This choice infers that lack of strong research findings, increased risk associated with the change, financial cost, or strong current practice mandate that the research information not be used.[12]

Decision-making example: visitation in critical care units

An example of a current issue, open visitation in adult critical care units, demonstrates the decision-making process using both available research data and institutional and environmental variables.

Since Molter's[14] original study, the needs of families of critically ill patients have been described by more than two dozen nurse researchers in 15 different states. Leske's[15,16] meta-analysis of 10 years of family needs research suggests that unrestricted visitation is a high-priority family need. Age, gender, relationship to the patient, and previous critical care experience of family members have little influence on the importance of visitation to family members. Visitation policies and practices are related more

to hospital and nursing variables than to family or patient needs or desires.

The visitation policies and practices of hospitals caring for critically ill adults is a contemporary issue in critical care nursing practice and the subject of much discussion and debate.[17] Visitation in many critical care units remains restricted (Fitzsimmons L, Carlson B, Thomas L, et al. Visitation policies of hospitals caring for critically ill adults. Unpublished research, 1994.)[18–23] and visitation policies and practices vary widely.[24] Fitzsimmons and colleagues (unpublished research, 1994) conducted a survey to describe the visitation policies of hospitals caring for critically ill adults. Preliminary survey results demonstrated that about 50% of the 28 hospitals caring for critically ill patients in a large, populous southern California county permit 24-hour visitation in their adult critical care units. Visitation restrictions remain common, despite an abundance of research suggesting that families need and want unrestricted access to their members during critical illness.

What environmental and institutional variables affect the use of family needs research to alter visitation policies and practices of hospitals caring for critically ill adults? Using Stetler's[12] model, one would consider a multitude of environmental and institutional variables before using family needs research to liberalize critical care visitation policies. Answers to the following questions may guide the clinician in decision making:

- Is the institution's philosophy congruent with meeting holistic patient needs?
- What are the characteristics of the critical care unit, including architectural design and waiting room facilities?
- Are volunteers, social workers, or other personnel available to assist with unrestricted visitation?
- What financial resources (eg, signs, printed information materials) are required to institute a change in critical care visitation policy?
- What is the appropriate mechanism for initiating a visitation policy change?
- What are the potential effects on hospital-wide visiting practices?
- What are nurses' and physicians' attitudes and beliefs regarding visitation?

Nurses' attitudes and beliefs toward visiting in adult critical care settings affect successful implementation of open or unrestricted visitation. Kirchhoff et al[25] found that nurses believe that the consequences of visiting are more positive for patients psychologically than physiologically, that families become exhausted with unlimited visitation, and that unlimited visiting has negative effects on the functioning of the critical care unit. These findings suggest that attempts to liberalize visitation without nursing staff involvement and commitment to change may be unsuccessful. An analysis of staff beliefs and attitudes toward visitation should be conducted before implementing change in visitation practices.

In summary, ample research results suggest that more liberalized visitation policies are needed to meet the needs of families of critically ill adults. Researchers have begun investigating the visitation preferences of patients in critical care units.[23,26] These data will provide a wealth of information in the future that will support the individualization of visitation based on family and patient preferences.

The critical care practitioner who opts to use this abundance of research to liberalize visitation must concurrently analyze the system in which change is proposed, involve staff in all phases of change, use knowledge of change theory to guide

change, and recognize that change is a stressor to many involved in that change. The deeply rooted values and attitudes that influence visiting practices and policies must be identified and modified. In essence, staff must be sensitized to their own feelings regarding visiting practices. Evaluation of the effects of a visitation change on patients, families, and staff must be planned and implemented.

PUTTING RESEARCH INTO PRACTICE: AHCPR-SUPPORTED CLINICAL PRACTICE GUIDELINES

In 1989 Congress determined that the AHCPR should promote improvement in clinical practice and patient outcomes. Specifically, the AHCPR was to facilitate the development of clinical practice guidelines that reflect current scientific knowledge of practices and expert clinical judgment. As defined by AHCPR, these guidelines are systematically developed statements to help practitioners and health care consumers make decisions about appropriate care for specific health conditions.[27]

Each guideline is based on an extensive review of the literature and expert judgment about the best ways to prevent, diagnose, and treat or manage a specific clinical condition. Topics for guideline development are based on the availability and adequacy of scientific evidence on which to develop the guideline; the number of individuals affected by a clinical condition; amenability of the condition to prevention; potential for reducing clinically significant variations in preventing, diagnosing, treating, and managing the condition; needs of Medicare and Medicaid populations; and the cost of the condition to all payors, including patients. The choice of topics is most often limited by the availability of adequate scientific evidence.[28]

The first AHCPR-sponsored guideline,[29] was released in March 1992. Since then, 11 clinical practice guidelines have been published, and several are under review (see box, "AHCPR Clinical Practice Guidelines").

The AHCPR sponsors multidisciplinary panels of health care experts and consumers to develop clinical practice guidelines for specific clinical conditions. Formation of new panels is announced in the *Federal Register*. Nominations for panel members are sought from a broad range of professional, specialty, and health care consumer

AHCPR Clinical Practice Guidelines

1. *Acute Pain Management: Operative or Medical Procedures and Trauma* (AHCPR publication no. 92-0032)
2. *Urinary Incontinence in Adults* (AHCPR publication no. 92-0038)
3. *Pressure Ulcers in Adults: Prediction and Prevention* (AHCPR publication no. 92-0047)
4. *Cataracts in Adults: Management of Functional Impairment* (AHCPR publication no. 93-0542)
5. *Depression in Primary Care* (AHCPR publication no. 93-0550)
6. *Sickle Cell Disease: Comprehensive Screening and Management in Newborns and Infants* (AHCPR publication no. 93-0563)
7. *Evaluation and Management of Early HIV Infection* (AHCPR publication no. 94-0572)
8. *Benign Prostatic Hyperplasia: Diagnosis and Treatment* (AHCPR publication no. 94-0582)
9. *Management of Cancer Pain* (AHCPR publication no. 94-0592)
10. *Unstable Angina: Diagnosis and Management* (AHCPR publication no. 94-0602)
11. *Heart Failure: Evaluation and Care of Patients with Left Systolic Dysfunction* (AHCPR publication no. 94-0612)

organizations. The selection of panel members takes into consideration the need for representation of a wide range of disciplines from nonacademic and academic settings (eg, primary care physicians and specialists, nurses, physical therapists, psychologists) and health care consumers. The number of panel members ranges from 9 to 15, with additional experts consulted as needed.[27]

Each expert panel spends a year or more developing the guidelines. The National Library of Medicine conducts a comprehensive literature search and obtains from 5,000 to 100,000 abstracts of relevant articles that address the topic. The panel members evaluate the abstracts and select full papers for review. They prepare evidence tables that summarize all relevant data, risks, and harms. Aggregate data are statistically analyzed if appropriate. Harm and benefit as well as health policy analyses are conducted. During the process, each panel holds open forums to solicit comments on the guideline topics. On completion of a final draft of the guideline, the draft is circulated widely to clinicians, researchers, and consumers for peer review. In addition, clinicians are asked to test the guideline with patients in their practice. After peer and pilot review, revisions are made, and the final version is submitted to the AHCPR. The guideline is then updated to incorporate new literature and new products as needed.[30]

The AHCPR widely publicizes the guideline documents and disseminates them to the appropriate audiences by direct mail and by inviting mail and telephone inquires to its clearinghouse as follows:

AHCPR Publications Clearinghouse
P.O. Box 8547
Silver Spring, MD 20907
(800) 358–9295
(weekdays, 9 AM to 5 PM Eastern time)

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Nurses are engaged in both the conduct of research and research utilization. All nurses, whether they are researchers, clinicians, or both, have a responsibility to use research findings in practice. Each nurse should ask, "How am I using research findings in practice?" and "How am I helping others to use findings?"

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