

## Academic-Practice Partnership Award: The University of Iowa Nursing Collaboratory

The University of Iowa College of Nursing (CON) and the University of Iowa Hospitals and Clinics (UIHC) Department of Nursing (DON) have had a formal affiliation since the mid 1980's. In 1986, a CON faculty member developed the first Nursing Research Office at UIHC. In 1989 this collaboration was formalized with a memorandum of understanding (MOU) and continues to this day. Highlights of this research collaboration include submission of all research grants developed by CON faculty and UIHC staff nurses through the CON Office of Nursing Research and Scholarship (ONRS), sharing of grant indirect funds that are returned to the CON on co-funded grants, participation by the CON and DON leadership on joint research committees, co-development of research interest groups, identification of collaborative projects, submission of jointly-led grants, co-authorship on publications, development of the Iowa Model of Evidence Based Practice (EBP) (see publication) and institution of an annual, nationally recognized EBP conference, now in its 21st year.

In 1996, the Chief Nursing Officer of UIHC and the Dean of the CON led an initiative to expand the formal collaboration described above. The *University of Iowa Nursing Collaboratory* (UINC) created a strategic partnership for improving health, through which the UIHC and the CON collaborate in the delivery of innovative nursing services, develop evidence-based nursing practice, conduct nursing research, promote informatics initiatives, disseminate new knowledge and provide education regarding leadership and clinical excellence in nursing practice. This partnership, operationalized through a formal, organizational structure, promotes collaboration in four areas: 1) research, 2) education, 3) practice and 4) informatics. The UINC is composed of Collaborative Leadership Groups (CLG) for each of the four areas. For example, the Research CLG is led by the CON Associate Dean for Research and the UIHC Director of Nursing Research and EBP, and the Education CLG is led by the CON Associate Dean for Academic Affairs and the UIHC Director of Nursing Education.

The UINC has been in place since 1999. Although the last update of the formal agreement was in effect until 2010, all aspects of the UINC have continued. Accomplishments in the Research area are described above. Within the area of Education, multiple, innovative collaborations have been developed. The Nursing Clinical Education Center (NCEC), opened in 2006, is a state of the art education simulation lab, located in UIHC but jointly funded, managed and utilized by the CON and DON for student and staff nursing education. The nurse residency program at UIHC is co-led by UIHC leadership and CON faculty. This program is CCNE accredited for 2013-18. With increasing challenges providing clinical practicums for undergraduate students due to faculty shortages, UIHC and CON worked together to pilot two dedicated education units (DEUs) in early 2013. In the DEUs, staff nurses with at least a BSN act as clinical instructors of the students on the unit with support from CON faculty members. Within Informatics, UIHC incorporated standardized nursing languages into the medical record (EPIC). The chosen languages included Nursing Interventions Classification (NIC) and Nursing Outcomes Classification (NOC), developed by teams of nurses, many from UIHC and across Iowa, and led by CON faculty. Practice initiatives have focused on integrating nurse practitioner faculty and students into appropriate practice sites at UIHC.

In the past five years, multiple leadership, organizational and policy changes have occurred at both institutions. Critical to the success of this ongoing collaboration is the need to update the overall UINC Agreement and the purpose and goals of each area. Meetings of the entire leadership group are underway. The Research CLG area updated their MOU in 2013. Within each of the areas, current and proposed collaborative projects identified include:

- Research: a) Identify additional pilot funding for joint UIHC-CON research grants, b) Continue to develop Scholarly Interest Groups (SIG) (Implementation, Writing, Pain, Genetics) with UIHC staff and CON membership, c) Continue to support collaborative research projects and publications.
- Education: a) DEU: Analyze outcome data for initial two DEU's, expand to specialty DEUs in 2014-15, implement options to successfully recruit and retain clinical instructors, offer more efficient orientation to DEU's, submit experience for presentations and publication. b) Clinical Simulation in NCEC: Develop certified simulation educators, standardize education for instructors who use simulation, re-evaluate policies and procedures for the use of simulation, expand the use of simulation for student and staff education, implement opportunities that use the NCEC for external revenue-generating programs or services.
- Practice: a) Develop an Advanced Practice Residency Program, b) Facilitate collaborations between CON Faculty Practice and UIHC practice units
- Informatics: a) Update nursing database for EPIC with most recent NIC and NOC content, b) Develop algorithm for accessing EPIC data warehouse for nursing research.

**What do you and your partner need to know about you and your organization?**

The faculty and staff of the University of Iowa College of Nursing (CON) and the University of Iowa Hospitals and Clinics (UIHC) Department of Nursing (DON) have had a formal partnership for a number of years and have extensive knowledge of each other's organizations. This long-standing collaboration, known as the University of Iowa Nursing Collaboratory (UINC), continues with ongoing updates of our goals, activities, and outcome measures.

**What is the right partnership activity for you and your partner?**

Activities within this partnership include those that enhance practice, teaching, research and informatics.

**What documents about your organization might be helpful to bring to the meeting?**

Previous MOU's and Agreements have been provided to all participants, along with the CON's current strategic plan and Annual Reports for the past few years and the DON strategic plan and recent Magnet review materials (which was positive).

**What do you have to offer?**

The CON and the DON provide joint leadership in the four identified areas, practice, teaching, research and informatics. For example, activities related to research and evidence based practice are led by the CON Associate Dean for Research and the CON Director of Nursing Research and Evidence-Based Practice.

**What is your vision for this partnership and does your partner share this vision?**

The University of Iowa Nurse Collaboratory (UINC) have a shared vision. The vision from our MOU's and Agreements includes:

“The University of Iowa Nursing Collaboratory (UINC) was created to provide an infrastructure for the CON and the DON to work together in the generation, dissemination, and application of knowledge for the improvement of practice and patient outcomes. The UINC is a strategic partnership, operationalized through an organizational structure, to promote collaboration in the areas of education, practice, informatics and research. The UINC provides a supportive environment for collaboration between the CON and DON to:

- Deliver effective health care services,
- Promote entrepreneurship,
- Enhance the education of all levels of professional nursing especially via opportunities afforded by the Nursing Clinical Education Center (NCEC), and
- Generate and apply scientific and professional knowledge (through support of research and evidence based practice).”

**Who else needs to be involved in both organizations? Is top leadership involved?**

Top leadership is involved from both organizations, including the Dean and the Associate Deans for Research and Academic Affairs in the CON and the Chief Nursing Officer and the Directors of Practice, Education and Research in the DON.

**What is the business case for the partnership?**

The business plan for the collaborative includes the mutual support of the Nursing Clinical Education Center, joint support of grants to support research and EBP projects, and recent partnerships for dual appointments and funding of staff in the designated education units.

**Do you have clarity on goals and vision?**

Yes, the faculty and staff of the CON and DON are aligned in their goals and vision, with the overall goal to develop and promote innovations in education, practice, informatics, and research.

**What are the details and timeline of the initiative?**

The details are included in the MOUs and Agreement. Examples of future collaborative projects identified include:

- Research: a) Identify additional pilot funding for joint UIHC-CON research grants; b) Continue to develop Scholarly Interest Groups (SIG) (Implementation, Writing, Pain, Genetics) with UIHC staff and CON membership; c) Continue to support collaborative research projects and publications.
- Education: a) DEU: Analyze outcome data for initial two DEU's, expand to specialty DEUs in 2014-15, implement options to successfully recruit and retain clinical instructors, offer more efficient orientation to DEU's, submit experience for presentations and publication; b) Clinical Simulation in NCEC: Develop a certified simulation educators, standardize education for instructors who use simulation, re-evaluate policies and procedures for the use of simulation, expand the use of simulation for student and staff education, implement opportunities to bring external revenue-generating programs or services into the NCEC; c) Develop research study to formally evaluate outcomes of nurse residency program.
- Practice: a) Develop an Advanced Practice Residency Program, and launch it in 2014; b) Facilitate collaborations between CON Faculty Practice and UIHC practice units
- Informatics: a) Update nursing database for Epic with most recent NIC and NOC content; b) Develop algorithm for accessing EPIC data warehouse for nursing research.

**Whom can we call for expert consultation if need be?**

The University of Iowa has a number of expert consultants in all areas that are available for consultation if needed.

**What are the expected outcomes of the activity?**

As this collaboration moves forward, multiple outcomes are expected and described above under each of the four imitative areas. In addition, multiple presentations and publications will result from these collaborations.

**Is this the right time for this partnership?**

Yes. This partnership was first formalized in 1999. However, the last agreement expired in 2010, although the intent and structure described in that agreement has continued. In the past five years, multiple leadership, organizational and policy changes have occurred at both institutions. Critical to the success of this ongoing collaboration is the ongoing updating of the UINC Agreement and the purpose and goals of each area. Meetings of the entire leadership group provide partnered vision and proposed activities within each of the four areas of collaboration: research, practice, education and informatics.

**What are the issues that will facilitate or impede the development of the partnership?**

The primary factor that will facilitate the ongoing functioning of the UINC is the strong history of this partnership. Each of the four areas has had impressive successes and the co-leaders are committed to continuing the collaborations. There really aren't any impediments to the ongoing success of the UINC.

**What is the time commitment for the partners?**

The UINC has developed so that the time that each leader and participant invests in the UINC is an integral part of their position in their primary unit. For example, when the Associate Dean for

Research and CON faculty partner with staff from the DON on research, this is what is expected of all parties.

**Whose time will be required?**

The leadership of both the CON and DON and the faculty and staff of both organizations provide time, or effort, for the success of the UINC. The UINC is composed of Collaborative Leadership Groups (CLG) for each of the four areas (practice, teaching, research and informatics) and each CLG has co-leaders, one from the CON and one from the DON. For example, the Research CLG is co-led by the CON Associate Dean of Research and the DON Director of Research and EBP.

**When will the meetings be scheduled?**

The CLGs along with the CON Dean and the UIHC CNO meet quarterly to review the goals, activities, and outcome measures within each of the four areas and make changes as needed in these goals, activities, and outcome measures.

**What space is required for the activity?**

No separate space is needed for the UINC. Faculty at the CON and staff at UIHC move fluidly between the CON and UIHC as needed to implement the activities within each of the four areas (practice, teaching, research and informatics). One of the unique projects within the UINC is the Nursing Clinical Education Center (NCEC), a state of the art education simulation lab, located in UIHC but jointly funded, managed and utilized by the CON and DON for student and staff nursing education.

**What equipment or supplies are needed?**

There is no equipment needed that is specific to the UINC.

**What money is needed?**

The CON and DON have jointly funded the UINC. The joint funding has supported personnel, space and operational expenses.

**Where are we meeting?**

The quarterly meetings of the CLGs take place in a meeting room on campus, convenient for all involved.

**Where will we present outcomes?**

A number of publications have resulted from the UINC. Attached are two examples, the original article describing the UINC and the most recent article on the Iowa Model of EBP. Other collaborative projects have been presented and published in multiple venues over the life of the UINC.

**What are the policies or regulatory issues that will impede or facilitate development of the partnership on both sides?**

Policies within each organization will facilitate the ongoing partnership. To date, there have been no policies that have impeded this successful collaboration. Leadership has integrated regulatory policies from certification and licensing bodies into all joint activities.

**How will the partnership be funded?**

The CON and DON have shared all expenses. For example, the NCEC, the education simulation lab, is located in UIHC but jointly funded, managed and utilized by the CON and DON. The DON provides the space, upkeep, utilities, infrastructure and information technology support. The

CON provides the equipment and disposable supplies. Both the CON and DON fund staff in the NCEC.

**What are the constraints of both partners?**

The CON must meet the expectations of the Provost and overall University of Iowa administration, including the Regents of the state of Iowa. The DON must meet the expectations of the UIHC administrators. These are not always in alignment.

**What history do the partners have with each other and each others' institutions?**

As seen in this application, the CON and DON have an extensive history together.

## Academic-Practice Partnerships Partnership Expectation and Outcome Metrics Worksheet

**NOTE: The University of Iowa Nursing Collaboratory is currently developing the next phase of our ongoing partnership. The following goals, activities, and outcomes have been identified.**

Partnership Goals	Activities	Outcomes
<p>Develop collaborative activities that support the development of knowledge (research) and the dissemination of knowledge (EBP) <b>(Research CLG)</b></p>	<p>The CON and DON Research Collaborative Leadership Group (CLG) will continue to partner on the development of:</p> <ul style="list-style-type: none"> <li>• Writing groups that include both CON faculty and UIHC nurses</li> <li>• Scholarly Interest Groups (SIGS) in Implementation Science, Pain Research, Writing, and Genetics that provide journal clubs, critique written projects and develop joint projects</li> <li>• Collaborative research grant proposals that include co-PIs from the UIHC nursing staff and CON faculty</li> <li>• Evidence Based Practice (EBP) and research internship projects for UIHC staff and DNP students</li> <li>• Lists of CON faculty and UIHC nurses that review grants and journal manuscripts and who would agree to review grants or manuscripts of graduate students, junior faculty and staff nurses</li> <li>• Presentations and publications co-authored by CON faculty and UIHC</li> <li>• An update of the Iowa Model of Evidence Based Practice</li> </ul>	<p>The Research CLG will identify and track over time the following outcomes, with the goal of increasing the numbers for each outcome:</p> <ul style="list-style-type: none"> <li>• Number of participants in the Writing groups and number of papers submitted</li> <li>• Number of participants in the SIGs and the number of projects developed (e.g. Pain SIG completing assessment of CON undergrad program and national Pain standards)</li> <li>• Number of internal and external grants submitted with co-PIs from the CON and UIHC (this past year 6 internal and 2 external grants)</li> <li>• Number of reviews of grants and articles based on the newly developed list of experienced reviewers</li> <li>• Number of presentations and publications with both CON faculty and UIHC staff. This has increased in 2013-2014 over previous years.</li> </ul> <p>In addition, a final outcome will be an updated <i>Iowa Model of EBP</i>, to be completed in 2014</p>

<p>Develop collaborative activities that support the educational mission of both the CON and UIHC <b>(Education CLG)</b></p>	<p>The CON and DON Educational Collaborative Leadership Group (CLG) will continue to partner on the development of:</p> <ul style="list-style-type: none"> <li>• Designated Educational Units (DEU), specifically by <ul style="list-style-type: none"> <li>○ Analyzing the evaluation of satisfaction of CON students and UIHC clinical nurse instructors from two DEU's over time</li> <li>○ Expanding to specialty DEUs in 2014-15</li> <li>○ Implementing procedures to successfully recruit and retain clinical instructors</li> <li>○ Offering more efficient orientation to DEU's</li> <li>○ Submitting experiences with DEUs for presentations and publication</li> </ul> </li>   <li>• Clinical Simulation in the co-funded and co-managed Nursing Clinical Education Center (NCEC), by <ul style="list-style-type: none"> <li>○ Developing certified simulation educators,</li> <li>○ Standardizing education for instructors who use simulation,</li> <li>○ Evaluating policies and procedures for the use of simulation, and updating as needed</li> <li>○ Expanding the use of simulation for CON students and UIHC staff education,</li> <li>○ Implementing opportunities to bring external revenue-generating programs or services into the NCEC.</li> <li>○ Developing research projects focused on: 1) best practices for incorporating simulation into the education of health care providers and 2) incorporation of simulation as part of the research design for intervention studies</li> </ul> </li> </ul>	<p>The Education CLG will identify and track over time the following outcomes:</p> <ul style="list-style-type: none"> <li>• Satisfaction by both students and staff on the DEUs with the orientation and overall experience</li> <li>• Scores on clinical evaluations of BSN students from DEUs comparable or higher than students not on DEUs</li> <li>• At least two specialty DEUs functioning by 2015</li> <li>• At least one co-authored presentation and one publication on the Iowa DEU model in 2014-2015</li>   <li>• Increase in number of clinical instructors with expertise in simulation</li> <li>• Increase in number of presentations and publications co-led by CON faculty and UIHC nurses on simulation</li> <li>• At least one external revenue source identified in 2014, with at least one more identified in 2015</li> <li>• At least one more research grant submitted in 2014 that incorporates simulation and is co-led by a CON Faculty member and a UIHC nurse (currently have one)</li> </ul>

	<ul style="list-style-type: none"> <li>• Nurse residency program <ul style="list-style-type: none"> <li>○ Supporting dissemination of residency projects at professional meetings and in publications</li> <li>○ Developing a study to evaluate outcomes of residency programs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• At least two presentations of residency projects at national meetings</li> <li>• At least one publication of a residency project</li> </ul>
Develop collaborative activities that support the practice mission of both the CON and UIHC <b>(Practice CLG)</b>	<p>The CON and DON Practice Collaborative Leadership Group (CLG) will continue to partner on the development of:</p> <ul style="list-style-type: none"> <li>• An Advanced Practice Nurse Residency Program, to be launched in 2014, that involves shared: <ul style="list-style-type: none"> <li>○ development of the curricula/program</li> <li>○ clarification of contributions, both personnel and financial, from the CON and the DON</li> <li>○ development of an evaluation plan with defined outcomes</li> </ul> </li> <li>• Practice collaborations between CON Faculty Practice and UIHC practice units.</li> </ul>	<p>The Practice CLG will identify and track over time the following outcomes:</p> <ul style="list-style-type: none"> <li>• Implementation of the Iowa Advanced Practice Nurse Residency Program to begin in 2014-2015</li> <li>• Number of students enrolled in the program</li> <li>• Number of practice networks that sponsor a resident</li> <li>• Practice positions obtained by residents, including those employed by UIHC and the CON Faculty Practice</li> <li>• Number of practice collaborations between UIHC and the CON Faculty Practice (e.g. new faculty member with appointment in Palliative Care at UIHC)</li> </ul>
Develop collaborative activities that support the informatics mission of both the CON and UIHC <b>(Informatics CLG)</b>	<p>The CON and DON Informatics Collaborative Leadership Group (CLG) will continue to partner on the development of:</p> <ul style="list-style-type: none"> <li>• The nursing database within EPIC at UIHC <ul style="list-style-type: none"> <li>○ updating the standardized nursing language within the Electronic Health Record with the most recent NANDA, NIC and NOC content</li> </ul> </li> <li>• An algorithm for accessing the EPIC data warehouse for nursing research, EBP and QI</li> </ul>	<p>The Informatics CLG will identify and track over time the following outcomes:</p> <ul style="list-style-type: none"> <li>• Annual review of EPIC database for most current use of NANDA, NIC and NOC content</li> <li>• Development of an <i>Assessing EPIC for Nursing Research</i> algorithm (e.g Star Maker has been instituted, first projects include a study of pain in the PICU)</li> <li>• Number of research, EBP and QI projects completed by CON faculty and</li> </ul>

		<p>DON staff using EPIC database and the <i>Accessing EPIC for Nursing Research</i> algorithm</p> <ul style="list-style-type: none"><li>• Annual review and updating of the algorithm</li></ul>
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Academic-Practice Partnership Award:  
The University of Iowa Nursing Collaboratory (UINC)

*Memorandums of Understanding and Description of Formal Partnership*

Joint Sponsorship of the Office of Nursing Research, 1989

Structure and Functions of the UINC, 2007

CON and UIHC DON Nursing Clinical Education Center, 2012

Research Academic Clinical Collaboration, 2013

CON and UIHC Dedicated Educational Units

# The University of Iowa

Iowa City, Iowa 52242

OFFICE FOR NURSING RESEARCH DEVELOPMENT AND UTILIZATION  
FAX: 319/335-9990

The University of Iowa College of Nursing 407 NB  
319/335-7133

and

The University of Iowa Hospitals & Clinics Department of Nursing T100 GH  
319/356-2267

Director, Toni Tripp Reimer, Ph.D., R.N., F.A.A.N.

Associate Director, Kathleen C. Buckwalter, Ph.D., R.N.

COPY



1847

TO: Eldean Borg  
Gordon Strayer

FROM: Toni Tripp Reimer

DATE: June 30, 1989

RE: Announcement of Joint Sponsorship

As of July 1, 1989, the Office for Nursing Research will be jointly sponsored by the College of Nursing and The University of Iowa Hospitals and Clinics Department of Nursing. A news release is attached to this memo.

We would appreciate your coordination of this announcement. If you have any questions, please feel free to contact either myself or Dr. Buckwalter, at the numbers shown above.

# The University of Iowa

Iowa City, Iowa 52242

OFFICE FOR NURSING RESEARCH DEVELOPMENT AND UTILIZATION

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Associate Director, Kathleen C. Buckwaller, Ph.D., R.N.



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\*\* For release July 1, 1989 \*\*

The University of Iowa Hospitals and Clinics Department of Nursing and The University of Iowa College of Nursing announce the joint sponsorship of the Office for Nursing Research Development and Utilization. The purpose of the Office is to facilitate nursing research to enhance the quality of nursing care. To this end, the Office fosters research collaboration and offers direct consultation on research design and proposal development, statistical analyses and computer usage; examination of research opportunities and funding sources; preparation of data for publication; and assistance with manuscript preparation.

The Office has a director, an associate director, and support staff. Dr. Toni Tripp Reimer is the Director. As Associate Director, Dr. Kathleen Coen Buckwaller will work with The University of Iowa Hospitals and Clinics Clinical Directors of Nursing and nursing staff to delineate nursing problems appropriate for research, methods to investigate those problems, and approaches to utilize research findings in practice and education. Focused staff development programs in research will also be offered.

## Contractual Agreement

This is an agreement effective July 1, 1989 to July 1, 1990, between the University of Iowa College of Nursing and the UIHC Department of Nursing.

### I. Purpose of Agreement:

This is a mutual agreement between the College and the UIHC Department of Nursing to jointly sponsor the Office of Nursing Research Development and Utilization. For the duration of this agreement, the above office will be known as:

University of Iowa Hospitals and Clinics  
Department of Nursing  
and  
University of Iowa College of Nursing  
Office of Nursing Research Development and Utilization

The basic purpose of this agreement is to establish cooperative relationships and to outline the responsibilities of the two parties in their efforts to promote nursing research and utilization in both agencies. This arrangement will be renewable annually upon agreement of both parties.

### II. Responsibilities of the College of Nursing:

It is agreed that:

- A. The Director, Office of Nursing Research and Development and Utilization, will have overall responsibility for the implementation of this agreement under the joint oversight of the Dean of the College of Nursing and the UIHC Director of Nursing.
- B. The services of the Research Office available to faculty (e.g., research consultation, technical assistance, and grants processing) will be available to UIHC Department of Nursing nurses.
- C. The computer consultation and short courses (6/semester) will be offered to UIHC Department of Nursing nurses.
- D. The UIHC Department of Nursing nurses will be invited to be participating members of established and new Collegiate research interest groups (e.g., Geriatric Research Interest Group).
- E. A 50% faculty position (fiscal year appointment) will be dedicated to coordinate the day to day nursing research development in the UIHC Department of Nursing.

This individual will:

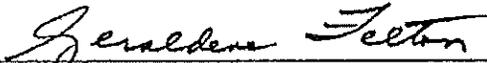
- A. Be a doctorally prepared faculty member at the University of Iowa College of Nursing with expertise in nursing research, mutually agreed on by the college and the UIHC Department of Nursing.

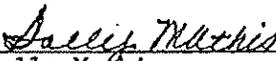
- B. Be designated Associate Director of the Office of Nursing Research Development and Utilization.
- C. Articulate with the Department of Nursing through the Chair of the Research Review Committee who will provide administrative guidance and support.
- D. Dedicate an average of 20 hours/week to this assignment (with fluctuations based on UIHC Department of Nursing need, grant deadlines, and other faculty responsibilities).
- E. Be available for ongoing consultation with the UIHC Department of Nursing staff.
- F. Work collaboratively with Department of Nursing staff to foster and develop research initiatives.
- G. Provide the following specific services to UIHC Department of Nursing staff:
  - 1. Direction in the development of nursing research proposals, including methodology, sampling techniques, and statistical analysis.
  - 2. Assistance in securing intramural and extramural grant support to test interventions and to develop research based protocols.
  - 3. Guidance in developing manuscripts for publication which flow from research projects.
  - 4. Assistance in the utilization of on campus research support services.
  - 5. Education regarding the research process and research utilization including:
    - a) one continuing education program for credit on the research process;
    - b) focused inservice programming (e.g., grantsmanship, research facilitation, collaborative models, informed consent, data collection, development of research questions from clinical problems);
    - c) a regular research column in the Iowa Nurse.

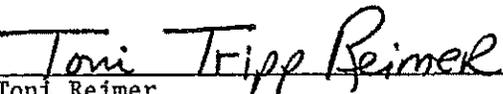
III. Responsibilities of the UIHC Department of Nursing:

It is agreed that:

- A. The UIHC Department of Nursing will provide the Associate Director of the Office of Nursing Research Development and Utilization with an office, secretarial assistance, a modest set of reference books and journals, office supplies, and copying service.
- B. The UIHC Department of Nursing will reimburse the Office of Nursing Research Development and Utilization in the projected amount of \$31,570 plus 50% of benefits for the fiscal year 1989-90.
- C. In addition, \$1,000 will be placed in the same "M" account for travel.

  
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Geraldine Felton  
Dean, College of Nursing

  
\_\_\_\_\_  
Sally Mathis  
Associate Director, UIHC  
and Director, Department of Nursing

  
\_\_\_\_\_  
Toni Reimer  
Director, Office of Nursing  
Research Development and Utilization

## **Agreement: Structure and Functions of the University of Iowa Nursing Collaborative (UINC)**

### **Mission**

To create a strategic partnership for improving the health of the public, through which the University of Iowa Hospitals and Clinics Department of Nursing Services and Patient Care (DON) and the University of Iowa College of Nursing (CON) can collaborate in the delivery of innovative nursing services, develop evidence-based nursing practice, conduct nursing research, promote informatics initiatives, disseminate new knowledge and provide education for future leadership and clinical excellence in nursing practice.

### **Vision**

The University of Iowa Nursing Collaborative (UINC) is a strategic partnership between the CON and the DON. This partnership, operationalized through an organizational structure, promotes collaboration in the areas of education, practice, informatics and research. The UINC provides a supportive environment for collaboration between the CON and DON to:

- Deliver effective health care services
- Promote care transformation
- Enhance the education of all levels of professional nursing especially via opportunities afforded by the Nursing Clinical Education Center
- Generate and apply scientific and professional knowledge
- Develop business strategies for products and services as indicated or as opportunities arise.

### **Objectives**

The objectives of UINC are to:

- Enhance the capacity of the nursing profession at the University of Iowa to be accountable to public and regulatory demand for services in the areas of education, practice, informatics and research
- Decrease redundancy and increase efficiency of services in education, practice, informatics, and research
- Implement nursing initiatives that promote the effectiveness and safety of nursing care
- Develop and promote innovations in education, practice, informatics, and research; and
- Speak with one voice when communicating with internal and external publics

### **Structure**

The UINC is an organizational structure linking four components of the CON and the DON. The unique mission of each of the two organizations partnering in the UINC is sustained and enhanced in this effort. The organizational structure of the UINC is illustrated in Figure 1.

The UINC is composed of four Collaborative Leadership Groups (CLG) that coordinate expertise and resources to produce excellence in education, practice, informatics, and research. The memberships of the Collaborative Leadership Groups are listed in Figure 2. Each CLG is responsible for developing its own purpose and functions.

The Dean of the CON and the Associate Director, Chief Nursing Officer, UIHC, Director of the DON will serve as Senior Associates to each other. The Dean of the CON serves as Associate Director for Clinical Practice in the DON; the Associate Director, Chief Nursing Officer; UIHC Director of DON serves as Associate Dean for Clinical Practice in the CON. Final decision-making regarding program development, allocation of resources and strategic planning for the UINC will rest equally with the Associate Director, Chief Nursing Officer, UIHC, Director of DON, and the Dean of the CON. Senior CON and DON leadership officers accountable for each of the four Collaborative Leadership Groups of the UINC – education, practice, informatics, and research – make up the Joint Staff of the UINC.

In addition to the CLG, the area chairs for the College of Nursing will serve as members. This includes the following areas of study: Parent Child Family, Adult and Gerontology, and Systems and Practice.

### **Management Responsibilities**

Management responsibilities within the University of Iowa Nursing Collaborative are defined as follows:

- The management responsibilities of the Dean of the CON are identified in Attachment I
- The management responsibilities of the Associate Director, Chief Nursing Officer, UIHC, for the DON are identified in Attachment II

### **Financial Structure-**

All revenue generating and funding activities will be agreed upon by the UINC in advance. In the event that the UINC is dissolved, UINC funds will be divided equally among the UIHC and CON. See attachment III, IV, V and VI.

### **Term of Agreement**

The terms of this agreement will be in effect for a three year period, from July 1, 2007 through June 30, 2010.

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Linda Q. Everett, RN, PhD, FAAN  
Associate Director, Chief Nursing Officer  
University of Iowa Hospitals and Clinics  
Department of Nursing Services and Patient Care

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Martha Craft-Rosenberg, RN, PhD, FAAN  
Interim Dean  
University of Iowa  
College of Nursing

Figure 1

The University of Iowa Nursing Collaborative (UINC)

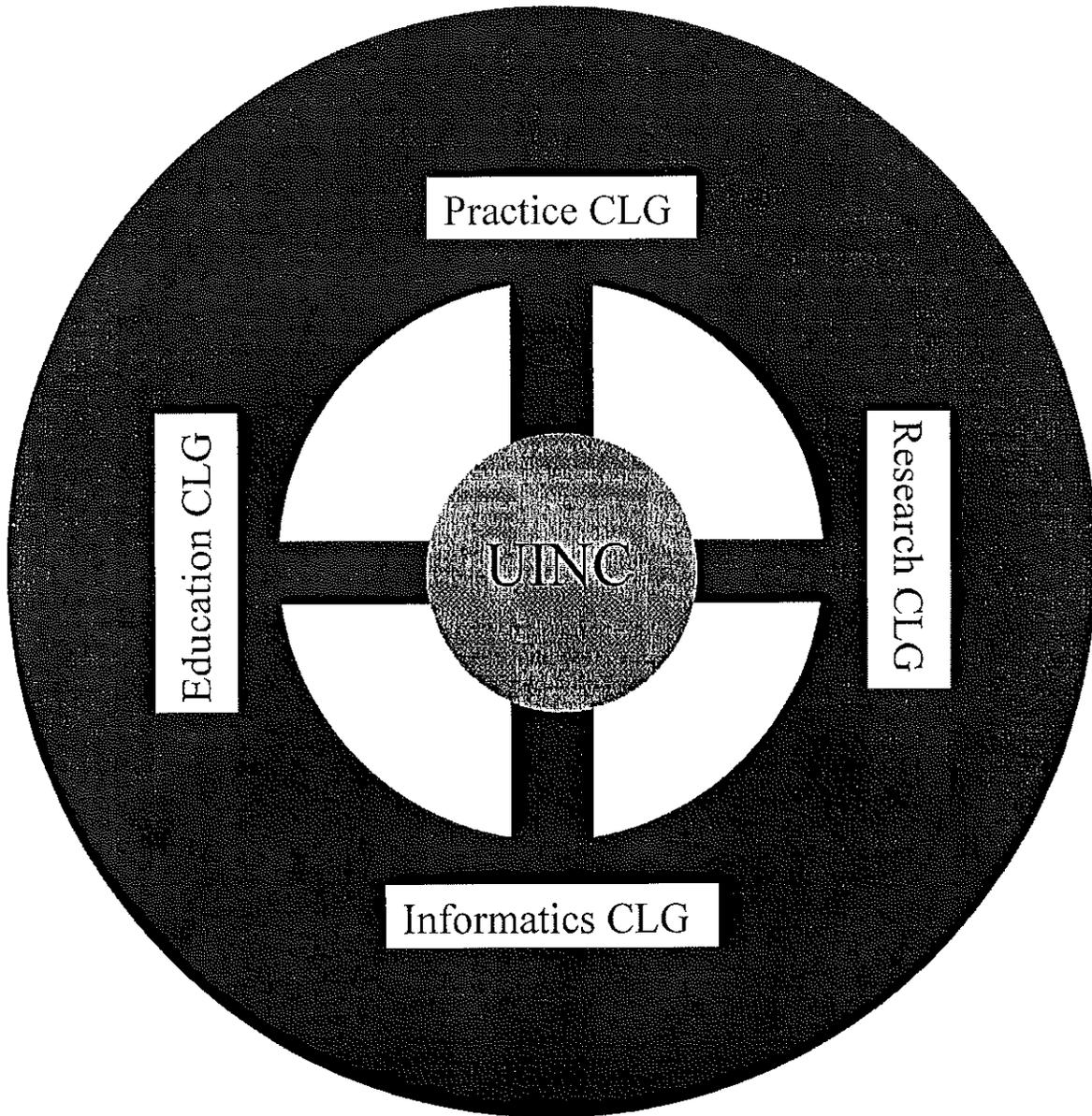


Figure 1. Model for relationship between UINC, CLG's (Collaborative Leadership Groups).

**UNIVERSITY OF IOWA NURSING COLLABORATIVE JOINT STAFF**  
*1/107*

**Education Collaborative Leadership Group**

Co-Chairs: Lou Ann Montgomery, PhD, RN, BC  
Associate Director, Nursing Education  
Co-Director, Nursing Clinical Education Center  
University of Iowa Hospitals and Clinics  
Department of Nursing Services and Patient Care

Kathleen S. Hanson, PhD, RN  
Interim Associate Dean for Academic Programs  
University of Iowa College of Nursing

**Practice Collaborative Leadership Group**

Co-Chairs: TBA  
Senior Assistant Director - Nursing Administration  
University of Iowa Hospitals and Clinics  
Department of Nursing Services and Patient Care

Jill Valde, RN, PhD  
Assistant Professor  
University of Iowa College of Nursing

**Research Collaborative Leadership Group**

Co-Chairs: Marita Titler, RN, PhD, FAAN  
Senior Assistant Director – Nursing Research, Quality and Outcomes  
Management  
University of Iowa Hospitals and Clinics  
Department of Nursing Services and Patient Care

Toni Tripp-Reimer, PhD, RN, FAAN  
Professor and Associate Dean for Research  
Co-Director of the John A. Hartford Center for Gerontologic Nursing  
Excellence  
University of Iowa College of Nursing

**Informatics Collaborative Leadership Group**

Co-Chairs: Ginette Budreau, MBA, MA, RN, BC  
Senior Associate Director, Nursing Informatics/Finance  
University of Iowa Hospitals and Clinics  
Department of Nursing Services and Patient Care

Jane Brokel, PhD, RN  
Assistant Professor  
University of Iowa College of Nursing

**University of Iowa College of Nursing**

Area Chairs: Rita A. Frantz, PhD, RN, CWCN, FAAN  
Professor and Area Chair: Systems & Practice

Ann Marie McCarthy, PhD, RN, PNP, FAAN  
Professor & Chair, Parent Child Family Area of Study, Director Doctoral  
Program

Keela Herr, PhD, RN, FAAN  
Professor and Area Chair: Adult and Gerontology  
Initiative Director, John A. Hartford Center for Geriatric Nursing  
Excellence

### **Associate Director for Clinical Practice**

The Associate Director for Clinical Practice is the Dean of the University of Iowa College of Nursing (CON). Out of this dual responsibility in nursing education and nursing service, the Dean will be in a position to:

- Partner with the Associate Director, Chief Nursing Office, University of Iowa Hospitals and Clinics (UIHC), Director of the Department of Nursing Services and Patient Care (DON) in the development and implementation of the University of Iowa Nursing Collaborative (UINC).
- Support the infrastructure to facilitate work between the CON and DON
- Identify CON resources to support the UINC, addressing matters related to nursing education, clinical practice, nursing informatics, and research.
- Promote DON nursing leadership involvement in curriculum development and adjunct faculty roles for master's prepared and higher staff.
- Facilitate conduct and utilization of nursing research.
- Promote methods of information and decision-making sciences and use of information systems to facilitate and enhance education, practice, and research.
- Identify ways in which CON faculty and DON staff might jointly develop new models for delivery of nursing services.
- Promote nursing education and the development of clinical nursing expertise through the Nursing Clinical Education Center.

### **Associate Dean for Clinical Practice**

The Associate Dean for Clinical Practice is the Associate Director, Chief Nursing Officer, University of Iowa Hospitals and Clinics, Director of the Department of Nursing Services and Patient Care (DON). Out of this dual responsibility in nursing service and nursing education, the Associate Director, Chief Nursing Office, UIHC, will be in a position to:

Partner with the Dean of the University of Iowa College of Nursing (CON) in the development and implementation of the University of Iowa Nursing Collaborative (UINC).

- Support the infrastructure to facilitate work between the DON and the CON.
- Identify DON resources to support the UINC, addressing matters related to nursing education, clinical practice, nursing informatics, and research.
- Identify learning needs of DON staff that might be addressed by the CON.
- Identify entry-level expectations for nurses in the practice setting and work with the CON to provide learning experiences for students.
- Support clinical and educational placements for baccalaureate and graduate students throughout the UIHC.
- Support the DON nursing staff who provide professional role models for students.
- Propose ways DON nursing staff members may participate as preceptors for undergraduate and graduate students.
- Facilitate conduct, implementation and utilization of nursing research.
- Identify ways in which CON faculty and DON nursing staff might jointly develop new models for delivery of nursing services
- Promote nursing education and the development of clinical nursing expertise through the Nursing Clinical Education Center.

**The University of Iowa Nursing Collaborative:  
Principles for Financial Operations**

- Each UINC project will operate under a unique grant number. The first three digits of the number will be the general UINC designation, and the last two digits will be a specific project designation.
- Projects will receive general expense funds from the UINC 240 account.
- Initially, the partner organizations may contribute staff resources in kind; however, as financial resources accrue, the partner organizations will be compensated for staff resource contributions.
- At the conclusion of each project, the project account will be closed and excess revenue or shortfall transferred to the UINC 240 account.
- UINC revenues will be credited to Org. 94, Fund 240.
- Project revenue in excess of costs and initial startup funds will be credited to the UINC 240 account.

Nursing Clinical Education Center  
Memo of Understanding  
August 2006  
Updated February 2012

**Strategic Vision**

The Department of Nursing Services and Patient Care and the College of Nursing have formed a partnership to create the Nursing Clinical Education Center (NCEC) which will serve to meet the mutual benefit of the education missions and endeavors of each entity while gaining efficiencies in the use of educational resources.

**Purpose of the Agreement**

To guide future decision-making with respect to operations and use of resources to meet the strategic goals of the Nursing Clinical Education Center.

**Historical Contributions by each partner:**

***1. Initial Contribution by each partner:***

- a. The Department of Nursing Services and Patient Care (UIHC) contribution consisted of provision of the physical space (20,000 sq. feet) at an estimated cost of \$3 Million.
- b. The College of Nursing contribution consisted of provision of the equipment and furnishings to be used by and in the Nursing Clinical Education Center, at an estimated cost of \$3 Million.

**Terms**

***1. Short term contribution by each partner:***

- a. The Department of Nursing Services and Patient Care (UIHC) contribution will include working to provide additional square footage, AV equipment and computer hardware for expansion as program requirements grow.
- b. The College of Nursing contribution will contribute remaining equipment and furnishings to be used in and by the Nursing Clinical Education Center..

***2. Ongoing strategic planning***

- a. The Department of Nursing Services and Patient Care (UIHC) and the College of Nursing will engage jointly in annual evaluation and strategic planning for future needs of the NCEC. This will occur each year at a meeting that includes the Department Project Executives, Department Project Facilitators and the Associate Dean for Academic Affairs in the College of Nursing.

***3. Organizational Chart:***

The attached organizational chart for the NCEC will be the basis for operations regarding the activities of the NCEC. Committees, functions, and other functional structures will be determined by the Dean of the College of Nursing and the Associate Vice President and Chief Nursing Officer of UI Hospitals and Clinics/designee.

***4. Decision Making:***

The attached decision tree will be utilized regarding issues surrounding the NCEC which require joint resolution.

***5. Appeal Process:***

If the two co-directors of NCEC cannot agree regarding issues, a written appeal will be made to the Dean of the College of Nursing and the Associate Vice President and Chief Nursing Officer of UIHC. If

these individuals cannot agree, a written appeal will be made to the University of Iowa President upon advice of the Provost and Associate Vice President and CEO of UIHC.

**6. Expense Accounts:**

Each partner will retain appropriate MFK accounts and budget annually for the expenses for their respective client base. UIHC will budget for all staff educational expenses; CON will budget for all student educational expenses.

**7. Naming:**

A gift valued at \$1 million or greater to either partner may result in the naming of the Nursing Clinical Education Center. All naming would be approved by the Dean of the College of Nursing and the Associate Vice President and Chief Executive Officer of UIHC following the guiding principles for naming by the University of Iowa.

**8. Equipment:**

- a. Equipment will be inventoried (annually) on the UIHC inventory listing for purposes of tracking and accounting. Equipment will be inventoried by the College of Nursing for purposes of equipment preventative and repair maintenance.
- b. The UI College of Nursing will be responsible for equipment replacement, including selection. Consultation prior to purchase will be made with the UIHC NCEC co-director. The College of Nursing is accountable and will be responsible for annual recurring budget and expenses related to equipment preventative maintenance and repair.
- c. The Department of Nursing Services and Patient Care will be responsible for new AV and computer purchases, including selection. The Department of Nursing will utilize all applicable contracts for purchase to achieve optimal purchasing leverage. Consultation prior to purchase will be made with the College of Nursing NCEC co-director.
- d. The Department of Nursing Services and Patient Care and the College of Nursing will jointly share the copier in the NCEC and the cost of the maintenance contract.
- e. Support for clinical workstations within the NCEC will be the responsibility of the Department of Nursing Services and Patient Care. Both the UI College of Nursing and the Department of Nursing Services and Patient Care will be responsible for the office computers of their respective staff.

**9. Utilities:**

The Department of Nursing Services and Patient Care (UIHC) will be responsible for all utilities, cleaning and upkeep of the center.

**10. Dissolution:**

- a. Either party has the right to unilaterally terminate this partnership provided at least one year's written notice is given to the other party.
- b. Upon dissolution, assets will be distributed upon mutual agreement, according to the following principles:
  - Assets initially contributed by the parties will revert to the party who contributed the asset. Thus, space will revert to UIHC and any equipment originally contributed by the College of Nursing will return to the College. "Equipment" includes clinical equipment, computer equipment, furniture, and library holdings. An inventory of such equipment was made in August 2006 and serves as the list of college donated equipment for future reference. This inventory will be amended as necessary as future donations or purchases of equipment are made by either party.
- c. If the two co-directors of NCEC cannot agree regarding asset division, disagreements will be resolved using the appeal process outlined in paragraph 4 of this agreement.

**11. Signatures:**



Ann Williamson, PhD, RN, NEA-BC  
Associate Vice President, UI Health Care  
Chief Nursing Officer, UIHC

4-17-12

Date

Rita Frantz, RN, PhD, FAAN  
Dean of the College of Nursing

Date



Kenneth Kates  
Associate Vice President UI Health Care and  
Chief Executive Officer, UIHC

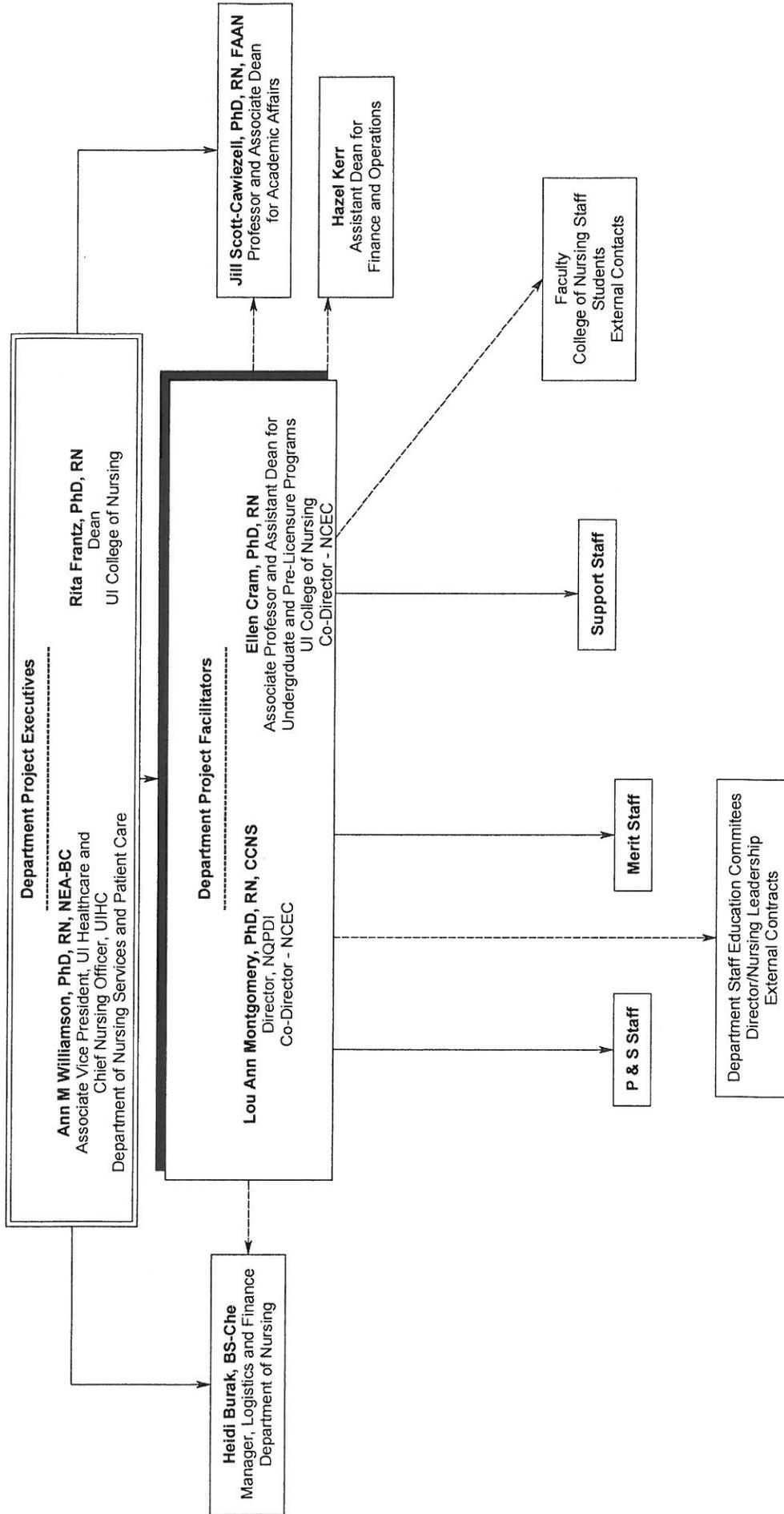
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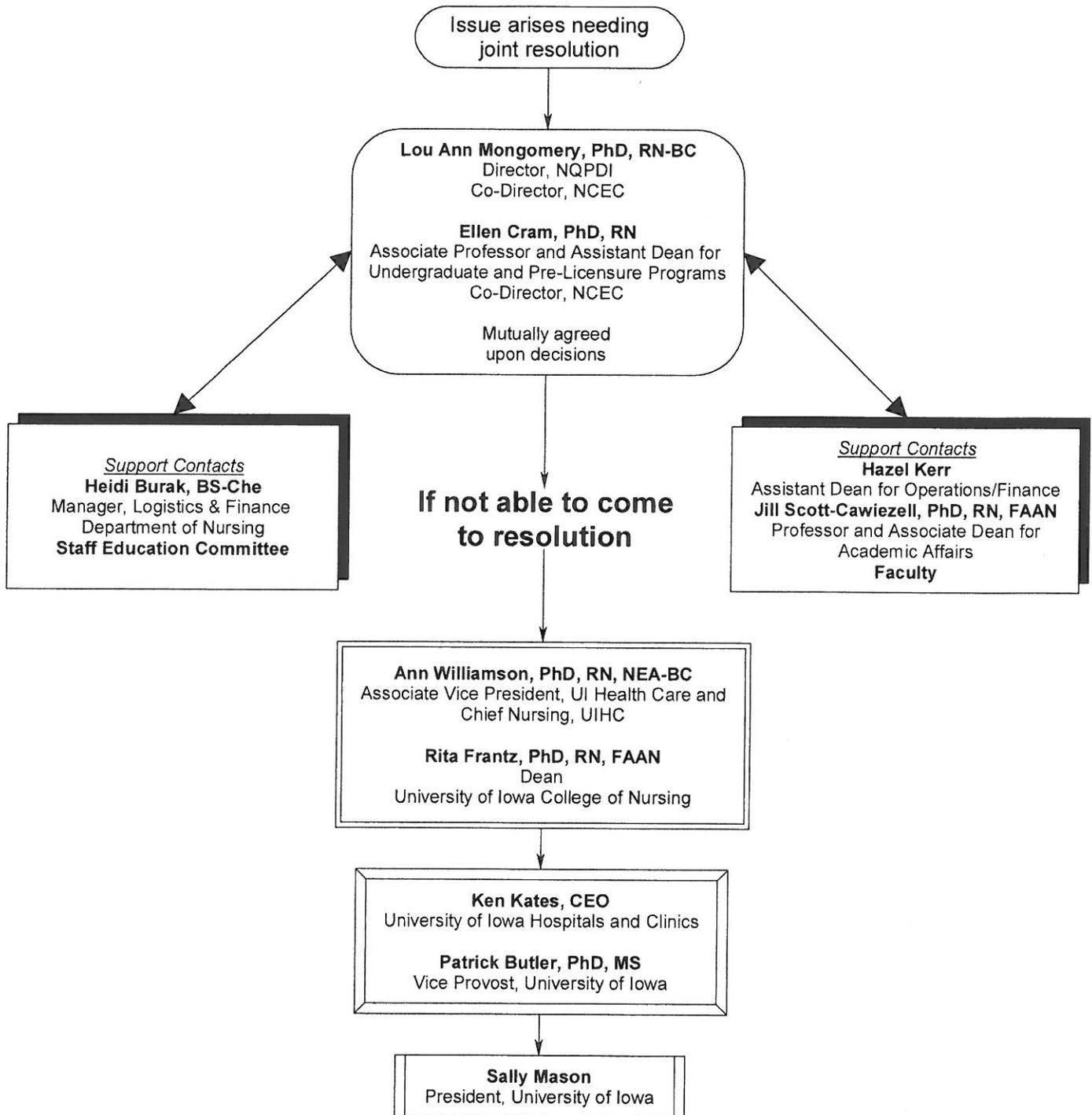
Patrick Butler, PhD, MS  
Executive Vice-President and Provost, University of Iowa

Date

**Nursing Clinical Education Center  
Organizational Chart  
October 2011**



# Nursing Clinical Education Center Decision Tree



**MEMORANDUM OF UNDERSTANDING**  
between  
**The University of Iowa College of Nursing**  
and  
**The University of Iowa Hospitals and Clinics Department of Nursing**

**I. PURPOSE and SCOPE**

This Memorandum of Understanding (MOU) reaffirms and updates the collaborative research partnership between the University of Iowa College of Nursing (CON) and the University of Iowa Hospitals and Clinics Department of Nursing (UIHC DON). This collaboration will facilitate nursing research and enhance the quality of nursing care. The partnership will be known as the **Research Academic Clinical Collaboration (RACC)**.

This MOU replaces the contractual agreement written by Dr. Toni Tripp-Reimer to Drs. Eldean Borg and Gordon Strayer dated June 30, 1989 (attached).

**II. IT IS MUTUALLY UNDERSTOOD AND AGREED THAT**

- A. The Office for Nursing Research (ONR) will continue to support research and scholarship both at the UI College of Nursing and the UIHC Department of Nursing. To reflect the focus of the joint efforts in promoting nursing research, the name of the office will be simply the "Office for Nursing Research."
- B. Under the joint oversight of the Dean of the College of Nursing and the UIHC Associate Vice President for Nursing, the College of Nursing Associate Dean for Research, the UIHC Director of Nursing Research and Evidence-based Practice (EBP), and the Director of the Office for Nursing Research will have shared responsibility for the implementation of this agreement.
- C. Co-attendance at meetings strengthens this partnership, allowing all parties to be informed and to share decision making in the development and discussion of initiatives that support nursing research, EBP and scholarship. As such, the memberships on the following committees will be maintained:
  - a. The CON Associate Dean for Research and the Director of the ONR will have membership on the UIHC Nursing Research and Evidence-based Practice Committee (NREBPC). This committee has the following responsibilities:
    - i. Works with the University IRB and reviews IRB applications to ensure that the demands on Department of Nursing resources are reasonable. Proposals that indicate that Department of Nursing resources will be used are sent for review to the NREBPC. In these cases, IRB approval is contingent upon this NREBPC's approval of the protocol.
    - ii. Develops the Call for Proposals, reviews the proposals, and makes funding recommendations for the annual Research and Evidence-based Practice pilot grants.

- iii. Supports development of research projects at UIHC conducted collaboratively by CON faculty and UIHC staff nurses and facilitates nursing staff-led research projects at UIHC;
  - iv. Increases engagement of CON students in research practica at UIHC; and
  - v. Facilitates the development of EBP Guidelines and the implementation of EBP at UIHC.
- b. The UIHC Director of Nursing Research and Evidence-based Practice (EBP) will have membership on the CON Research Advisory Group (RAG) and is also invited to attend meetings of the ONR. The RAG committee advises and steers research activities at the CON and provides input into collaborative activities with the UIHC DON. The joint goals of the RAG and the ONR meetings are to:
- i. Improve processes supporting research through the ONR;
  - ii. Increase nursing research productivity and scholarship; and
  - iii. Increase the visibility of UI nurse scientists on campus and nationally.
- D. This agreement will be reviewed and amended (if needed) annually by the CON Associate Dean for Research, the ONR Director, and the UIHC Director of Nursing Research and Evidence-based Practice (EBP). A mid-year review may be requested with 30-day notice by either party.

### **III. JOINT PRODUCTS and OUTCOMES**

- A. Expected products of this collaboration include:
- a. Submission of grant proposals that include PI's and Investigators from both the College of Nursing and UIHC Department of Nursing
  - b. Sponsorship of small pilot grants for staff nurses at UIHC and, when appropriate, for joint staff-faculty collaborations.
  - c. Generation of new joint projects that include team members from both units
  - d. Development of new Evidence-Based Practice guidelines
- B. Expected outcomes of this collaboration include:
- a. Provision of feedback on the development of the UIHC Data Warehouse that represents the interests of both units
  - b. Annual co-sponsorship of a joint visiting professor who is an expert on Research and/or Evidence-based Practice

#### **IV. SPECIFIC RESPONSIBILITIES OF EACH PARTY:**

##### **COLLEGE OF NURSING:**

- A. College of Nursing faculty will be available to serve as mentors and collaborators with Department of Nursing (UIHC) nurses on research and EBP projects.
- B. The College of Nursing will support the development and submission of grant proposals by the Department of Nursing by contributing staff support from the ONR. The ONR includes the Director as well as pre-award and post-award support, and statistical and data management support. Secretarial support from the ONR will be provided when assistance is needed in areas not supported by the Department of Nursing secretary.
- C. On accounts that are held jointly by the College of Nursing and Department of Nursing, administrative accounting support is provided by the College of Nursing Business Manager.

##### **UIHC DEPARTMENT OF NURSING:**

- A. The UIHC Director of Nursing Research and Evidence-based Practice (EBP) will work with UIHC staff nurses to advance research ideas to the proposal stage.
- B. The UIHC Department of Nursing will submit grant proposals for external funding through the ONR and work within ONR guidelines for submission, including deadlines. Proposals submitted by a UIHC nurse PI through the ONR will be routed using Org 18, department 4040 and sub-department 40016, identifying it as a College of Nursing grant.
- C. The Department of Nursing Secretary will administer grants awarded in which the PI is from the UIHC Department of Nursing.

#### **V. SERVICES PROVIDED BY THE OFFICE FOR NURSING RESEARCH (ONR)**

- A. **Research events, consultation, technical assistance, and grants processing services** of the ONR are available to College of Nursing (CON) faculty and to Department of Nursing (UIHC) nurses. Specifically, the ONR will:
  - a. Include UIHC nurses and CON faculty in Scholarly Interest Groups (SIGs);
  - b. Facilitate opportunities for continuing education, such as collegiate Research Forums and other collegiate seminars;
  - c. Provide education regarding the research process and research utilization including:
    - i. Working collaboratively with the UIHC Department of Nursing Staff and College of Nursing faculty to foster and develop research initiatives;
    - ii. Being available for ongoing consultation with the UIHC Department of Nursing Staff and College of Nursing faculty;
    - iii. Assisting in developing research based protocols and in securing intramural and extramural grant support to test interventions;
    - iv. Serving as a liaison to the UI Division of Sponsored Programs.
    - v. Providing direction in the development of nursing research proposals, including methodology, sampling techniques, data collection and management and statistical analysis;
    - vi. Providing focused in-service programming at least once a year (e.g., grantsmanship, research facilitation, collaborative models, informed consent, data collection, and development of research questions from clinical problems);
    - vii. Providing guidance in developing manuscripts for publication; and
    - viii. Assisting in the utilization of other on-campus research support services.

- B. Provide support in **Pre-award Grant Development**, including (but not limited to) identifying potential funding opportunities; helping to locate potential resources and collaborators for conducting research; developing grant budgets; assembling, formatting and uploading proposals; and working with Sponsored Programs to submit the proposals.
- C. Provide support in **Post-award Administration**, including (but not limited to) liaising with Grants Accounting and providing Human Resources support in hiring of project staff, will be provided by the ONR Post-award grants specialist.
- D. All **Statistical and Data management support services** that are available to College of Nursing Faculty are also available to Department of Nursing staff conducting research. This includes, but is not limited to, statistical consultation and assistance with creation of data entry forms and survey tools. Statistical and Data Management Support will be provided by the ONR Statistician and Data Manager.
- E. The ONR Secretary oversees **Scholarship Dissemination** and can provide assistance with manuscript formatting, conference poster development and printing, and advice in complying with NIH Public Access policy.

#### **VI. FINANCIAL RESPONSIBILITIES**

There are three accounts that reflect the joint activities of the Office for Nursing Research and the UIHC Department of Nursing:

- **UIHC F&A** (Owned by the UIHC Department of Nursing, MFK(s) assigned as needed)
- **EBP/Research Pilot Seed Grants** (Owned by the UIHC Department of Nursing, MFK: 240-94-9462-70003-57000504-31)
- **ONR EBP** (Owned by the Office for Nursing Research, MFK: 240-18-4040-00000-54047230-21)

- A. **Indirect costs (F&A)**. When a PI from the UIHC Department of Nursing submits a grant that is funded, any F&A costs recovered from that grant will be returned as part of the total F&A funds returned to the College of Nursing and distributed in the following way:
  1. In recognition of the ONR's joint support of both the CON and the DON, 50% of these funds will be returned to the ONR. The remaining 50% will be returned to the Office of Faculty Services at the CON.
  2. The Office Faculty Services will return its share (50%) to the Principal Investigators of the grants from which the F&A funds were recovered. The percentage of F&A funds that is returned to each PI will be equal to the percentage of the total F&A funds that was generated by each PI's grant(s).
  3. For F&A-generating grants awarded to a PI from the UIHC Department of Nursing, the DON PI's share of the F&A recovery will be deposited into an account called "UIHC F&A" with an MFK assigned at that time.
- B. **UIHC – CON Pilot Grant for Research and EBP**. The UIHC Department of Nursing and the CON will jointly fund a pilot grant to support Research and EBP projects at the UIHC.

- i. **Account details**

1. The UIHC Department of Nursing will contribute funds from an account called “EBP/Research Pilot Seed Grants.” The MFK for this account is 240-94-9462-70003-57000504-31. The remaining funds previously held in the CON-UIHC joint account 240-18-4040-00000-54047240-21 will be transferred into the EBP/Research Pilot Seed Grants account to support the pilot seed grants.
  2. The College of Nursing will make a contribution to the EBP/Research Pilot Seed Grants account for each pilot grant award cycle, not to exceed \$500 per fiscal year without prior approval from the Dean of the College of Nursing. The owner and the primary reviewer for this account will be from the UIHC Department of Nursing and EBP. A staff member from the Office for Nursing Research will serve as a secondary reviewer on this account.
- ii. **Appropriate use of funds:** It is agreed that these funds will be used to support nursing Evidence Based Practice (EBP) Projects and Research Projects conducted by staff nurses at the UIHC that may be done collaboratively with faculty from the College of Nursing.
- C. **Joint account.** A joint account between the UIHC and UI CON called “ONR-EBP” will contain the revenue generated from the sale of Evidence Based Practice (EBP) guidelines and Quick Reference Guides (QRG) that are produced through the ONR in collaboration with the University of Iowa Hartford Center for Geriatric Nursing Excellence and result from collaborations between CON faculty or CON students and UIHC staff.
- i. **Account details**
    1. The MFK for ONR-EBP is 240-18-4040-00000-54047230-21, identifying it as an Office for Nursing Research account.
    2. The Director of the Office for Nursing Research is the Account Owner and the Primary Reviewer is the Office for Nursing Research Pre-award Administrator.
    3. All revenue generated from the sales of the EBP guidelines and QRGs produced by the ONR is deposited into ONR-EBP.
  - ii. **Appropriate use of funds**
    1. Funds from the ONR-EBP account will be used to support College of Nursing and Department of Nursing research activities and initiatives, including but not limited to pilot grants, sponsorship of a visiting scholar, travel to professional meetings for College of Nursing or UIHC Department of Nursing personnel, and support for educational and developmental activities of College of Nursing faculty and UIHC staff nurses, including support for conference registrations, poster printing; and
    2. Costs of publishing results of research or EBP projects resulting from joint activities.
    3. Approval from the CON Associate Dean for Research or ONR Director is required for expenses over \$300 charged to ONR-EBP.
  - iii. **Attribution of credit**  
Per the ONR’s agreement with the National Guideline Clearinghouse (NGC), all Guidelines produced jointly by the UI College of Nursing Office for Nursing Research must include the following attribution:

©The University of Iowa College of Nursing, Office for Nursing Research  
University of Iowa Hospitals and Clinics, Department of Nursing Services and Patient Care

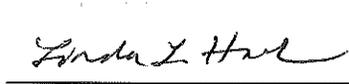
**VII. DISSOLUTION OF MEMORANDUM OF UNDERSTANDING**

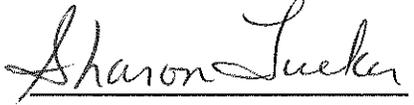
- A. It is anticipated that the long-standing and productive collaboration between the UIHC Department of Nursing and the UI College of Nursing will continue into the future. Acknowledging that change is fundamental to university life, we mutually agree that in the event that this partnership no longer serves the needs of both units and both units agree to dissolve the partnership that any joint funds will be divided as follows:
  - a. Funds remaining in the "EBP/Research Pilot Seed Grants" account will remain with the UIHC Department of Nursing.
  - b. Funds remaining in the "ONR-EBP" account will remain with the Office for Nursing Research.
  - c. Funds remaining in the "UIHC F&A" recovery account will remain with the UIHC Department of Nursing and funds remaining in the "ONR F&A" recovery account will remain with the ONR.

**VIII. EFFECTIVE DATE AND SIGNATURES**

This MOU shall be effective upon the signature by authorized officials of UIHC Department of Nursing, the College of Nursing, and the Office of Nursing Research.

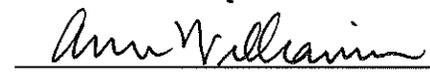
  
**Ann Marie McCarthy, PhD, RN, FAAN**  
Professor and Associate Dean  
for Research  
Office for Nursing Research  
University of Iowa College of  
Nursing

  
**Linda Liu Hand, PhD**  
Director  
Office for Nursing Research  
University of Iowa College of  
Nursing

  
**Sharon J. Tucker, PhD, RN**  
Director of Nursing Research and  
EBP  
University of Iowa Hospitals and  
Clinics

  
**Rita A. Frantz, PhD, RN, FAAN**  
Kelting Professor and Dean  
University of Iowa College of Nursing

08/13/13  
Date

  
**Ann Williamson, PhD, RN, NEA-BC**  
Associate Vice President for Nursing  
University of Iowa Hospitals and Clinics

8/14/13  
Date

The University of Iowa College of Nursing  
Dedicated Educational Units (DEU): The experiences of students and instructors  
May 2014

### Background

Since 2003 when the University of Portland pioneered the Dedicated Educational Unit teaching model, this approach to clinical education has spread widely. Benefits of the DEU include closer student supervision, greater opportunities for learning experiences, more efficient use of faculty, potentially greater student enrollment, and greater satisfaction of staff nurses and faculty. Students often spend time in instructor-supervised clinical groups waiting because the instructor is busy with another student. Waiting time is reduced or eliminated in a DEU. The staff nurse is an integral part of the unit team; the staff nurse gives the student greater entrée to unit culture, current protocols and practices. While college faculty still spend time on the unit each clinical day student, their role shifts from directing and supervising every student activity to guiding and mentoring the staff nurse teachers. Successful DEUs are characterized by strong nurse leaders, high quality clinical care, and staff commitment to student learning. Some state Boards of Nursing (BON) have been supportive of this model while others have not embraced the concept. The Iowa Board of Nursing approved a one academic year pilot at the University of Iowa College of Nursing and required reporting of results prior to expansion to other units. Our clinical partner, UIHC, is a major academic hospital with unionized nursing staff. Union support was sought and gained prior to the beginning of the pilot.

### Methods and Results:

After receiving BON and Institutional Review Board (IRB) approval, we randomly assigned students in the first clinical course to either DEUs or units with traditional groups (one instructor: 8 students). All units were adult medical/surgical acute inpatient units. The two DEUs requested to be part of the pilot and recruited interested staff nurses to serve as clinical instructors (CI). Students completed the modified Clinical Learning Environment Scale +Teacher (CLES+T) scale upon course completion. CI's completed a parallel scale adapted from the University of New York at Buffalo to evaluate their experience. Staffing was adjusted for the first 2 weeks of the student rotations. Unit cost data were also collected.

While all students in the course were satisfied with their clinical learning experience (4.0 or higher on a 5 point scale), students in the DEUs evaluated their learning experience more positively than students in the traditional educational model units. Specific aspects such as team integration, readily available feedback and adequate attention from the instructor were higher for DEU students. While CIs generally rated the experience positively, some concerns were expressed; we had four of our initial six CIs choose not to do the role the following semester. Schedule, preference for the charge nurse role, and transfer to other units were the primary reasons for CI turnover.

### Summary and Recommendations:

Our students' experience is similar to reports from several other educational programs who have adopted DEUs. Our measurement of the CI experience adds to the understanding of the model. Our CI turnover is higher than reported elsewhere. We continue to explore ways to invest in nurses in that role and find meaningful rewards. The two DEUs have continued, and plans are in place for expansion to other units to become DEUs.

Academic-Practice Partnership Award:  
The University of Iowa Nursing Collaboratory (UINC)

*Two Key Publications*

Dreher, M., Everett, L., & Hartwig, S. M. (2001). University of Iowa Nursing Collaboratory: A partnership for creative education and practice. *Journal of Professional Nursing*, 17(3), 114-120.

Titler, M.G., Kleiber, C., Steelman, V. J., Rakel, B., Budreau, G., Everett, L. Q., Buckwalter, K. C., Tripp-Reimer, T., & Goode, C. J. (2001). The Iowa Model of Evidence-Based Practice to Promote Quality Care. *Critical Care Nursing Clinics of North America*, 13(4), 497-509.



## The University of Iowa Nursing Collaboratory: A Partnership for Creative Education and Practice

MELANIE DREHER, PhD, RN,\* LINDA EVERETT, PhD, RN,†

SALLY MATHIS HARTWIG, MSN,‡ AND

MEMBERS OF THE UNIVERSITY OF IOWA NURSING COLLABORATORY

**This article describes a comprehensive partnership between a college of nursing and its corresponding department of nursing services. The Nursing Collaboratory was created to provide an infrastructure for the generation, dissemination, and application of knowledge to improve nursing practice and patient outcomes. In addition to creative problem solving, the Collaboratory serves as an “incubator” of ideas and innovation, engaging nursing staff, faculty, and students in the development of new products and services to enhance nursing education and practice. (Index words: Practice, Education, Research partnership collaboration) *J Prof Nurs* 17:114-120, 2001. Copyright © 2001 by W.B. Saunders Company**

**T**HE NEED FOR COLLABORATION between the practice setting and the academy has been a consistent theme in recent commentaries about the organization and financing of health care (American Association of Colleges of Nursing, 1998; Barger, 1999; Bellack & O'Neill, 2000; Manion, Sieg, & Watson, 1998; McBride, 1999; Mundt, 1997; White & Henry, 1999; Wilson & Mitchell, 1999). In 1999

the American Association of Colleges of Nursing formally identified the need to revisit the appropriate and necessary clinical support needed for nursing education in its publication of *Essential Clinical Resources for Nursing's Academic Mission*. At the same time, the increased emphasis on patient outcomes in evaluating nursing care has sensitized practicing nurses to the need for research and clinical scholarship that will improve care and reduce cost.

The University of Iowa Nursing Collaboratory (UINC) was created to provide an infrastructure for the College of Nursing and the Department of Nursing to work together in the generation, dissemination, and application of knowledge for the improvement of nursing practice and patient outcomes. As the name “Collaboratory” implies, it is not just a contract to provide clinical learning sites for students or a partnership for faculty practice. Rather, it was conceived as a nursing “think tank,” an incubator for creativity and innovation that will engage nursing faculty, nursing staff, and nursing students in the development of new products and services and models to enhance both nursing education and patient care.

The Collaboratory is grounded in the notions that ideas are most easily and frequently generated at the intersection of practice and education and that advancement in nursing education and advancement in nursing practice are deeply interwoven. It also is predicated on the assumption that professional nurses employed in an academic health sciences center value nursing scholarship and have made a commitment to teaching and research as intrinsic to their practice. Equally fundamental is the assumption that the nurs-

\*Dean and Professor, College of Nursing, University of Iowa, Iowa City, IA.

†Associate Director and Chief Nursing Officer, University of Iowa Hospitals and Clinics, Iowa City, IA.

‡Emeritus Associate Director, University of Iowa Hospitals and Clinics, Iowa City, IA.

Address correspondence and reprint requests to Dr Melanie Dreher: Dean and Professor, College of Nursing, The University of Iowa, 50 Newton Road, Iowa City, IA 52242.

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ing faculty is committed to supporting high-quality practice environments where clinical solutions and best practices are explored and developed in collaboration between practicing nurses and students.

### A History of Collaboration

The Academic Health Sciences Center at the University of Iowa comprises the University of Iowa Hospitals and Clinics and five health science colleges—pharmacy, dentistry, medicine, public health, and nursing. Not surprisingly, the nursing education program and the university hospital both were established in 1898. In the first half of the 20th century the School of Nursing faculty and students provided much of the patient care as an integral part of student learning. At midcentury, however, as nursing education began to shift from the hospital to the academy, the University of Iowa Hospitals and Clinics no longer depended on the School to provide patient care. Thus, unlike the College of Medicine, which continued to provide most of the medical care at University of Iowa Hospitals and Clinics, nursing education and nursing service evolved in parallel but separate trajectories.

This national movement that separated education from service was an important and necessary step in the intellectual development of nursing and assisted the profession in attaining credibility as an academically grounded profession. At the same time, however, it created an almost palpable tension between nurses in practice and nurses in education, often expressed in antagonism between diploma-prepared staff nurses and baccalaureate students and graduates. Then, as collegiate-based education took a greater foothold in the preparation of nurses, accompanied by the gradual abatement of diploma programs, the educational qualifications of practicing nurses increased. Nursing faculty members now look to their counterparts in practice for assistance in preparing new generations of nurses while nurses in practice look to the research and scholarship generated in universities to improve practice and outcomes of care. It is no longer unusual to find clinicians who consider education to be part of their role—particularly those in academic health science centers and teaching hospitals. Similarly, it is common for faculty members to have active practices themselves, and to conduct research that is grounded firmly in clinical practice.

Collaboration between the College and Department of Nursing is not new at the University of Iowa. For over a century the Hospitals and Clinics have served as the major

clinical teaching facility for University of Iowa nursing students—both graduate and undergraduate—while many University of Iowa Hospitals and Clinics nurses have pursued advanced degrees at the College of Nursing. In addition, the Hospitals and Clinics have served as sites for research conducted by the College faculty in collaboration with the Department of Nursing. These include, for example, the development of standardized nursing languages and studies of nursing effectiveness. In addition, countless ad hoc, informal, and highly individualized relationships between clinicians and academicians at the University have developed over the years. These include faculty members working at University of Iowa Hospitals and Clinics during the summer to maintain their clinical expertise, and informal consultation and exchange of guest lectures between faculty and staff. It was, however, with the gratuitous, but highly symbolic, joint appointments of the Chief Nursing Officer (CNO) of University of Iowa Hospitals and Clinics as the Associate Dean for Clinical Practice in the College and the Dean of the College as the Senior Associate for Clinical Practice at University of Iowa Hospitals and Clinics, that the spirit of and potential for formal collaboration were realized. The CNO sits on the Dean's executive committee and the Dean sits on the CNO's administrative council.

The Nursing Collaboratory emerged when it was discovered that, despite the many instances of collaboration, there was no official mechanism linking the Department of Nursing and the College of Nursing that could be deployed for the purpose of *enterprise* (i.e., responding directly to the needs of patients and families and turning ideas into innovations). Most collaborative activities were based on gentleperson's agreements, more or less embedded in the institutional memories of specific staff and faculty members. The establishment of the Nursing Collaboratory in January 1999 institutionalized the relationship between service and education, assuring that it will continue and flourish independently of the specific individuals and personalities who currently occupy leadership roles. Perhaps even more important, it has provided an infrastructure for the encouragement of creativity and entrepreneurial thinking within the University of Iowa nursing community for problem solving and for the support and development of new programs and products in research, education, and practice.

### Organization and Governance

Nursing practice, education, research, and informatics constitute the four domains of the UINC. Two

coleaders head each of the four components, one appointed from the College and the other from the Department, each of whom serve in leadership roles in their respective institutions. Providing overall leadership for the Collaboratory are the CNO and the Dean of the College of Nursing. They are responsible for articulating the vision of the Collaboratory, facilitating activity, convening the meetings, setting the agendas, and representing the Collaboratory in other University and external forums.

The Dean and the CNO, along with the coleaders of the four component Collaboratives, are joined by the Business Officers and Program Associates of each entity. Together, they constitute the Nursing Collaborative Leadership Group that meets monthly. The early meetings of the Leadership Group were focused on establishing the structure and operations of the Collaboratory. This included the development of joint appointment processes and titles, decision-making procedures, sorting out contributions of clerical support, Web page development and linkages, and so forth. As the structure and decision-making process of the Collaboratory have become more clearly defined, the Leadership Group meetings have provided a forum for joint problem solving, the development of research initiatives, the improvement of graduate and undergraduate education, the enhancement of nursing practice, and the development of entrepreneurial activity.

Cementing the connectivity and mutuality of the Collaboratory is the extension of secondary appointments to members of University of Iowa Hospitals and Clinics nursing staff and the College faculty. Similar to those of the Dean and CNO, these appointments are fiscally neutral unless they contain specific assignments, such as teaching a course in the College or a practice responsibility in University of Iowa Hospitals and Clinics. They are, nonetheless, formal appointments that imply a commitment of mutual participation, including attendance at meetings, working on special task forces, taking part in both College and Nursing Department searches, problem solving, policy development, and serving on standing committees. Staff members who are master's prepared and above from the University of Iowa Hospitals and Clinics are appointed as clinical faculty (nonsalaried), at a specific rank to one of four areas of study in the College (Parent, Child and Family; Adult and Gerontological Nursing; Biobehavioral Nursing; and Organizations, Systems and Community Health Nursing). Bachelor's prepared staff nurses, who have achieved the required clinical and teaching experience, are appointed as Clin-

ical Teaching Assistants to one of the four areas of study and often serve as preceptors and clinical educators. Similarly, College faculty members are appointed as academic associates to one of the clinical areas at University of Iowa Hospitals and Clinics (Children and Women's Services, Medical-Surgical Nursing, Behavioral Health, Surgical Services, Intensive Care Services, Ambulatory and Community Services, and Administration).

### The Four Domains

Each of the four domains of the Collaboratory—education, research, practice, and informatics—has formulated its purpose, membership, and goals.

#### THE EDUCATION COLLABORATIVE

The purpose of the Education Collaborative Leadership Group is to create, implement, maintain, and evaluate projects and programs that enhance the educational process for all levels of students, professional nurses, and nursing support staff. Its objectives are to: (1) deploy the expertise of the College faculty and University of Iowa Hospitals and Clinics staff to continuously improve the education of faculty and staff; (2) develop and promote innovations in nursing education; (3) create a business partnership to market educational products and services; and (4) enhance the education of all levels of student and professional nurses.

The University of Iowa Hospitals and Clinics Director of Nursing Education and the Associate Dean for Academic Affairs in the College head the Education Collaborative. Its membership consists of the College's directors of the basic undergraduate program, the RN to BSN program, and the graduate program, as well as two of the Associate Directors for Nursing from University of Iowa Hospitals and Clinics, and an advanced practice nurse whose primary focus is in quality education.

There is a history of affiliation around specific activities having to do with nursing education. Clinicians at University of Iowa Hospitals and Clinics have served as preceptors for undergraduate and graduate students. In addition, many of the nurses employed at University of Iowa Hospitals and Clinics received their bachelor's, master's, and even doctoral degrees from the College of Nursing. Representatives of the Nursing Council at University of Iowa Hospitals and Clinics were active committee members in revising the RN to BSN curriculum that is designed specifically for working nurses

and for which the University of Iowa Hospitals and Clinics provides tuition support.

#### THE RESEARCH COLLABORATIVE

The College and University of Iowa Hospitals and Clinics have a long history of working collaboratively to advance the science of nursing. For example, the Director of the University of Iowa Hospitals and Clinics Nursing Research Office has a secondary appointment to the College's Office of Research Development and Utilization. All grants submitted for external funding are channeled through the Joint Office of Nursing Research and Development, using one sponsored program number. In addition, the University of Iowa Hospitals and Clinics Nursing Research Committee includes faculty representation from the College and the College's Research Advisory Committee includes representation from University of Iowa Hospitals and Clinics.

The Research Collaborative Team is headed by the Associate Dean for Research and Scholarship in the College of Nursing and the Director of Research, Quality, and Outcomes Management from University of Iowa Hospitals and Clinics. Its purposes are to maintain and enhance the formal and informal structures that promote collaborative research and clinical scholarship among nursing faculty, staff, and students. The specific objectives are to:

1. Promote collaborative research and clinical scholarship among staff, faculty, and students.
2. Provide strategic direction and management of collaborative research and clinical scholarship initiatives.
3. Generate research for the development and evaluation of new nursing products and services.
4. Promote research and scholarship as a professional responsibility for practicing professional nurses.

#### THE PRACTICE COLLABORATIVE

The purposes of the Practice Collaborative are to strengthen and enhance nursing practice at University of Iowa Hospitals and Clinics, including the development of innovative strategies and products to improve patient outcomes. The specific objectives are to: (1) identify populations that could benefit from improved access to nursing care; (2) respond to the needs of patients, families, and communities by establishing new

opportunities for nursing practice; (3) assist clinicians and faculty members to develop ideas and innovations that will improve clinical practice and enhance patient outcomes; (4) create and test nursing service innovations that will strengthen quality and reduce costs; and (5) strengthen and acknowledge faculty clinical expertise and practice.

The Practice Collaborative Committee is led by the Associate Dean for Faculty Practice in the College of Nursing and the Associate Director of Nursing for Children's and Women's Services. The membership consists of other Associate Directors of Nursing from University of Iowa Hospitals and Clinics and the faculty leaders of advanced practice programs at the college. Thus, the Committee links master's students in advanced practice programs (nurse practitioner, clinical specialist, nurse anesthetist) directly with the practice community at University of Iowa Hospitals and Clinics. This is very helpful in the expanding of the advanced practice master's program while achieving greater flexibility and clinical placement opportunity. The presence of master's students provides University of Iowa Hospitals and Clinics with strong clinical leadership and special projects that improve patient outcomes.

#### THE INFORMATICS COLLABORATIVE

The Informatics Collaborative of the UINC focuses on developing new ways to link academic and clinical information systems. Its purposes are to create and deploy health and patient care information and knowledge in the effective delivery and evaluation of health care and nursing services. Specific objectives of the Collaborative include: (1) enhancing the informatics expertise of all nurses and promoting the education of informatics specialists in nursing; (2) assisting clinical decision-making through the collection and analysis of patient information; (3) supporting knowledge building in nursing through the compilation and classification of information regarding human responses, nursing interventions, and nursing outcomes; and (4) assisting staff, faculty, and students to develop informatics products and services that will improve nursing practice and education.

The dual leadership of the Informatics Collaborative consists of the head of the informatics program in the College who also directs the University of Iowa Health Care Informatics Certificate Program and the Director of Nursing Informatics at University of Iowa Hospitals and Clinics. In addition to the Director of Computer Information and Technology in the College

of Nursing and representatives from the University of Iowa Hospitals and Clinics Nursing Informatics Department, this standing committee includes members from other departments such as a professor from Biomedical Engineering and a representative from the University of Iowa Hospitals and Clinics Information systems. The diverse membership of the Informatics Collaborative reflects the very nature of informatics, integrating computer science, business, cognitive sciences, and engineering, as well as other health sciences to advance patient care and clinical scholarship.

### Intercollaboratory Effort

Although the Collaboratory is organized into these four domains, it often is impossible to distinguish initiatives as belonging exclusively to practice, research, education, or informatics. Indeed, Collaboratory initiatives—whether problem solving, product development, or model testing—often involve at least two and often all of the four Collaboratives. Staff nurses, faculty members, and students are encouraged to present their problems, solutions, ideas, and inventions that will improve patient care and create new models of education, either directly to one of the component Collaboratives or to the Collaboratory Leadership Group. They can expect a thoughtful discussion of the issue or proposal along with guidance on how to proceed. If it appears to involve more than one collaborative, the directors will forward it to one or more of the other three collaboratives and/or place it on the agenda of the Leadership Group meeting for general discussion.

Perhaps the most obvious example of the connectiveness of the four collaboratives is the development of a clinical nursing database by the Department of Nursing, derived from the classification research being conducted in the College. In addition to decision support for nurses in clinical practice, the database supports research as well as instruction for undergraduate and master's students. The collaboration between the College and the Department has created an optimal environment for the development, teaching, and implementation of standardized languages and the use of clinical data sets. The nursing informatics area of specialization in the master's program was developed in collaboration with the University of Iowa Hospitals and Clinics Department of Nursing Informatics where students obtain a rich "laboratory experience" in the management of patient information, clinical support, and knowledge building.

### Initiatives

Even though the Collaboratory has existed for only a year, a number of initiatives already have been implemented.

*The Clinical Fellows Program*, in which faculty members update and expand their clinical knowledge and ability while providing consultation to the staff in their area of expertise to develop solutions for specific clinical problems. Thus far, three faculty members have had clinical fellowships at University of Iowa Hospitals and Clinics (Friedrich & Dreher, 2000).

*The Young Scientists Program*, in which selected undergraduate students amplify their basic research requirement by working with a clinical nursing research team at University of Iowa Hospitals and Clinics, composed of faculty and staff. Support is provided for the young scientists to accompany their research "mentors" to a regional or national research meeting where they have the opportunity to meet nurse researchers from other institutions.

*The Clinical Mentor Program*, in which beginning undergraduate students are assigned to intensive care nurses for their first clinical experience in working the same shifts as their mentors in a one-on-one clinical learning model. Senior preceptorships have been in place for a number of years but the principles of apprenticeship had not been used previously with beginning undergraduate students.

*The Clinical Seminar Program*, is designed for students who are employed at University of Iowa Hospitals and Clinics during the summer to receive educational credit for their clinical work experience by identifying learning objectives and participating in a weekly seminar.

*The Outcomes Effectiveness Research Team* is a project co-led by senior investigators from the Department of Nursing and the College. Its purpose is to conduct nursing outcomes-effectiveness research by using electronic data sources of nursing interventions and patient outcomes.

*The Gerontological Nursing Interventions Research Center (GNIRC)*, funded by the National Institutes of Health, promotes research to improve the health of elders. The Research Dissemination Core, based in both the Department and the College, produces evidence-based clinical guidelines and training in translational research.

*The Nursing Enterprise* provides small start-up capital, release time, and technical assistance to staff and faculty members who wish to develop new products and services that will respond to the needs of patients and families while furthering the goals of the Department and the College. A 10 percent return on investment in 3 years is expected to “grow” the capital available for future enterprise activity in nursing.

### Future Programs

Initiatives in the planning stage include the development of an experimental nurse-managed patient care unit in which faculty, staff, and students of all levels will develop and test new models of patient care and nursing education. The College and the Department will collaborate on establishing and staffing the unit with practicing clinicians, faculty members, in which nursing faculty members, practicing clinicians, researchers, postdoctoral fellows, graduate students, and various levels of undergraduate students compose the clinical team. With consultation from other health professions, the collaborative nursing team will assume responsibility for identifying and solving clinical problems, improving patient outcomes, providing unique learning experiences for students of all levels, and generating new knowledge.

Another project under discussion is a partnership for master's education in which clinical faculty at University of Iowa Hospitals and Clinics will guide and supervise the clinical instruction for advanced practice students, while the College will provide the didactic instruction. For example, the nurse managers of cardiac rehabilitation and pulmonary rehabilitation have proposed a master's course of study in cardiopulmonary rehabilitation that incorporates the required courses in the College with practical learning in their units. This kind of partnership for education will permit the College to offer Graduate work in specialties such as cardiopulmonary rehabilitation, perioper-

ative nursing, neonatal nursing, or geriatric psychiatry that do not generate large enrollments. From the University of Iowa Hospitals and Clinics perspective, the presence of advanced practice students will benefit their units in terms of ongoing recruitment and retention of educated and experienced clinicians.

The potential of the Collaboratory appears to be endless. It is a forum for keeping the Department and the College mutually informed on strategic objectives, thus, creating synergy from the beginning, rather than trying to cooperate once all the pieces are in place. The University of Iowa Hospitals and Clinics leadership now takes part in faculty searches and the College of Nursing participates in University of Iowa Hospitals and Clinics clinical research projects. Faculty members often are consulted regarding the development of clinical programs and the identification and evaluation of patient outcomes, whereas staff nurses are involved in designing and implementing clinical practice for students. The Collaboratory acknowledges and rewards faculty practice and deploys the clinical expertise of staff more strategically. It decentralizes problem solving but provides central support for good solutions. It enhances the ability to respond quickly and directly to the public with new products and services and increases the possibility for generating revenue that will support additional entrepreneurial activity in nursing. Essentially, the Collaboratory bolsters both the clinician and the academician, rewarding collaborative problem solving and creativity.

Note: This initiative began under the leadership of Dr. Geraldene Felton, Dean of the University of Iowa College of Nursing, and Dr. Judy Ryan, Vice President and Director of Nursing. With the support and encouragement of University of Iowa Hospitals and Clinics Chief Executive Officer, Edward Howell, their vision gave form to the eventual University of Iowa Nursing Collaboratory and its component parts.

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## The Iowa Model of Evidence-Based Practice to Promote Quality Care

Marita G. Tittler, PhD, RN, FAAN, Charmaine Kleiber, PhD, MS, RN, CPNP, Victoria J. Steelman, PhD, RN, Barbara A. Rakel, PhD, RN, Ginette Budreau, MA, MBA, RN, C, Linda Q. Everett, PhD, RN, CNAA, Kathleen C. Buckwalter, PhD, RN, FAAN, Toni Tripp-Reimer, PhD, RN, FAAN, and Colleen J. Goode, PhD, RN, CNAA, FAAN

Research utilization began with Florence Nightingale, who used data to change practices that contributed to high mortality.<sup>38,39</sup> In spite of Nightingale's efforts, a critical gap developed and grew between the conduct and use of research.<sup>54</sup>

In the 1970s, 1980s, and early 1990s, as nursing science became available to guide practice, use of research in practice was promoted by demonstration projects and programs such as the Conduct and Utilization of Research in Nursing project,<sup>19,22</sup> Western Interstate Commission for Higher Education in Nursing regional program in nursing research development,<sup>26-28</sup> Nursing Child Assessment Satellite Training Project,<sup>25</sup> Moving New Knowledge into Practice Project,<sup>8,12,13</sup> and Orange County Research Utilization in Nursing Project.<sup>42,56</sup> Findings from these projects

demonstrated that research utilization (RU) encompassed dissemination of scientific knowledge, critique of studies, synthesis of research findings, determination of the applicability of findings for practice, development and institution of research-based practice (RBP) guidelines, and evaluation of practice changes.

Parallel to nursing efforts, physicians have focused on evidence-based practices (EBPs) in medicine to promote synthesis and use of research findings from randomized trials. EBP has been defined by some experts as the synthesis and use of scientific information from randomized clinical trials (RCTs) only.<sup>30,35,41</sup> Others have defined EBP more broadly to include use of evidence from other types of scientific investigations (descriptive studies) and knowledge (e.g., case reports, expert opinion) as well as findings from RCTs.<sup>7,50</sup> Sackett and colleagues<sup>44</sup> define evidence-based medicine as "the integration of best research evidence with clinical expertise and patient values."

The term *evidence-based practice* has become widely adopted in recent years by the

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From the Department of Nursing Services and Patient Care (MGT, CK, VJS, GB, LQE, BAR), University of Iowa Hospitals and Clinics, and Office of the Provost (KCB) and College of Nursing (TT-R), University of Iowa, Iowa City, Iowa; and University of Colorado Hospital, Denver, Colorado (CJG)

nursing profession<sup>11</sup> and is sometimes used interchangeably with RU.<sup>32,57</sup> Although these two terms are related, they are not "one and the same."<sup>57</sup> Adopting the definition of EBP as the conscientious and judicious use of the "best evidence" to guide delivery of health care services, RU is a subset of EBP—a process and product encompassed within EBP. Importantly, RU is the application of findings from studies that use qualitative or quantitative methods and is not limited to the use of findings from randomized trials. As Cook<sup>7</sup> notes, "enthusiasm about the primacy of randomized trials to answer all clinically important questions is regressive." In comparison, EBP is a broader concept that encompasses RU as well as evidence from case reports and expert opinion in making decisions about health care practices.

The Iowa Model of Research-Based Practice to Promote Quality Care (Fig. 1), developed and originally implemented at the University of Iowa Hospitals and Clinics (UIHC),<sup>58</sup> serves as a guide for nurses and other health care providers to use research findings for improvement of patient care. Since its inception, the model has been used in numerous academic and clinical settings. More importantly, users of the model have provided important feedback on how to improve it. This article discusses the utility of the original model, explains the impetus for changing the model, and presents the revised Iowa Model of Evidence-Based Practice to Promote Quality Care (Fig. 2).

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### Utility of the Original Model

The utility of the 1994 model<sup>58</sup> is evident from the more than 93 written requests we have received to use it for publications, presentations, graduate and undergraduate research courses, clinical research programs, and practice. It has been cited in 28 nursing journal articles,<sup>48</sup> and the originators of the model were awarded the 1997 Sigma Theta Tau International Research Utilization Award.

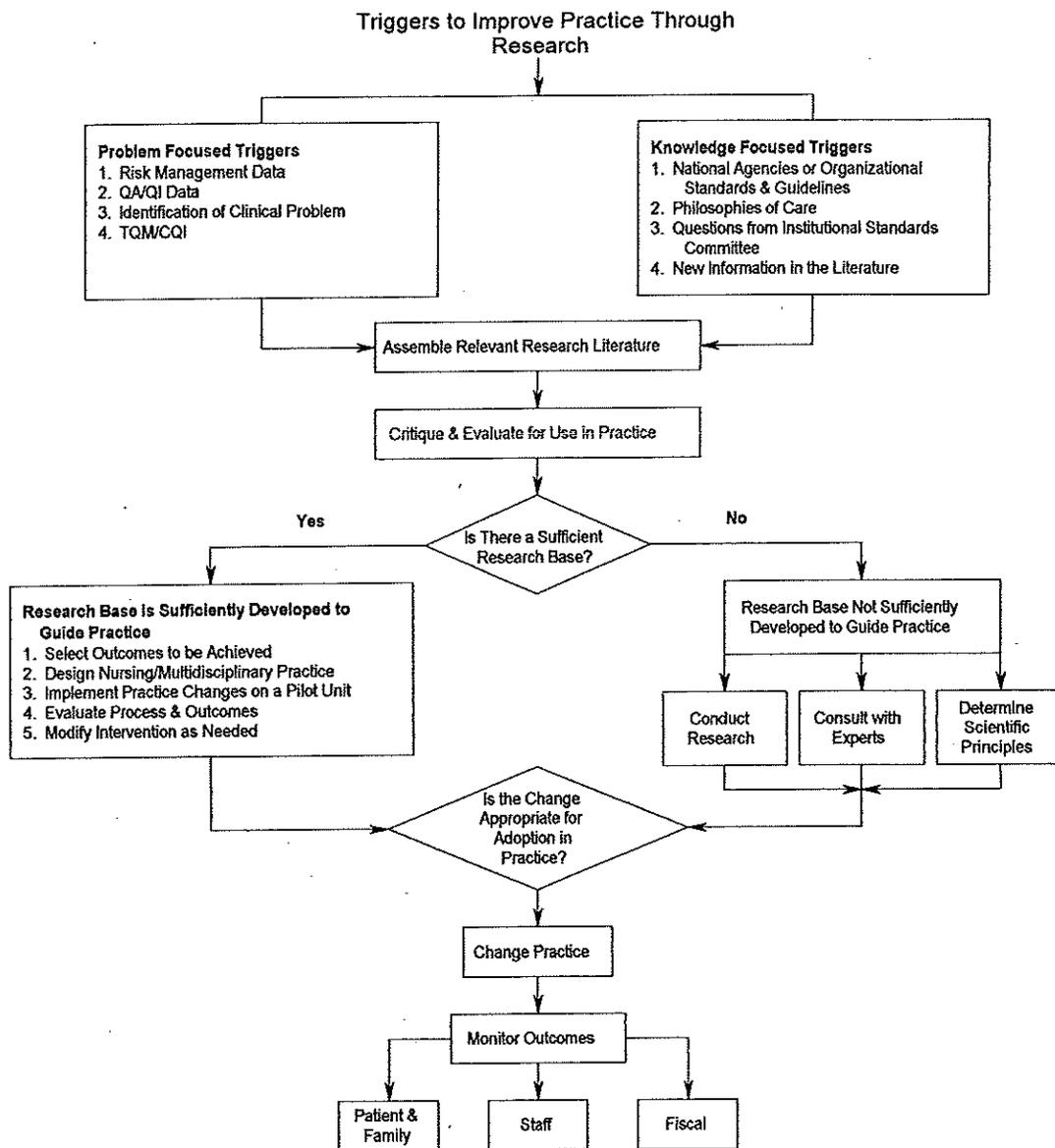
Staff nurses have used the 1994 model to identify areas of clinical inquiry (problem- and knowledge-focused triggers) that may be addressed through synthesis and application of research findings. For example,

critical care nurses from a 100-bed private hospital in Hong Kong used the model to guide changes in practice regarding normal saline instillation before suctioning ventilated patients.<sup>53</sup> No adverse outcomes arose from withholding normal saline instillation before suctioning. A decrease in nosocomial respiratory infection and improvement in patient comfort were noted, staff were satisfied with the change in practice, and a significant cost savings was realized.<sup>53</sup> The model also has been used to guide practitioners in reducing restraint use in the acute care setting<sup>9</sup> and to promote earlier ambulation after cardiac catheterization, resulting in improved patient comfort, improved patient satisfaction, and significant cost savings without adverse outcomes.<sup>31</sup>

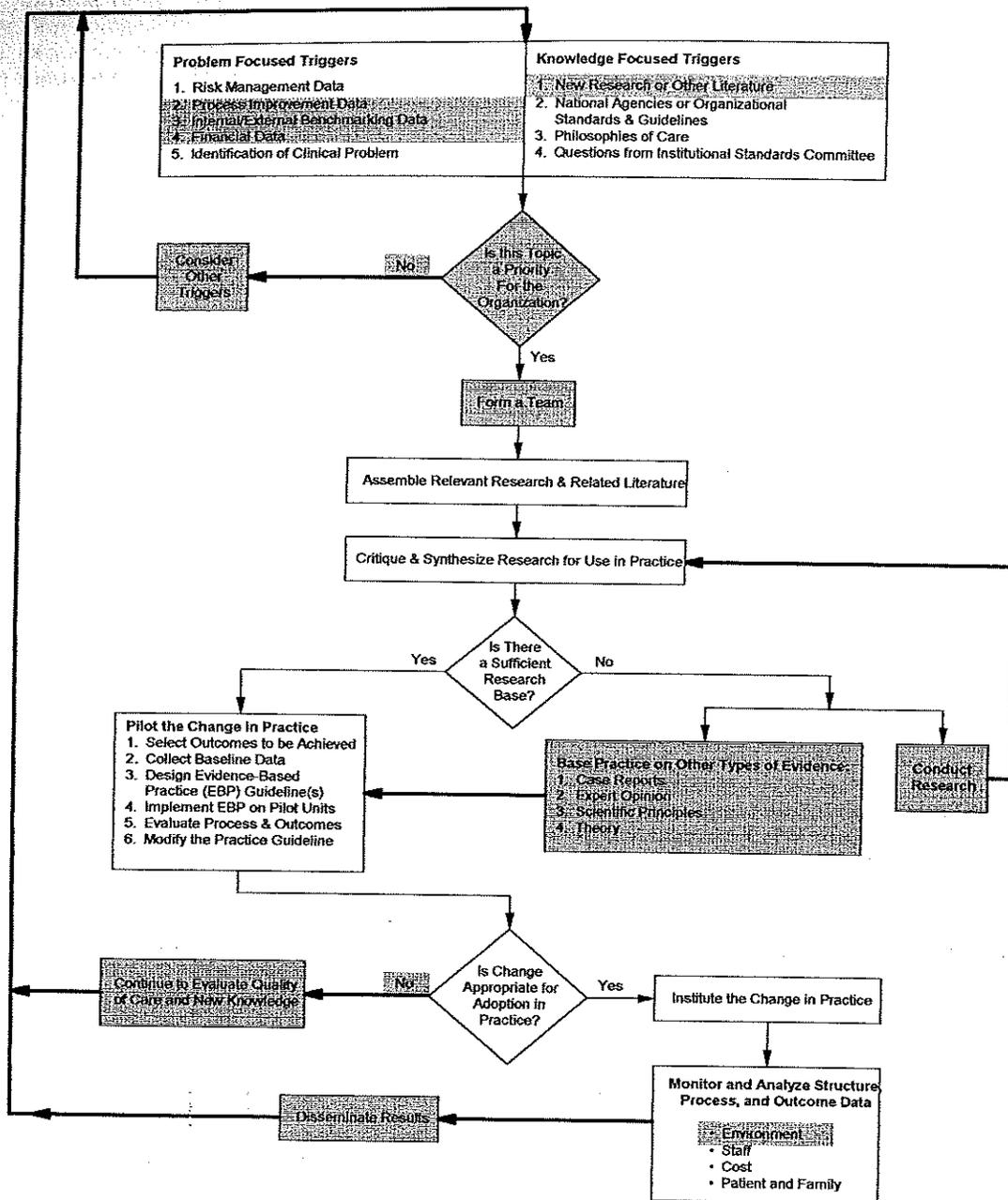
Feedback from nurses at numerous community-based agencies and health care institutions has indicated that the process is easy to follow and provides three options to choose from if there is not enough research to guide practice. Other aspects of the model that have been reported as helpful include the following:

- Provision of a decision point regarding sufficient research to guide practice,
- Emphasis on pilot testing the practice change with a smaller group of patients before instituting the change throughout designated patient care areas, and
- Evaluation of the change to determine if the outcomes identified in the research actually occur in practice

Use of the 1994 model is facilitated when it is incorporated into the work of existing committee structures such as quality management or research committees. This approach makes use of an established reporting channel within the existing organizational structure. Members of an existing committee or team, having worked through the group process, know each other's talents and can divide the workload in a manner to maximize the strengths of each member. Individuals knowledgeable about quality management and research are usually experienced in data acquisition, data management, and transformation of data into information, which are all important components of evaluating research-based changes in practice.



**Figure 1** The Iowa model of evidence-based practice to promote quality care. QA/QI = quality assessment and improvement. TQM/CQI = total quality management and continuous quality improvement. Diamond = A decision point. (From Tittle MG, Kleiber C, Steelman V, et al: Infusing research into practice to promote quality care. *Nursing Research* 43:307-313; with permission.)



**Figure 2** The Iowa model of research-based practice to promote quality care. Diamond = decision point; heavy lines = new feedback loop; shaded areas = new terminology and action steps. (Courtesy of Marita Titler, PhD, RN, FAAN)

Implementation of the model at the UIHC provides an environment for nurses from other agencies to learn experientially about RU. The UIHC provides on-site educational opportunities in research utilization for nurses from a variety of geographic locations and types of agencies. A formal residency program is funded for up to two master's-prepared nurses per year as a part of the Research Dissemination Core of the Gerontological Nursing Interventions Research Center (National Institute of Nursing Research [NINR] grant 2P30 NR03979). Individualized educational programs are also available for nurses from other national and international acute care, long-term care, and home health agencies.

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### **Impetus for Revisions**

Based on recent developments in the health care market and feedback from users, the original model was revised to (1) incorporate new terminology and feedback loops, (2) address changes in the health care market, and (3) encourage use of other types of evidence (e.g., case reports) when research findings are unavailable to guide practice.

### **User Feedback and Terminology**

Users of the 1994 model have commented on the need for feedback loops to illustrate that RU is an ongoing process of continually improving care throughout the implementation of research findings in practice. Accordingly, several feedback loops were incorporated into the model, terms used to describe problem- and knowledge-focused triggers were revised, and additional decision points were added.

### **Changes in the Health Care Market**

The changing social and economic environment of health care provides new incentives for RBP. The current health care arena is highly competitive, with institutions trying new initiatives to increase customer satisfaction and implementing highly visible customer-focused programs. These goals, ultimately aimed at protecting or expanding market shares, also may serve as catalysts for adopting RBPs. For example,

if a strategic goal of a health care agency is to increase the market share of pediatric critical care services, research-based protocols for promoting family-centered care may be given priority over other potential projects. Customer satisfaction can also serve as a catalyst for projects such as pain management, prevention of post-operative nausea, music therapy, or stress reduction.

Likewise, cost savings has become a common impetus for RBP changes. For example, a change in our clean-catch urinalysis technique was initiated to save money associated with supplies without affecting contamination rates of urine cultures.<sup>3</sup> Similarly, a project evaluating urinary catheters was undertaken to determine if the additional cost of a more expensive catheter could be offset by a reduction in urinary tract infections (M. Wagner et al, unpublished data).

### **Evidence-Based Practice**

The decision to change the name of the Iowa Model from "Research-Based Practice" to "Evidence-Based Practice" arose from our experiences in using the original model, the recent use of the term *evidence-based practice* in the nursing literature,<sup>11</sup> and the need to clarify the application of research findings in relation to use of other types of evidence. Although the scientific basis of nursing practice has grown over the past 30 years, some practices are not "research based," because findings are inconclusive or the practices have not yet been investigated. Nurses need a framework for making decisions about day-to-day nursing practices. When research is either unavailable or inconclusive, several additional sources of evidence such as theory, case reports, consensus of experts, and scientific principles can be used to guide practice. For example, a series of published case reports noting morbidity and mortality of children after aspiration of latex balloons led our nursing department to institute a policy prohibiting latex balloons in pediatric areas of the hospital.

The definition of "evidence" is still actively debated in the interdisciplinary and international scientific community. Groups such as the Cochrane Collaboration (originating in England) and the Evidence-Based Medicine

Working Group (based in Canada) promote strict criteria for evaluating the strength of the research before accepting any conclusions on which to base medical practice.<sup>6, 18, 24, 46</sup> The RCT is most often still regarded as the gold standard for research,<sup>7, 29, 55</sup> and other forms of research (cohort designs or case studies) are viewed by some to be of lesser value in guiding clinical practice.<sup>29</sup> It must be remembered, however, that the work of medicine is different from the work of nursing. Although RCTs are well established for testing the efficacy of drug therapies or medical treatments, nursing intervention testing may not lend itself to this approach.

Others have proposed a broad definition of evidence.<sup>7, 44</sup> For example, the Agency for Healthcare Policy and Research, now the Agency for Healthcare Research and Quality, has categorized evidence into five levels, with the strongest level being meta-analysis of multiple studies and the weakest level including case reports and clinical examples. The Guideline for Management of Cancer Pain<sup>23</sup> made use of this last level of evidence when evaluating the practice of applying heat for comfort. Based on the recommendation of a 1940 study of rats and several other studies of fetal tissue, texts and articles in peer-reviewed journals had labeled the presence of a malignancy as a contraindication to the application of heat. The authors of the guideline acknowledged the physiologically based theory that warmth increases blood flow and might enhance tumor growth if applied to a cancerous region of the body. Nevertheless, the guideline panel concluded that in the absence of research showing that superficial heat is harmful and in the presence of the clinical evidence that heat seems to help relieve pain, superficial heat is recommended for cancer pain.

A variety of other definitions and methods to grade evidence are used when EBP guidelines are developed.<sup>1, 2, 5, 18, 29, 50, 59</sup> There is no consensus regarding the definition of EBP and grading schemas used in development of evidence-based guidelines.<sup>15, 29, 50-52, 55</sup> After careful review of existing definitions, philosophies, and evidence-based guideline grading schemas to use in our revision of the 1994 model, we adopted the definition of EBP as "the conscientious and judicious

use of current best evidence to guide health care decisions."<sup>43</sup> Research evidence includes findings from meta-analyses, RCTs, observational studies, and qualitative research; other types of evidence include case reports, expert opinion, scientific principles, and theory.

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## The Revised Model

As noted previously, several revisions were made to the 1994 model based on feedback from users of the model, analysis of the EBP literature, and consideration of emerging social and environmental factors in the health care market. Major revisions are described in the following sections and are highlighted in Figure 2.

### Triggers

Problem- and knowledge-focused triggers are catalysts for nurses to think critically about clinical and operational efficiency and effectiveness and thus to seek scientific knowledge for use in decision making. The term *process improvement data* replaces the term *quality assessment/improvement* and *total quality management/continuous quality improvement*,<sup>48</sup> because process improvement is a more inclusive term that encompasses improvements in clinical and operational systems of health care.

"Internal/external benchmarking data" and "financial data" were added as "problem-focused triggers" to reflect the use of financial consortium benchmarking and internal benchmarking data by organizations when making clinical and operational decisions. As health systems and networks respond to market forces, it has become possible for individual institutions to gauge their progress toward organizational goals using system-wide outcomes, taking into consideration factors such as facility size, patient mix, and severity of illness. Certainly, deviations from expressed goals and target indicators within and outside the health care setting can serve as important triggers to the conduct and utilization of research. Finally, American health care has become a "largely for-profit, market-driven model of managed care."<sup>47</sup> In today's health

care environment, in which many health care agencies are struggling to survive, failure to consider financial data as a problem-focused trigger is shortsighted. Now more than ever, research must be compatible with the realities of the health care marketplace.

The term *new information in the literature* (knowledge-focused trigger) was replaced with the term *new research or other literature* to reflect the importance of clinical- and theory-based publications as information sources that stimulate questioning of current practice. This trigger was listed first to emphasize the importance of new knowledge in stimulating critical thinking.

### Priority of the Topic

"Is this topic a priority for the organization?" is a new decision point in the model. Nurses must consider where the topic (e.g., pain, urinary tract infections) fits in relation to organization-, department-, and unit-specific priorities. This is a critical question to ask, because, as noted by Blumenthal,<sup>4</sup> one way to maintain the interest and support of members of health care agencies is to increase investment in research and development that is relevant to the needs of that enterprise. Higher priority may be given to EBP projects that address high-volume or high-cost procedures, those that are closely aligned with the institution's strategic plan, or those that are driven by institutional or market forces. One example of a new priority at the University of Iowa that meets such criteria is macular degeneration, which is the most common cause of legal blindness in the United States and affects about 10% of people over the age of 65 years. The huge cost in terms of human suffering and economic loss has made interdisciplinary collaborative research efforts on diagnosis, treatment, and formulation of guidelines for laser treatment a high priority for the University's newly established Center for Macular Degeneration.

Consideration of how the topic fits into organizational priorities can be important to garner the support of nurse managers, nursing leaders, administrators, and physicians as well as the resources necessary to carry out the change in practice. Equally as important,

the topic selected should excite the staff who are responsible for making the change in practice. A topic that is embraced by staff and aligned with the strategic goals of the organization has a high likelihood of being adopted by those providing care.<sup>56</sup>

It is possible that several topics meet these "top priority" criteria and that nurses may be confronted with selecting one topic to pursue from a list of several. Issues to consider when selecting a topic are summarized in Box 1.

If the topic is not a priority for the organization, other topics are considered ("consider other triggers"). This feedback loop is new in the revised model.

### Forming a Team

The next step in the model is new. A team is responsible for development, implementation, and evaluation of the EBP. An existing team or subgroup of an existing committee may do the work, or it may be necessary to form a new team. The composition of the team is directed by the topic selected and should include interested interdisciplinary stakeholders in the delivery of care. For example, a team focusing on pain management would ideally be composed of pharmacists, nurses, physicians, and psychologists. In contrast, a team working on the EBP of bathing might consist of nurses, assistive personnel, and experts in skin care.

### Assemble Relevant Research and Related Literature

Once a topic is selected and a team is formed, the relevant research and related literature

#### Box 1 ISSUES TO CONSIDER WHEN SELECTING A TOPIC FOR EVIDENCE-BASED PRACTICE

- Fit with the strategic goals of the organization
- Magnitude of the problem
- Number of people interested in the topic
- Interdisciplinary support
- Support of nurse leaders
- Cost implications
- Potential barriers to change

are retrieved. Particular attention is given to including evidence-based guidelines, systematic research reviews, meta-analyses, and clinical studies on the topic.

In addition to using traditional methods of finding published literature (e.g., health indexes), other sources of information should be reviewed, including bibliographies of integrative reviews, abstracts published as part of conference proceedings, master's theses and doctoral dissertations, and direct written or verbal communication with scientists investigating the topic and with others who have completed a research utilization project on the same topic. A number of health care indexes such as the Cumulative Index to Nursing and Allied Health Literature have electronic databases available to assist with the search process. Electronic journals such as the *On-Line Journal of Knowledge Synthesis for Nursing* and the *Evidence-based Nursing Journal* are particularly helpful for research utilization projects, because articles provide a synthesis of the research and an annotated bibliography for selected references or summarize findings from published research. Other databases such as the Best Evidence Database and Cochrane Database of Systematic Review provide access to evidence-based health care reviews. In using all these sources, it is important to identify key search terms and to use the expertise of librarians in locating publications relevant to the subject.

### Critique and Synthesis of Research

The critique process is a shared responsibility, and leadership from advanced practice nurses is an integral component of critiquing and synthesizing research for practice.<sup>51</sup> It is helpful for one individual to serve as the leader for the project; this individual should have skills in research critique. A group approach to critique of research is recommended because it distributes the workload, helps those responsible for implementing the changes to understand the scientific base for the change in practice, arms nurses with citations and research-based sound bites to use in effecting practice changes with peers and other disciplines, and provides novices with an environment for learning how to critique and apply research findings in practice.

Once the literature is located, it is helpful to group the articles as clinical (nonresearch), systematic research reviews, theory articles, and research articles. It is important for individuals doing critiques to initially read the clinical and systematic review articles to understand the state of practice and science, respectively. Reading theory articles before undertaking the critiques provides an understanding of the various theoretical principles and concepts that may be encountered in reading and critiquing the research. Numerous aids are available to assist with the critique process.<sup>5,10,17,21,55</sup> The following methods can make the critique process productive, fun, and interesting:

- Using a journal club to discuss critiques done by each member of the group
- Pairing a novice with an expert to do critiques
- Partnering with faculty or students from a local nursing school who may be interested in the topic and want experience doing critiques
- Assigning the critique process to graduate students interested in the topic
- Making a class project of the critique and synthesis of research for a given topic

Once studies are critiqued, a decision is made regarding use of each study in the synthesis of research findings. Factors that are considered for inclusion of studies in the synthesis process include (1) the overall scientific merit of the study, (2) the type (e.g., age, gender, pathologic findings) of subjects enrolled in the study and their similarity to the patient population to which the findings are to be applied, and (3) the clinical relevance of the study. For example, if the focus of the project is prevention of deep venous thrombosis in postoperative patients, a descriptive study using a heterogeneous population of medical patients is not appropriate for inclusion in the synthesis of findings.

Synthesis of available research can involve a variety of techniques. The most common strategy is the systematic research review. This strategy pulls together research findings through analysis of the studies by one or more reviewers. The process of systematic reviews is facilitated by the use of a summary table, in which critical information from studies can be documented.<sup>5,56</sup> If the research

provides a clear and consistent message, this approach can be reliable, yielding similar conclusions among reviewers. If the research is unclear and does not easily identify a superior treatment, this type of research synthesis may not provide needed guidance for practice.

Meta-analytic techniques use a quantitative approach to help solve this problem. These methods lift the information-processing burden from the reviewer by quantitatively integrating findings across studies while simultaneously correcting for the effects of statistical and measurement artifacts. They apply the same statistical methods that are routinely used for analyzing data within a study to the problem of integrating findings across studies.<sup>14</sup> Although still imperfect and subject to methodologic pitfalls, the results of a meta-analysis usually provide the closest possible estimate to the effect in the true population because they rely on all available evidence (both published and unpublished). An example of a practice change driven by meta-analysis is the use of saline versus heparin for maintaining the patency of peripheral intravenous locks. A meta-analysis of 17 studies showed that effect sizes for clotting, phlebitis, and duration of the lock were close to zero, indicating that neither agent (heparin or saline) was favored for these three outcomes. Because use of heparin poses additional risks for patients (e.g., thrombocytopenia), the results indicated a need to change practice to the use of saline for flushing. This practice change had the added benefits of eliminating the extra nursing time required to flush between heparin and incompatible drugs (e.g., certain antibiotics) and decreasing supply costs, which were estimated to reach as high as \$109,100,000 to \$218,200,000 annually in US health care dollars.<sup>16</sup>

### **Is There Sufficient Research to Guide Practice?**

Determining if there is enough research to guide practice is a critical decision point. The synthesis methods described here are important means of making this decision. The following criteria are also helpful: (1) the consistency of findings across studies, (2) the type and quality of the studies, (3) the clinical

relevance of the findings for practice, (4) the number of studies with sample characteristics similar to those to which the findings are to be applied, (5) the feasibility of the findings for use in practice, and (6) the risk:benefit ratio. When there is sufficient research to guide practice, major or minor practice modifications may be warranted.<sup>56</sup>

### **Insufficient Research to Guide Practice**

When there is insufficient research on which to base practice, one option for the clinician is to conduct a study. When the study has been completed, the results should be systematically integrated with findings from other research as indicated by the feedback loop to "critique and synthesize research for use in practice." For example, a group of nurses were interested in using saline rather than heparin solution to flush "locked" peripheral intravenous (IV) catheters in our neonatal intensive care units. The research in this area was inconclusive, with one study demonstrating that saline extended the life of intravenous (IV) catheters, one study demonstrating heparin to be superior to saline, and one study demonstrating no difference between heparin and saline. All the studies had small sample sizes, lacking power for conclusive results. The nurses at our hospital conducted a randomized trial of saline and heparin for IV locks in neonates and found no statistically significant differences between groups. Our sample size was also small, however, and lacked statistical power. Insufficient funding and human resource issues made the continuation of the research study impractical. The next step in the process was to critically evaluate all the available evidence. The hospital neonatologists and neonatal nurses decided that there was enough evidence to proceed with an RU project. Baseline data were collected on infiltration rates, with heparin solution as the standard flush solution; those data were compared with infiltration rates collected after changing the practice to use of saline flush. Survival curve analysis revealed no statistically or clinically significant differences between groups, with a power of 0.8. This methodical examination of a nurse-driven practice change prevented disagreements among clinical team members

and enhanced the reputation of nursing as a science-driven profession.<sup>20</sup>

If there is not enough research evidence, an alternative to conducting a study is using other types of evidence (e.g., case reports, expert opinion, scientific principles, theory) to guide practice. Published case reports can provide valuable evidence for untoward outcomes. For example, case reports regarding the transmission of Creutzfeldt-Jakob disease provided evidence of how the fatal disease can be transmitted iatrogenically. This evidence was used to develop an infection control protocol at the UIHC.<sup>49</sup> Expert opinion can also provide a valuable source of knowledge for a practice change when there is insufficient research to guide practice. For example, expert opinion provided by the American Academy of Allergy, Asthma, and Immunology supported the implementation of latex avoidance practices with spina bifida patients beginning at birth.

New to this model is combining other types of evidence such as scientific principles of infection control with available research findings to develop an EBP guideline. This is designated by the arrow between the box "base practice on other types of evidence" and "pilot the change in practice." Components of the EBP guideline may be research based, although other steps in the guideline rely on evidence from expert opinion, case reports, scientific principles, and theory.

In the revised model, the term *evidence-based practice* is used to denote a practice developed from research findings in combination with other types of evidence. Priority is given to projects in which a high proportion of a practice guideline is developed from research evidence. In reality, most practice guidelines are developed using several types of evidence. For example, methods of endotracheal suctioning are based on research evidence, expert opinion, and scientific principles. We suggest using the term *evidence-based practice* guideline rather than *research-based practice* guideline.

In writing EBP guidelines, it is important to designate which components are based on research evidence and which parts are supported by other types of evidence. It is also important to indicate clearly the type and strength of research used in formulation of the guideline.<sup>55</sup>

## Pilot the Change in Practice

The change in practice is piloted before adoption, which entails the following steps: (1) selecting outcomes to be achieved, (2) collecting baseline data, (3) developing a written EBP guideline, (4) trying the guideline on one or more units or with a small number of patients, (5) evaluating the process and outcomes of the trial, and (6) modifying the guideline based on process and outcome data. The pilot indicates the feasibility and effectiveness of using the guideline in various practice settings such as acute care, long-term care, or home health care. It is important to know if the guideline can be carried out as intended and if outcomes noted in the research can be achieved in a practice setting, where multiple caregivers deliver the practice to a more heterogeneous patient population.

Piloting a research-based change in clinical settings takes the intervention away from the controlled environment of a research study and puts it into an environment where the effects of extraneous variables influence the results. Consequently, it is possible to obtain different results than those demonstrated by the research on which the guideline is based. An example of this occurred when piloting the effectiveness of using aspirate pH and color to determine nasogastric tube placement at the bedside. The research showed that this technique could identify correct placement of the tube 85% to 87% of the time.<sup>34</sup> When this method was piloted on four inpatient units at a large academic medical center, this technique yielded only a 50% accuracy rate. Medications and aspirates containing tube feedings adversely influenced the reliability of pH interpretations by nurses.<sup>40,57</sup>

## Adoption in Practice

After the EBP has been piloted, a decision is made about adopting the practice for all appropriate patient populations. When outcomes from the practice change are not achieved as expected, adopting the new practice is not supported, and the answer to "is change appropriate for adoption in practice?" is "no." In this case, efforts are refocused to ongoing monitoring of quality of care and evaluation of new knowledge from

recently reported research. This evaluation can result in new information that stimulates the process to begin again as illustrated in the model by a feedback loop (arrow) to the "problem- and knowledge-focused triggers" (see Fig. 2).

If quality improvement monitoring continues to show a problem with current practice and no further research evidence exists to support an alternative approach to the method piloted, other types of evidence such as expert opinion, scientific principles, or theory can be used to determine the best practice. In piloting the use of pH aspirate to determine nasoenteral tube placement, the answer to the decision point on the Iowa Model, "is change appropriate for adoption in practice?," was "no." The use of pH aspirate for determining placement of nasoenteral tubes was not feasible or effective when piloted. Nevertheless, there is strong research evidence to suggest that traditional practice of air insufflation through the nasoenteral tube and auscultation at the abdomen is not reliable and puts patients at risk for complications, especially when small-bore feeding tubes are placed.<sup>33</sup> The EBP team responsible for this project obtained expert opinion and used scientific principles to revise the guideline for determining nasoenteral tube placement. Because of the lack of a good bedside method for determining tube placement, the use of radiography on initial placement was recommended. This change in practice was realistic for our setting and was endorsed by staff.

### **Institute the Change in Practice**

If the pilot reveals positive outcomes and feasibility for carrying out the EBP, the practice change is adopted and integrated into practice throughout a patient population or organization. Adoption can be facilitated through (1) organizational support, (2) education of staff with regard to the knowledge and skills necessary to carry out the EBP, (3) ownership of the new practice by nurses and all affected disciplines, (4) perception by staff that the change improves the quality of care, and (5) time to carry out the EBP as intended. If EBPs are to move from "the book" to the bedside, user-friendly prompts are needed in the care environment to help staff practice

according to the evidence base. For example, this may require revising patient care documentation systems, developing bedside algorithms to guide practitioners in decision making, or removing certain equipment (e.g., certain types of Foley catheters) from the care environment.<sup>37, 56, 58</sup>

### **Monitor and Analyze Structure, Process, and Outcome Data**

The original model emphasized evaluation of patient (e.g., less pain), staff (e.g., increased nursing knowledge), and fiscal (e.g., cost avoidance) outcomes. Evaluation of environmental variables has been added to the revised model based on our experiences and continued work in EBP. For example, the effectiveness of a change in infection control practices for resistant organisms was measured by environmental cultures. Adding environment to structure, process, and outcome data provides another dimension to consider when evaluating EBP changes.

Evaluation of an EBP, whether it involves a change or supports current practice, provides important information for other care providers, administrators, and policy makers. It is imperative that evaluation data from implementation of EBPs be shared with these constituents through presentations and publications as illustrated in the feedback loop from "disseminate results" to "problem- and knowledge-focused triggers" (see Fig. 2). Evaluation provides insights into the outcomes of the practice change and frequently includes structural and cost information beyond what is available in the research literature. Evaluation data lend support to the usefulness of the intervention in practice settings by demonstrating the ability of multiple care providers to use the EBP and the reality of achieving expected outcomes.

Reporting structural, process, and outcome data to internal networks illustrates the value of EBP activities to administrators, peers, and other disciplines. When care is improved, cost reductions and positive outcomes of the practice change are frequently realized. It is important to capture these data through evaluation and include them during the budget process, quality improvement efforts, and other institutional initiatives.

**SUMMARY**

The UIHC Department of Nursing is nationally known for its work on use of research to improve patient care. This reputation is attributable to staff members who continue to question "how can we improve practice?" or "what does the latest evidence tell us about this patient problem?" and to administrators who support, value, and reward EBP. The revisions made in the original Iowa Model<sup>29</sup> are based on suggestions from staff at UIHC and other practitioners across the country who have implemented the model. We value their feedback and have set forth this revised model for evaluation and adoption by others.

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*Address reprint requests to*

Marita G. Titler, PhD, RN, FAAN  
 Research, Quality, and Outcomes Management  
 Department of Nursing Services and Patient Care  
 University of Iowa Hospitals and Clinics  
 200 Hawkins Drive, T-100 GH  
 Iowa City, IA 52242

e-mail: marita-titler@uiowa.edu

