Creating a National Telehealth Nursing Research Agenda

An Invitational Conference funded by
the Agency for Health Research and Quality (AHRQ) – R13-HS0115961-01

October 9-11, 2005
Mount Aloysius College
Cresson, PA

Project Co-Sponsors:

AT&T Center for Telehealth Research and Policy at UTMB
The University of Texas Medical Branch - Electronic Health Network
Mount Aloysius College Division of Nursing (funded through the Office of Naval Research [Award # N00014-04-1-0516] and administered by the Henry M. Jackson Foundation for the Advancement of Military Medicine)
The University of Texas Medical Branch - Hospitals & Clinics Nursing Department
Polycom, Inc.

NTAI
Nursing Telehealth Applications Initiative
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I. ACKNOWLEDGEMENTS

No project of this magnitude could have been accomplished by the two of us working alone. In fact, we were fortunate to have a variety of resources at our disposal. Our generous sponsors provided the financial support that made the conference possible. The grant from the Agency for Health Research and Quality was supplemented by support from the Electronic Health Network at the University of Texas Medical Branch (UTMB), the Division of Nursing at Mount Aloysius College, the Hospitals and Clinics Nursing Department at UTMB, and Polycom, Inc.

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Alice Wygant and Caroline Ackroyd, from the AT&T Center for Telehealth Research and Policy at UTMB, served as the editor and associate editor, respectively. Their invaluable assistance made this publication possible.

The support staff at UTMB and Mount Aloysius worked tirelessly on the conference and the subsequent publication of these proceedings. Their contribution to the logistics and attention to detail required by both phases of the project cannot be overestimated.

Phyllis Beck Kritek served as a masterful facilitator. Her considerable skills kept the conference on track and ensured maximum productivity. Her guidance with the post-conference evaluation process was invaluable.

The conference speakers challenged us with provocative presentations that served as a springboard for idea generation throughout the conference. Their papers, based on their conference presentations, form the largest part of these proceedings.

The visionary leadership and support of Dr. Jeanette Hartshorn, former executive director of the UTMB Telehealth Center*, inspired us to pursue the grant from AHRQ. Dr. Glenn Hammack, associate vice president and executive director of the UTMB Electronic Health Network, continued to support the project to its conclusion.

Finally, our conference participants - educators and practitioners with a sincere interest in furthering the telehealth agenda - willingly gave of their time, insight, and experience. Their commitment and enthusiasm sparked the rich discussion and lively debate that we hope has laid a solid foundation for continuing work in this area.

* Dr. Hartshorn currently serves as the assistant vice president for Research and Program Development and the director of nursing at the University of Houston, Victoria, Texas.
II. PLANNING COMMITTEE

A conference planning committee was formed by Dr. Poldi Tschirch, project director for this proposal. Individuals on the planning committee provide expertise in telehealth nursing practice, evidence-based practice, and translation research, nursing care delivery systems and consensus-building processes. Three meetings have been held by conference call for the initial conference planning and proposal preparation. The planning committee (listed below) assumed primary responsibility for conference planning, implementation and dissemination of conference proceedings:

- Poldi Tschirch, RN, PhD. Director of Nursing Informatics (formerly Director of Distance Education, UTMB Telehealth Center), The University of Texas Medical Branch. Galveston, Texas.
- Janet Grady, RN, PhD. Chairperson, Division of Nursing, Mount Aloysius College, Cresson, Pennsylvania.
- Jeanette Hartshorn, RN, PhD, FAAN. (formerly Executive Director, UTMB Telehealth Center, The University of Texas Medical Branch. Galveston, Texas).
- Phyllis Beck Kritek, RN, PhD, FAAN. Principal, Courage: Conflict Transformation, Consultation, Training and Mediation Services, Richmond, VA.
- Jean Sorrells-Jones, RN, PhD. Principal and Senior Industry Expert, CSC Global Health Solutions, Houston, TX.

The Conference Steering Committee has finalized conference planning and overseen conference implementation. In addition to the individuals identified above, this committee included the following members, who have reviewed conference plans and provided feedback on the application:

- Michael Custer, RN, CS, DrPH. Colonel, US Army Nurse Corps, Chief of Nursing Research, Walter Reed Army Medical Center, Washington, DC.
- Loretta Schlacta-Fairchild, President and CEO, iTelehealth, Inc.; Chair, Nursing Special Interest Group, the American Telemedicine Association, Frederick, MD.
- Marita Titler, RN, PhD, FAAN. Director of Research, Quality and Outcomes Management, University of Iowa Healthcare, Iowa City, IA.
- Phyllis Waters, RN, MSN. Director for Nursing Practice and Professional Advancement, UTMB Hospitals and Clinics Nursing Department, Galveston, TX.
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IV. EXECUTIVE SUMMARY

Advocates and users of emergent telehealth, both practitioners and recipients of care, have experientially demonstrated the potential of this health care modality, while the exponential explosion of creative technology further unveils its as yet unrealized possibilities. Nurses have become active advocates and participants in this emerging future, creating the specialty of telehealth nursing.

Pressing unmet health care challenges, the traditions and values of nurses, and the need for systematic study of this practice have made the delineation of clear telehealth nursing research priorities a compelling goal. To that end, a group of engaged stakeholders convened to generate a beginning articulation of these priorities. The intent of this group was to create an initial statement of priorities that would further dialog among all stakeholders and support focused research initiatives.

The group convened October 9-11, 2005 in Cresson, PA hosted by Mount Aloysius College. Dr. Janet Grady, Chairperson of the Division of Nursing at Mount Aloysius and Dr. Poldi Tschirch, then Director of Distance Education at the University of Texas Medical Branch (UTMB) Telehealth Center in Galveston, Texas provided leadership. A grant awarded to Dr. Tschirch by the Agency for Health Research and Quality (AHRQ R13-HS0115961-01) supplied partial funding for the conference. Additional sponsors included Mt. Aloysius College, Nursing Service, and the Electronic Health Network at UTMB, and Polycom.

The conference leaders organized a process that first explored germane topics through the presentation of papers by experts. Using these papers as catalysts, participants then collectively responded to a set of questions by means of brainstorming followed by weighted voting. Brainstorming questions (seven) emerged from the stated goals of the gathering, and outcomes were a set of priorities (identified by weighted voting) viewed by the group as the most compelling answers to the questions. The overriding goal of the group was the identification of priority research initiatives for telehealth nursing. While several were identified as important, the overriding key recommendation was as follows:

**Increase studies with clearly identified populations, standard outcomes, and standard methodologies that support the cost effectiveness of telehealth.**

The initial stimulus paper was presented by Dr. Loretta Schlacta-Fairchild who discussed the clinical standards and competencies in telehealth nursing. The initial question asked participants: *What are the specific phenomena of concern that telehealth nursing practice seeks to address? What are the nursing diagnoses, problem statements, presenting complaints, and patient needs that the telehealth nurse addresses?* Priority responses focused on chronic care issues: the need for patients to manage their own diseases and demonstrate skill and knowledge about their symptoms, the importance of coordination of care, and the impact of co-morbidities. Creating therapeutic presence, screening for disease prevention, and the importance of timeliness of care were also identified as important responses to this question.

Dr. Meridean Maas provided participants with a tour through the terrain of nursing classification systems and their implications for telehealth nursing. Her presentation created context for responses to the second question: *What specific interventions do nurses in telehealth practice provide in response to stated needs; are some interventions unique to this practice?* The predominant group response to this question emphasized symptom management, though participants also identified several additional important interventions. These included responding to critical data; conducting "modified" clinical assessments; matching technology to clinical needs, desired outcomes, and the patient’s ability; virtual presence; monitoring and
IV. EXECUTIVE SUMMARY (Continued)
trending (tracking) the patient’s health status; family involvement in care; and the coordination of multidisciplinary care. While the primary focus on symptom management had centrality for participants, it is noteworthy that the added emphases point to emergent interventions and those unique to telehealth nursing.

Evidence-based practice was elucidated through a presentation by Dr. Marita Titler that set the stage for the group to respond to the next three questions. These questions asked participants: Among the interventions that nurses employ in telehealth practice, which show the highest potential for demonstrating the clinical efficacy of this practice model? Which show the highest potential for demonstrating cost effectiveness? Which show the highest potential for creating evidence-based future practice directives?

Question 3 focused on clinical efficacy of the nurse’s practice model. Participants posited that clinical efficacy was most evidenced through chronic disease management, patient empowerment, and teaching self-management using technology. A second level of importance included the efficacy of telepresence, increased access for persons seeking services, attention to changes in the patient’s health status, and the ability of the nurse to export expertise regardless of geography.

The fourth question centered on cost effectiveness. Participants indicated that the cost effectiveness of telehealth practice was most readily demonstrated with interventions that focused on enhanced self-care management, early detection of health deterioration, and symptom management. As in prior questions, a second level of responses tended to emphasize the future more, by accentuating the potential demonstration of cost effectiveness in the management of chronic disease, the value of nursing, and the utilization of standards.

Question 5 focused on evidence-based practice directives. In response, participants identified several areas of development where telehealth nursing practice has a high potential for creating such directives. The group indicated that the creation of standardized care delivery studies and a different view of patient-centered care were unique factors in telehealth nursing. They also identified the need to employ and understand the similarities and differences in contexts, which alter processes and outcomes of telehealth delivery. They placed substantive emphasis on the uniqueness of telehealth nursing practice, noting how telehealth nursing changes nursing administration, alters patients’ access to care, and breaks down barriers that deter desired outcomes.

Dr. Carol Bickford and Ms. Kristen Hellquist presented the final papers on policy issues. Question six therefore asked participants: Among the interventions and clinical outcomes specific to telehealth nursing practice, which, if studied, have the greatest potential for shaping future health policy initiatives? This question elicited a high consensus response from the group, with primacy given to creating partnerships among key stakeholders to achieve desired policy outcomes. The group also supported innovation using new pedagogies for emerging generations and the exploration of professional practice roles in telehealth. Several other ideas garnered enough group interest to be noteworthy. These include determining best practices, building an on-going revolution, identifying ways to use technology proactively, patient empowerment, the shifting of the balance of power from providers to consumers, and the break down of parochialism among healthcare professionals to enable inter-professional service and practice.

Question 7 moved from policy initiatives to the actual strategies needed to achieve the primary aim of the conference, the identification of research priorities in telehealth nursing: What strategies are the most promising in creating a program of research in telehealth nursing that
IV. EXECUTIVE SUMMARY (Continued)

would provide nurses with evidence-based practice opportunities? The group consensus supported increasing studies to support the cost effectiveness of telehealth with clearly identified populations, standard outcomes, and standard methodologies. They recommended educating and lobbying groups with research funds, such as (NINP), National Institute for Nursing Research (NINR), Robert Wood Johnson Foundation (RWJ), and the American Association of Retired Persons (AARP). The group also supported working to get telehealth nursing leaders appointed to the national advisory councils of selected federal funding agencies such as NINR. Further strategies emphasized the need to test nursing interventions across levels of technology and the formation of partnerships between nurse research methods experts and those in telehealth who manage the data.

The final brainstorming question explored by the group essentially served as the culmination point: Among all the priorities generated at this conference, which are the most urgent in guiding stakeholders in planning future research initiatives? The top priority of the group, garnering significantly more votes than other topics, was an increase in studies with clearly identified populations, standard outcomes, and standard methodologies to support the cost effectiveness of telehealth.

A second level of priorities with several key items was also identified. Participants recommended the creation of programs of levels of research development, i.e., moving from descriptive to designs that are more experimental. They affirmed the need for a common definition of telehealth with a blueprint for development and an identified end point for goal achievement. Partnering with educational institutions doing basic nursing education to build optimal conditions for telehealth research and practice interests was identified as a useful strategy, as was integrating telehealth agendas into existing priority research agendas, both nationally and internationally. Participants recommended defining key stakeholders in telehealth nursing and creating partnerships among those stakeholders, along with increasing visibility by publicizing outside the telehealth world. Looking to the future, participants gave priority to the standardization and regulation of telehealth based on best practices to ensure consistency, and envisioned an international state of the science conference on telehealth sponsored by one or more key national and international agencies or organizations such as the NINR, International Council of Nurses (ICN), National Institutes of Health (NIH), or AHRQ.

In addition to the brainstorming and voting process, participants were also invited to add images or ideas to a concept map. This visual tool provided a “space” to introduce additional ideas and enhance creative thinking. Finally, participants provided individual recommendations or reported individual concerns in writing to augment conference outcomes.
IV. CONFERENCE ABSTRACT

Evaluation:
To date, we have processed eight evaluations, 36.4% of the total of 22 participants. The conference evaluations received so far tended to reflect the diverse interests of the group. The following report is based on the responses to the evaluation form.

Most significantly, 55% of the conference participants strongly agree and 40% agree that the use of a consensus process was an effective strategy for developing a national research agenda for telehealth nursing.

The majority of the conference participants felt that the conference objectives were met and responded very positively to the format and process of the conference. Some of those in attendance would like to see research emphasize the outcomes and effects of telehealth delivery compared to in-person, face-to-face delivery.

The majority of the conference participants think there is still a significant amount of work to be done in the field of telehealth nursing. To further this research, people from various backgrounds in telehealth nursing need to work together to move telehealth forward and integrate it into nursing practice.

What we would do differently in the future:
Some participants would have liked to focus more on the conceptual maps and to generate more detailed information on the definitions and concepts of telehealth nursing. Others would have liked to have more input from “front line” telehealth nurses, such as those with the VA system. Consideration of specific nursing interventions and outcomes of telehealth delivery could also have been a valuable part of the conference process.

Another thing we would do differently would be to allow at least 4-8 more hours for the conference. The additional time could be spent developing the conceptual map of the desired future state of telehealth nursing. This need was identified by both conference leaders and participants.

The planning and implementation of this conference was a challenging and valuable experience. One aspect of the conference, which was most challenging, was the facilitation of such a diverse group. This represents the first time in our experience that scholars with expertise in nursing classification systems and evidence-based practice were included in dialogue with front-line clinicians delivering care via telenursing. The key questions were validated and broad consensus reached. This conference focused on broad goals and a number of participants were interested in moving down to identification of very specific goals and interventions. This should be one of the next steps.

Lessons learned:
- The consensus process works effectively for focusing a diverse group on a common goal.
- More time should have been allotted for the conference.
- Scholars and clinicians both have significant contributions to make to the field of telenursing. Together their contribution is greater than either group could make alone.
V. BACKGROUND

Conference Development
The idea for the invitational conference Creating a National Telehealth Nursing Agenda emerged from the observations of nurse leaders at the University of Texas Medical Branch (UTMB) Telehealth Center that current telehealth nursing activities tend to be focused around a specific service or technology medium with little or no interface among foci. This limits the impact of outcome evaluation and research efforts. Telehealth has tremendous potential as a tool for improving access to health care, particularly in rural populations and care of the elderly and chronically ill. Nurses play a vital role in delivery of clinical services in telehealth. Despite the efforts of the Nursing Special Interest Group of the American Telemedicine Association and The American Nurses Association, there has not yet been a concerted effort to create a common framework for defining or evaluating telehealth nursing as a practice arena has emerged.

The University of Texas Medical Branch (UTMB) Telehealth Center (Now the Electronic Health Network) proposed an invitational conference to develop a consensus among key stakeholders that represents a research agenda for telehealth nursing. This purpose of this agenda is to define the research questions to be addressed and the evidence base needed to integrate telehealth nursing further into the mainstream of health care delivery.

The conference was held on October 9, 10 and 11, 2005 at Mount Aloysius College in Cresson, Pennsylvania. A conference planning committee, consisting of key experts in telehealth nursing, nursing, and health policy, nursing classification systems and evidence-based practice, guided the development and implementation of the conference. An internationally recognized expert in mediation and consensus work facilitated the conference, which consisted of short papers presented on key issues and a consensus process, from which the Telehealth nursing research agenda was developed. Conference co-sponsors included Mount Aloysius College Division of Nursing in Cresson, PA; UTMB Hospitals and Clinics Nursing Department; and Polycom Worldwide, a leader in provision of voice, video, data, and web collaboration technology for Telehealth. Conference proceedings will be disseminated through a number of websites: UTMB Telehealth Center, the American Telemedicine Association, American Nurses Association, and International Council of Nurses.

Identification of the Need
In recent decades, the United States has been unable to fully achieve its health care goals or adequately address the issues of health care access, quality, and cost for all citizens. The U.S. now spends more than 14% of its gross domestic product on healthcare, or more than one trillion dollars per year—a greater percentage than any other nation. (Bean JR, 2005; Chernew ME, 2005) Despite this enormous fiscal investment, access to high quality health services is denied many Americans. Increasing numbers of low-income and minority individuals, estimated now at more than 42 million, are without health insurance. (Cohen JJ, 2003) With the changing demographic composition of the United States, due in part to an increasingly aging population of “baby boomers” and a growing proportion of minorities, this situation is only expected to worsen. Strategies to improve access and reduce expenditures while providing quality care are urgently needed.

Telehealth has shown potential as a tool for improving access to health care while maintaining or reducing costs (Dimmick SL, et al., 2003). Despite these successes and the fact that some telehealth-related technology has been in place since the 1950s – the market has remained relatively small realizing only a fraction of the potential for this technology (US
V. BACKGROUND (Continued)

Department of Commerce, 2004). For the most part, telehealth remains a type of technical sub-specialty and has not yet been accepted within the mainstream of health care delivery.

One of the major goals of Healthy People 2010, to improve access to comprehensive, high quality health care services, identifies a number of structural barriers to care that lead to disparities in access. These include a lack of access to health facilities and health professionals because of geographic barriers. (US Department of Health and Human Services, 2000) Telehealth can help address this problem by bringing care to underserved communities and individuals. (Bratton RL, 2000; Ricci M, 2003) These key policy documents indicate that telehealth nursing can play a more important role in fulfilling the strategic direction for health care.

The UTMB Electronic Health Network has the vision, the expertise, and the clinical experience to pursue the creation of a national research agenda for Telehealth Nursing successfully. The institution has been a leader in telehealth since 1994 and is nationally and internationally recognized as such. Since that time, medical specialists, nurse practitioners, and ancillary services have conducted more than 256,000 patient visits using videoconferencing. The program currently averages almost 5,000 visits per month. EHN’s extensive experience in telehealth has led to the recognition of the vital importance of strategic thinking at a national level regarding the future direction of telehealth nursing. This agenda must be pursued aggressively to achieve telehealth nursing’s full potential as an innovative tool for improving health care access, quality, and cost.
VI. PROCESS

Process Report
Phyllis Beck Kritek, RN, PhD, FAAN

The processes used to meet the stated goals of this invitational conference were crafted with attention to several germane factors. The most obvious factor was the desired outcome: the identification of priority research initiatives for telehealth nursing. Conference planners also sought to create a process that evoked creative thinking, maximized diversity of input, ensured equity among participants, and enabled an efficient movement toward conference goals. The group size made it possible for all participants to contribute directly to all outcomes, encouraging “buy-in” of the final product.

A variety of process decisions ensued. Background materials were provided to all participants to provide a common information base. It was recognized that each individual participant would bring specific expertise to the process and benefit from information about other less familiar dimensions of the conference focus. These materials provided a common point of departure for all involved and helped focus the ensuing work.

Papers were commissioned specifically linked to the stated goals of the gathering. These papers, prepared by experts, served as catalysts for the participants. They were designed to be evocative rather than final commentaries on the assigned topics. In addition, all persons who delivered papers also functioned as participants in the overall process, which established the possibility for on-going diversity of viewpoints and a more organic unfolding of the answers to the questions the group had gathered to answer.

While this gathering thus created an arena for sharing insights and reflection, the overriding commitment was to outcomes. Hence, each of the conference goals was operationalized through the generation of questions posited to the participants. The questions served as impetus and guide to a series of brainstorming sessions where all potential answers to the questions were solicited from participants. These lists then served as a “menu” of sorts, and participants were asked to vote on the items generated.

Voting was weighted, in that each person could distribute, among the items generated, six to eight votes for those they viewed as most compelling, i.e., those they considered a priority. In addition, in each voting session, one vote for the least compelling item was included. This latter process helped identify those responses that would generate either little or no investment from the group or where there were differences among the participants that might foreshadow more troublesome divergences.

This latter point is important to note, since, while voting unveils those items viewed by the group as most and least compelling but also those viewed as least compelling, it also identifies places where the group differs among themselves. Effective implementation of change and innovation best proceeds from a place of consensus. Hence, those items evoking a “split vote” would be those least likely to succeed as strategies, places where individuals and groups might invest substantive amounts of time and energy simply differing among themselves. As is perhaps apparent, such items might best be delayed until the high consensus items could be pursued.

The presupposition of this entire process was that group productivity surpasses individual productivity and that the synergy of a group process would create superior outcomes. While initial research on brainstorming as a tool is almost seventy years old, it has been underutilized in moving a group effectively and efficiently toward desired goals. In addition, it can be waylaid by the desire to debate. Finally, brainstorming coupled with weighted voting interrupts the process of “taking turns” making one’s case for the preferred outcomes, which often concludes
VI. PROCESS (Continued)

in the most verbal or “powerful” person in the room determining outcomes. Eliminating the possibility of the domination of a few voices and extended debate was a deliberate intent of the process selected.

Brainstorming also enables the process of one idea building on prior ideas and enriching them. Providing participants adequate time to generate all possible responses to the question raised helps focus the group on the desired outcome and can stimulate individual group members to blend ideas for increasingly innovative ideas. Participants were repeatedly encouraged to offer ideas, build on prior ones, and forgo the impulse to provide a narrative defense of the idea, since all ideas were equally welcomed and included. Diversity of ideas was welcomed.

Ideas generated were simply recorded on easel sheets written large enough for all participants to read as the brainstorming proceeded. When a sheet was filled, it was posted on a wall, creating a bank of posted ideas that became the menu for weighted voting. All items were concurrently entered into a computer to create a permanent record of the process. Voting outcomes were also recorded for all items.

It was assumed that all participants brought substantive expertise to the process, and that the diversity of expertise was an asset for pursuit of the desired outcomes. Informal discussion during breaks and meals gave participants an opportunity to explore this diversity, while the structured process of brainstorming and voting enabled efficient pursuit of conference goals.

Weighted voting not only provides the participant with an opportunity to indicate preferences but also to indicate strength of preference, since votes can be distributed in any pattern that best expresses an individual’s point of view. Voting was operationalized through individuals placing green dots on items they viewed as compelling and red dots on those viewed as least compelling.

Seven voting sessions were incorporated into the conference plan, each guided by a question drawn directly from conference goals. Since the goals were structured to provide a progression through the focal areas of the gathering, each voting process built on prior outcomes. Voting identified priorities generated by the group, which were then recounted prior to initiation of the next voting process? In this fashion, participants were able to track their progression as a group in addressing conference goals.

Voting itself was an interactive process where the assumption was that participants would both see and discuss their shared expressions of preference. Such public voting creates the possibility of mutual influence and makes it overt. This is intentional since it more accurately mirrors the human process of decision-making that rarely actually occurs secretly, privately, or in a contextual vacuum. The voting process also enables the group to observe the unfolding of priorities.

After each voting session, those items identified as priorities were culled from the overall list of items and identified, noting levels of strength that naturally emerged. Group patterns were also noted, since some questions evoked strong consensus and others evoked a more “scattered” pattern. The former indicate the possibility of pursuing strategies that may enjoy high investment from significant numbers of persons; the latter indicate where there may be more diffusion of investment. This latter situation may require that strategies involve multiple initiatives embraced by the interested parties rather than a single focused mission.

This primary process of brainstorming and voting was augmented by two other processes. If individuals felt one or another perspective was critical and yet evoked little group investment, these could be noted on cards provided to highlight this concern. In addition, a mind map of the focus of the conference, including items already identified through the planning process and the
VI. PROCESS (Continued)

literature, was posted where individuals could include ideas or components they viewed as essential for exploring the overall topic. These latter tools were designed to provide additional stimulus, ensure engagement of all participants, and create an outlet for the ideas that were potentially useful, yet not viewed by the group as compelling now.

As is apparent, all dimensions of the process design were aimed at maximizing individual engagement and input, yet ensuring a group outcome. In addition, because voices are “equalized” in the process, group engagement increases, and the focus on outcomes overrides individual agendas or biases. Finally, the investment in evoking priorities avoids the risk of generating multiple competing agendas, which can confuse subsequent efforts at creating strategies, and guiding a progression toward goals.

The participants in this conference used this process creatively and constructively, and quickly engaged in the work of the gathering, moving systematically toward the desired product. As the process unfolded, the build up of consensus, and the preferences of the total group became apparent. While each individual brought specific insights and knowledge to the group, they were able to incorporate this into the final product of the conference in a way that created a group product.
A. Current Status of Telenursing: Roles & Competencies

_Loretta Schlacta-Fairchild RN, PhD, CHE and Janet Grady, DrPH, RN_

From the inception of nursing practice, simple and complex technologies have been used to care for the sick. From nineteenth-century poultries to the intra-aortic balloon pumps of the 1970s, nurses have incorporated technology as an integral part of nursing care. As Sandelowski (1996) pointed out, though nurses have always used technology, the relationship between nurses and their technological tools has posed a challenge. Nursing leaders of the 1950s, a period when technology was rapidly introduced into inpatient settings, cautioned nurses to remain “nurse therapists rather than nurse technicians” (Abdellah and Strachan, 1959). Farmer (1978) in a widely cited first effort to describe the relationship of nurses and technology emphasized that technology led to role erosion as nurses shifted their focus away from patients and placed it on machines and technology. Nevertheless, the use of technology in nursing has progressed rapidly to the point that entire specialties such as operating room nursing and critical care nursing have evolved around the use of technology.

Nursing has been and continues to be central in the use of technologies for health care. Nurses have relative power and choice in how and whether equipment is used. Nurses inform patients about the use and result aspects of technologies. Nurses are the primary professionals who provide explanation and patient education about medical equipment, medical devices, procedures that use technology, and the potential outcomes of all of these upon the patient’s health and well-being. Nurses in all specialties of practice are required to care for their patients and have the technical knowledge to both manipulate machinery and interpret data, and nurses also take on increasingly varied and complex roles and responsibilities associated with emerging technologies.

Sandelowski’s (1996) perspective of technology as an object, i.e., that technology is a tool used by nurses for nursing practice, is a fundamental tenet of the approach of this article and its view of telenursing. Viewing technology as an object allows focus on what nurses do and the impact of the technology processes on their role(s), rather than focus on the technology itself. Telehealth has received much attention in the last ten years. To date, most of the focus has been on the technical aspects of telehealth. In contrast, Sandelowski’s perspective focuses on the care process and people, viewing technology as an entity, but not a focal point of attention. Using Sandelowski’s perspective in this article, telehealth is viewed as an object used by nurses for nursing. When technology is viewed as an object, then the advances of telehealth technology are viewed as merely another tool in the toolkit of nurses. The focus then becomes the people and processes: what nurses DO with the technology instead of the technology itself.

Telemedicine is defined as the practice of health care delivery, diagnosis, consultation, treatment, transfer of medical data and education using interactive audio, visual, and data communications (Kansas Telemedicine Policy Group, 1993). Telehealth is a broader term often interchanged equally with telemedicine and encompassing the same elements of interactivity, education, distance diagnosis, and Internet based health efforts. Typically, telehealth technology includes an exchange via interactive voice, data and/or video; where the patient may hear and see the provider, and the provider may hear and see the patient in real time, or asynchronously (i.e. at different times, but still able to interact with the patient from a stored file of sound, video and/or data). The technology enables a clinical interaction very similar to a face-to-face exchange in a clinic or hospital setting. Use of telehealth in healthcare has exploded in the last decade as a potential solution to cost and access issues in the United States and abroad.
VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

In 1996, there were approximately 100 telehealth programs in the US. As of 2004, there were more than 200 formal institutional programs, with numerous private applications of telehealth technology, such as individual home health agencies and web portals (Telemedicine Information Exchange, 2004). Telehealth technology use continues to accelerate, usually with very little education or formalized training for providers. Nurses today are practicing telenursing, using telehealth technology in various settings such as hospital-based telehealth centers, telephone triage, rehabilitation facilities, home-health agencies, and disease-management companies, to name just a few settings. Telenurses are practicing outside the United States, where healthcare reimbursement methods, such as socialized medicine, provide the economic structure to realize telehealth's cost reduction and access-to-care capabilities.

**Telenursing** is defined as the use of telehealth technology to deliver nursing care and conduct nursing practice (Schlachta & Sparks, 1999). Telenurses utilize a range of telehealth technologies that begin with telephone and go all the way through sophisticated interactive voice and video systems, whereby patients and providers can see each other as well as hear each other (Schlachta-Fairchild, 2000). Telenursing is not a new role for nurses. Its existence has been in the literature for more than 25 years. There is, however, scant detail relating to the specifics of the telenursing role. The earliest reference to the role of telenurse was by Quinn in 1974. She described her roles as a nurse in a hospital-based telehealth center in Boston as being technician, scheduler, patient educator, staff educator, coordinator, and physician-support resource in the conduct of medical teleconsultations. In this anecdotal report of her experience as telehealth nurse, Quinn also expressed great excitement regarding the promise of the practice of nursing in the future using telehealth.

Empirical evidence of the practice and perceptions of nurses in telehealth is severely limited. Early descriptions of telehealth programs in the 1970s and 1980s alluded to nurses actively participating in telehealth work. Few specifics are offered. Later studies begin to report data from the active participation of nurses and even telenurse-impacted patient outcomes. The first reported study of telenursing roles, responsibilities, and practices was conducted in 1996 by Chahl-Horton (Chahl-Horton, 1997). She conducted a self-developed, mailed survey with a convenience sample of 130 telenurses in the United States and achieved a 56 percent response rate of 74. Telenurses were identified by Horton after contacting the telehealth programs. In Horton’s study, roles were defined to include perceived job responsibilities. While 38 percent of the respondents worked full time in telehealth, 67 percent reported that more than one nurse was working at the telehealth site. Roles described for the telehealth nurses included clinical nurse \( (n=27) \), administrator \( (n=9) \), nurse educator \( (n=5) \), technician \( (n=1) \), and “I don’t know” \( (n=1) \). Four respondents indicated that their roles included all categories. Twenty-one percent of nurses identified their roles as “other”, which included program evaluators, researchers, nurse practitioners, consultants, clinical nurse specialists, and schedulers.

In this study, only 35 percent of nurses had a job description. Twenty-eight percent of respondents indicated that specific actions related to telehealth were expected, but not included, in their job description. Of note, 20 percent of the nurses indicated that they did not report to anyone. Twenty-one percent reported to a physician.

When asked to provide other written comments, 21 nurses wrote comments that were categorized into five themes: satisfaction, nurses, specific nursing actions, roles, and technology. Respondents reported their nursing role as being a) undefined, b) fraught with political turmoil, and c) without recognition or part in decision-making. Role frustration related to a “lack of specific expectations” was also reported.
Telenursing Role in the U.S. in 2000

In order to document nursing’s role in the upsurge in telehealth activity in the US, Schlachta-Fairchild (2000) conducted a web-based descriptive study of US telenurses. The focus was on examination of the telenursing role using a portion of Role Theory as the conceptual framework (Hardy & Conway, 1988). One of the three study objectives was to describe telenurses’ professional role(s) and individual characteristics. From the identified population of 796 telenurses in 40 states, 196 (27% response rate) telenurses provided complete and usable responses. Data analysis was based on these 196 responses.

Telenurses worked in at least 29 different practice settings in 2000, as depicted in Table 1. Forty-three telenurses who selected “other” specified their practice setting. Their responses were then recoded to add nine categories to the existing survey. The total reported practice settings for telenurses are identified in Table 1.

Table 1. Work Settings of U.S. Telenurses in 2000

<table>
<thead>
<tr>
<th>Practice Setting</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care/Community Hospital, Nonfederal</td>
<td>28</td>
<td>14.3</td>
</tr>
<tr>
<td>Home Care</td>
<td>25</td>
<td>12.8</td>
</tr>
<tr>
<td>Disease Management Company</td>
<td>15</td>
<td>7.7</td>
</tr>
<tr>
<td>Federal Government Hospital</td>
<td>10</td>
<td>5.2</td>
</tr>
<tr>
<td>University</td>
<td>10</td>
<td>5.2</td>
</tr>
<tr>
<td>Multispecialty Group Physician Practice</td>
<td>9</td>
<td>4.6</td>
</tr>
<tr>
<td>Nonprofit Hospital</td>
<td>7</td>
<td>3.6</td>
</tr>
<tr>
<td>Private Company</td>
<td>7</td>
<td>3.6</td>
</tr>
<tr>
<td>Military Telemedicine Organization</td>
<td>6</td>
<td>3.1</td>
</tr>
<tr>
<td>Visiting Nurse Service</td>
<td>5</td>
<td>2.6</td>
</tr>
<tr>
<td>Physician Group Practice</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Prison or Jail</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Telemedicine Company/Vendor</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Consultant</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Nursing Group Practice</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Community Mental Health Facility</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Federal Agency</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Call Center</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Rehab/Disability Agency</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Web Portal</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Neighborhood Health Center, Rural Health</td>
<td>1 each</td>
<td>0.5 each</td>
</tr>
<tr>
<td>Center, School Nurse, Freestanding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician Clinic, Freestanding Nurse Clinic,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulatory Surgical Center, Health Planning,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance Company, Legal/Policy Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, not specified</td>
<td>38</td>
<td>19.4</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
</tbody>
</table>

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Telenurses reported 24 different titles for their positions. Table 2 indicates the various telenursing position titles that were reported.

Table 2. U.S. Telenursing Position Titles in 2000

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator*</td>
<td>28</td>
<td>14.4</td>
</tr>
<tr>
<td>Administrator of organization/department</td>
<td>26</td>
<td>13.3</td>
</tr>
<tr>
<td>Nurse clinician</td>
<td>18</td>
<td>9.3</td>
</tr>
<tr>
<td>Case manager</td>
<td>12</td>
<td>6.1</td>
</tr>
<tr>
<td>Consultant</td>
<td>10</td>
<td>5.1</td>
</tr>
<tr>
<td>Clinical nurse specialist</td>
<td>9</td>
<td>4.6</td>
</tr>
<tr>
<td>Nurse manager</td>
<td>7</td>
<td>3.6</td>
</tr>
<tr>
<td>Supervisor or assistant supervisor</td>
<td>7</td>
<td>3.6</td>
</tr>
<tr>
<td>Researcher</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Staff nurse</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Director**</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Other – specified***</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Administrator of nursing</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Owner/shareholder</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>No position title</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Head nurse</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>In-service education director</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Instructor</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Professor or assistant/associate professor</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>School nurse</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Team leader</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Other – not specified</td>
<td>42</td>
<td>21.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

* Titles included Technical Telemedicine Coordinator, Care Coordinator, Clinical Consult Coordinator, Clinical Coordinator, Coordinator of the TeleHealth Program, Research Coordinator, Mental Health Coordinator, Telemedicine Coordinator, Program Development Coordinator, Project Coordinator, Research/Telemedicine Coordinator, Telehome Health Project Coordinator

**Titles included Clinical Products Director, Patient Service Center Director, Telehealth Project Director, and Telemedicine Program Director

*** Titles included Biomedical Engineering Clinical Nurse Specialist, Consumer Information Nurse, Diabetes Educator, and Intake Nurse.

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Telenurses were also asked to respond to open-ended questions asking for the strategies used in their organization to achieve nurse-user competence with telemedicine technology. Answers to the nurse-user competence question ranged from “no strategies – was left on my own to figure it out” to “six-month complete orientation with a mentor and a final checklist for competency completion”. Subjective data of responses ranged between these two endpoints. It was clear there was no standard of preparation for telenursing practice.
Telenursing Role in 2004

In order to advance the work of the Nursing Telehealth Applications Initiative (NTAI) at Mount Aloysius College in Cresson, Pennsylvania, more information about current telenursing practice, participation, and competencies was needed. Dr. Janet Grady, Principal Investigator of the NTAI and chairperson of the Division of Nursing at Mount Aloysius, commissioned iTelehealth Inc. to conduct a second, updated telenursing survey.¹

This survey was initiated in the United States, building upon the 2000 U.S. Telenursing Role Study. The International Council of Nurses in Geneva, Switzerland at the same time had also commissioned iTelehealth Inc. to produce a monograph on international competencies in telehealth nursing. To accommodate both needs, the survey scope was extended to the international telenursing community and included the collection of information regarding international aspects of telenursing preparation, competencies, role, and practice. The survey targeted those telenurses who were actively practicing in telenursing at the time of the survey, OR who were working for an organization that supported telehealth/telemedicine (e.g., vendor or public policy). Internationally, online invitations were sent to those in key telehealth organizations and key nursing groups as well as individual points of contact. More than 2,000 invitations to participate were emailed. Professional organizations that were instrumental in distributing the survey included the Canadian Society for Telehealth (CST- SCT), The International Council of Nurses (ICN), American Nurses Association (ANA), American Telemedicine Association (ATA), Association of Telehealth Service Providers (ATSP), the National Association for Homecare (NAHC), the Capital Area Roundtable on Informatics in Nursing (CARING), the American Medical Informatics Association (AMIA), the International Medical Informatics Association (IMIA), and the American Academy of Ambulatory Care Nursing (AAACN) as well as multiple telehealth and informatics listservs.

More than 1,700 persons accessed the survey online. There were 719 nurses (628 women, 89 men, and 2 gender not stated) from 36 countries who completed the survey. Sixty-six percent of the respondents were from the U.S., where 49 of 50 states were represented (all except Delaware). Canada had the second largest number of respondents.

¹ The survey was funded in part by the Office of Naval Research/Henry M. Jackson Foundation for Military Medicine under Subawardee Contract # 97366. The research findings and results in no way are endorsed by or reflect the opinions of the US Military and/or the Office of Naval Research.
### VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

Table 3. Telenurse Survey Participants by Country

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
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<td>100.0</td>
<td></td>
</tr>
<tr>
<td>USA</td>
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<td>68.0</td>
<td>68.0</td>
<td>68.0</td>
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<tr>
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<td>72</td>
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<td>10.0</td>
<td>78.0</td>
</tr>
<tr>
<td>AUSTRALIA</td>
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<td>4.9</td>
<td>82.9</td>
</tr>
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<td>UNITED KINGDOM</td>
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<td>4.0</td>
<td>86.9</td>
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<tr>
<td>NORWAY</td>
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<td>3.5</td>
<td>90.4</td>
</tr>
<tr>
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<td>1.1</td>
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<td>SWEDEN</td>
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<td>0.8</td>
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<td>IRAN</td>
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<td>KOREA REPUBLIC OF</td>
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<td>97.9</td>
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<td>SOUTH AFRICA</td>
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<tr>
<td>CHINA</td>
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<td>0.1</td>
<td>0.1</td>
<td>99.9</td>
</tr>
<tr>
<td>JORDAN</td>
<td>1</td>
<td>0.1</td>
<td>0.1</td>
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</tr>
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</table>

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VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

In 2004, the average telenurse was female and 48-years old, although her age ranged from 22 to 84. She had a 50 percent chance of working just part-time in telehealth, most often in a hospital setting and with a US income of $35,001 to $75,000 per year ($15,000- $50,000 range for non-US telenurses). Her highest level of education in nursing was likely an associate’s degree in the US and a diploma internationally. The average telenurse most likely received on-the-job training in telehealth. These nurses were highly satisfied with telenursing, based on assessments of factors such as autonomy, interaction, professional status, pay, task requirements, and organizational policies. They believed that autonomy in their position contributed the most to their satisfaction with telenursing. Other reasons for their satisfaction included better hours, new skills, challenging work, and less physically demanding than “regular” nursing. Some drawbacks to telenursing were lack of face-to-face contact with patients and inadequate technical support.

The variety of practice setting for telenurses is depicted in Table 4. The order of settings internationally varied slightly from those in the United States, where the four most common practice settings in order were hospital, community, college, and government, respectively. Internationally, the settings were hospital, college, community, and call center, in that order.

Survey respondents believe that the demand for telenurses in 2005 is moderate; however, a sharp increase is expected within three years due to costs of healthcare, the aging population with chronic health problems, and the increase in use and availability of technology. They believe that telehealth will aid the nursing shortage citing that telehealth helps nurses deliver and manage care, provide better education, keep patients out of the hospital, provide better outcomes, decrease hospitalizations, save nursing time, and assist in recruiting and maintaining nurses.

Table 4. Where Telenurses Worked in 2004

<table>
<thead>
<tr>
<th></th>
<th>INTL</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>College</td>
<td>11%</td>
<td>10.2%*</td>
</tr>
<tr>
<td>Community</td>
<td>9.7%</td>
<td>11.7%*</td>
</tr>
<tr>
<td>Call Center</td>
<td>8.9%</td>
<td>7%*</td>
</tr>
<tr>
<td>Govt</td>
<td>8.2%</td>
<td>7.6%*</td>
</tr>
<tr>
<td>Clinic</td>
<td>4.5%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Military</td>
<td>2.1%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Vendor</td>
<td>0</td>
<td>.4%</td>
</tr>
</tbody>
</table>

* denotes difference in order in the US.
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The vast majority of the telenurses surveyed were not certified in telemedicine/telenursing, or nursing informatics. Seventy-five percent of telenurses believed that certification in telenursing was important and were interested in achieving certification. According to these respondents, critical components of a curriculum for a certification program would be proficiency with technical tools, knowledge of standards and protocols, and competence in clinical care.
VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

delivery. Eighty-nine percent of respondents believe that telenursing, including clinical experiences, should be a part of basic nursing education.

Telehealth and Nursing Informatics Knowledge and Competencies

Telenurse survey participants were asked to identify their level of knowledge of general health care informatics, nursing informatics competencies, and telehealth competencies. The Telehealth Competencies and the Standards for Nursing Informatics Practice were distilled from those prescribed by the American Nurses Association (ANA, 1999 and 2001, respectively). Participants were asked to respond if they were taught technology-related knowledge and skills in a formal nursing education setting (specifying the level of education or training using U for undergraduate, G for graduate, or CE for continuing education), learned on the job, or are not familiar (NF) with the knowledge.

Specifically, respondents were asked the primary method by which they learned various aspects of knowledge and competencies related to nursing informatics. Twenty different items were presented, as depicted in Table 5. For all of the items, “on-the-job training” was most frequently selected, ranging from computer-based patient record (n = 315; 43.8%) to human factors, ergonomics (n = 100; 13.9%). Table 5 identifies the categories of nursing informatics knowledge and competencies gained by telenurses, in order of percentage of knowledge gained on the job.

Table 5. Percentage of Telenurse Respondents who Learned NI Standards on the Job

<table>
<thead>
<tr>
<th>Nursing Informatics Standards (ANA, 2001)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems for practice, education, research, computer-based pt. record</td>
<td>315</td>
<td>43.8%</td>
</tr>
<tr>
<td>Computer technology, networks</td>
<td>280</td>
<td>42.4%</td>
</tr>
<tr>
<td>Information processing, accessing electronic resources</td>
<td>305</td>
<td>42.4%</td>
</tr>
<tr>
<td>Computer technology, types/functions of hardware and software</td>
<td>286</td>
<td>39.8%</td>
</tr>
<tr>
<td>Professional issues, organizations</td>
<td>265</td>
<td>36.9%</td>
</tr>
<tr>
<td>Systems for practice, education, research, health databases</td>
<td>258</td>
<td>35.9%</td>
</tr>
<tr>
<td>Professional issues, privacy, confidentiality, security</td>
<td>246</td>
<td>34.2%</td>
</tr>
<tr>
<td>Career and education, certification in NI</td>
<td>227</td>
<td>31.6%</td>
</tr>
<tr>
<td>Professional issues, ethical use of information</td>
<td>220</td>
<td>31.6%</td>
</tr>
<tr>
<td>Life cycle, roles of healthcare team members</td>
<td>212</td>
<td>29.5%</td>
</tr>
<tr>
<td>Systems for practice, education, research, types and applications</td>
<td>207</td>
<td>28.8%</td>
</tr>
<tr>
<td>Informatics theory, expected informatics competencies</td>
<td>205</td>
<td>28.5%</td>
</tr>
<tr>
<td>Informatics theory, definition</td>
<td>202</td>
<td>28.1%</td>
</tr>
<tr>
<td>Life cycle, planning, implementing, evaluating and upgrading</td>
<td>196</td>
<td>27.3%</td>
</tr>
<tr>
<td>Systems for practice, education, research, standardized language</td>
<td>190</td>
<td>26.4%</td>
</tr>
<tr>
<td>Informatics theory, state of the science</td>
<td>171</td>
<td>23.8%</td>
</tr>
<tr>
<td>Information processing, frameworks/research studies</td>
<td>156</td>
<td>21.7%</td>
</tr>
<tr>
<td>Information processing, adoption of innovation theories</td>
<td>140</td>
<td>19.5%</td>
</tr>
<tr>
<td>Career and education, new roles</td>
<td>135</td>
<td>18.8%</td>
</tr>
<tr>
<td>Life cycle, human factors-ergonomics</td>
<td>100</td>
<td>13.9%</td>
</tr>
</tbody>
</table>

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VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

Similarly, respondents were asked where they learned telenursing competencies and telenursing knowledge. Once again, most telenurses reported learning this information on the job. See Table 6 below.

Table 6. Percentage of Telenurse Respondents who Learned Telenursing Competencies on the Job

<table>
<thead>
<tr>
<th>Telenursing Competencies (ANA, 1999)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates knowledge/skills of telehealth technology</td>
<td>301</td>
<td>41.9%</td>
</tr>
<tr>
<td>Ensures that public and institutional policies are employed</td>
<td>288</td>
<td>40.1%</td>
</tr>
<tr>
<td>Ensures that clients are informed about their choices</td>
<td>280</td>
<td>38.9%</td>
</tr>
<tr>
<td>Documents the structure, process, and outcomes of telehealth events</td>
<td>277</td>
<td>38.5%</td>
</tr>
<tr>
<td>Establishes a therapeutic relationship using telehealth technology</td>
<td>276</td>
<td>38.4%</td>
</tr>
<tr>
<td>Determines whether client needs can be met with telehealth</td>
<td>272</td>
<td>37.8%</td>
</tr>
<tr>
<td>Uses results of telehealth outcomes to modify practice</td>
<td>272</td>
<td>37.8%</td>
</tr>
<tr>
<td>Assesses for appropriateness of specific telehealth technologies</td>
<td>268</td>
<td>37.3%</td>
</tr>
<tr>
<td>Integrates telehealth for assessment, diagnosis, identification,</td>
<td>262</td>
<td>36.4%</td>
</tr>
<tr>
<td>implementation and evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates skills/interdisciplinary collaboration</td>
<td>255</td>
<td>35.5%</td>
</tr>
<tr>
<td>Assesses and adjusts communication plans</td>
<td>245</td>
<td>34.1%</td>
</tr>
</tbody>
</table>

Respondents were also asked to identify different areas of activity (maximum of 8) and estimate how much time was spent in each area. They identified working in as many as eight areas, with 19.9 percent working in only two areas... Time spent in each functional area is detailed in Table 7. In addition, comparisons with previous telenursing studies and “regular” nursing activities are presented.
VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

Table 7. Role Functions Comparison of Telenurses and Nurses

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative</td>
<td>15%</td>
<td>14.7%</td>
<td>28.9%</td>
<td>49.9%</td>
</tr>
<tr>
<td>Consultation with agencies or other professionals</td>
<td>--</td>
<td>8.5%</td>
<td>20.4%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Direct patient care (in-person care; telehealth-delivered care)</td>
<td>51%</td>
<td>59.8%</td>
<td>53.5% (22.4% in-person + 31.1% telemedicine-delivered)</td>
<td>83.2% (32.4% in-person + 50.8% telemedicine-delivered)</td>
</tr>
<tr>
<td>Research</td>
<td>5%</td>
<td>1.9%</td>
<td>12.4%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Supervision</td>
<td>--</td>
<td>9.7%</td>
<td>17.7%</td>
<td>33.1%</td>
</tr>
<tr>
<td>Teaching</td>
<td>7%</td>
<td>4.9%</td>
<td>15.7%</td>
<td>32.4%</td>
</tr>
<tr>
<td>Other</td>
<td>21%</td>
<td>.5%</td>
<td>27.4%</td>
<td>22.4%</td>
</tr>
</tbody>
</table>

*Note: Telenurses fulfill from one to eight roles as described in this table. In 2000, telenurses fulfilled three functions most often; in 2004, they fulfilled two functions most commonly; therefore, totals may exceed 100%.

Conclusion

The growth and maturity of the telenursing role has been measured and tracked extensively over the last ten years; although the role of telenursing was described first in 1974, when Quinn documented her experience. Telenurses are an international community of nurses, unbound by geography, but bound by limitations of their country’s own nursing practice standards and healthcare systems. The future growth of the role of telenursing is inevitable in our technological society. The challenge, posed by Porter and O’Grady (1999) is still relevant; “A script for a preferred future for health care is unfolding. The key question is whether nurses are at the table proactively writing the script or at the door lamenting the need to write it.” (p. 34). Nurses must actively promote and utilize the interactive capability of telehealth technologies to deliver nursing care and conduct nursing practice in today’s world.
VII. PAPERS - Current Status of Telenursing: Roles & Competencies (Continued)

References


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References

http://tie.telemed.org/programs/default.asp
B. Implication of Nursing Classifications for Telehealth Nursing

Meridean L. Maas, RN, PhD, FAAN

Telehealth has the potential to increase the access of many persons to health care, especially those in rural and underserved areas, and those who need long-term management of health problems. There are also important potentials to improve healthcare providers’ care and services. Providers and assisting staff in remote locations have enhanced opportunities with telehealth technologies to obtain consultation and training from experts. Care and training are provided at less cost due to reduced travel time for patients and providers, and communication between providers and between providers and patients and families is improved. The advantages of telehealth for the delivery of nursing are powerful; the use of nursing classifications would enhance that power even more. Nursing assessment, teaching, counseling, and support of persons for the long-term management of chronic health problems; teaching students, assisting staff and family caregivers; and consultation with other nurse experts or experts from other disciplines about specific health problems and interventions are among the advantages of telenursing and nursing classifications.

Nursing classifications are fundamental to developing the practice knowledge of the discipline and for nurses to communicate accurately and efficiently with other nurses, other disciplines, policy makers, and with their clients and families. Yet, many nurse scientists, educators, and clinicians do not understand the importance of nursing classifications, making their adoption protracted and controversial. Like many nurses, those who practice telenursing also tend to have limited understanding of nursing classifications and their importance. This paper describes nursing classifications and the reasons they are fundamental to the development of nursing science, education, practice, and policy influence. These essentials for the progress of nursing are then discussed for telehealth nursing (telenursing).

Classification

Despite more than 30 years of developing, teaching, and studying nursing classifications, I am still perplexed by the number of nurses who know little about them or who continue to ask, “Why are nursing classifications important?” I am surprised, not only because their importance seems so clear, but also because classification is pervasive in our lives. Perhaps it is the pervasive integration of classification in daily life that makes it difficult to recognize its importance to nursing. Note the phenomena that are classified. There are chairs and tables that are types of furniture. The water and food we ingest and the air we breathe are classified using chemistry. People (Homo sapiens) and other animals are classified by biologists. It is hard to think of something that is not classified.

Consider the effects of no classification systems. What if each of us called everything whatever we chose? How would our ability to communicate with one another be affected? How would knowledge in the various sciences have developed without classifications and taxonomies? Chemistry without a table of elements or biology and botany without their taxonomies are hard to imagine. Alternatively, perhaps even more basic, can you imagine life without dictionaries? Dictionaries are alphabetical classifications of words and definitions that symbolize and describe the meaning of concepts. Without classification, communication would indeed be difficult, if not impossible.

Classifications are not new. The Guido musical scale (Fink, 2005) was described in the 11th century, enabling musicians everywhere to read and play compositions from any place in
the world. Classifications order our environment and help us communicate more easily and effectively. Classifications are used to develop and build knowledge, including the principles underlying what is known, and to clarify what is not known to focus inquiry. Classifications aid understanding because there is greater confidence that the meanings of words are shared. Nursing classifications have these same functional benefits for nursing.

**Nursing Classification**

Nursing classifications describe the whats, hows, and results of nursing. For nursing practice, as well as education, research, and policy influence; classifications of nursing diagnoses, interventions, and outcomes facilitate communication among nurses, other disciplines, and laypersons. Use of standardized nomenclatures for the phenomena that nurses treat, the interventions they use, and the outcomes of their interventions makes it easier for nurses to discuss and document their clinical decisions, treatment plans, and the response of clients for continuity of care, and to obtain the participation of clients in the decisions about their care.

Nursing classifications are important for the development of nursing knowledge. Nursing diagnoses, interventions, and outcomes in the classifications are the concepts with which nursing practice knowledge is built; the building blocks of nursing theory. The linkages among the concepts studied in clinical trials and with clinical data using the databases generated by clinical information systems that create the evidence base for practice. The potential for the development of nursing knowledge from effectiveness studies linking nursing clinical data with other health care information is inspiring to contemplate. Yet, nursing has been slow to adopt nursing classifications and to use standardized nursing languages in their clinical documentation systems. The results are a paucity of large clinical nursing databases, no nursing data included in large national healthcare databases, slower development of nursing science, and largely invisible nursing contributions to healthcare.

Werley & Lang (1988) defined the Nursing Minimum Data Set (NMDS), the minimum nursing elements needed in local and national data sets to make nursing visible in health care effectiveness and policy analysis. In 1991, the American Nurses Association recognized the NMDS as the minimum data elements to be collected in any patient record (Ryan & Delaney, 1995; Werley, Ryan, Zorn, & Devine, 1994). Comprised of sixteen elements organized into the three categories (Patient Demographics, Service, and Nursing Care), the NMDS provides a framework for priority nursing efforts to create standardized, uniform languages in the United States and internationally (iNMDS). Efforts were directed to developing standardized terminologies for nursing diagnoses, nursing interventions, and nursing-sensitive patient outcomes. ANA recognized standardized nursing languages that provide the comprehensive content for the three nursing clinical elements of the NMDS: the North American Nursing Diagnosis Association International Classification (NANDAi, 2005/2006), the Nursing Interventions Classification (NIC) (Iowa Intervention Project, 2004), the Nursing Outcomes Classification (NOC) (Iowa Outcomes Project, 2004), the Omaha System (Martin & Scheet, 1992), the Home Health Care Classification (Saba, 1992), the Patient Care Data Set (PCDS) (Ozbolt, Fruchtnight, & Hayden, 1994), the Perioperative Nursing Data Elements (AORN, 1999; Bakken, 2002), and the International Classification of Nursing Practice (Coenen, 2005).

Together the NANDA International Classification of Nursing Diagnoses (NANDAi), The Nursing Interventions Classification (NIC), and the Nursing Outcomes Classification (NOC), now also known all together as NNN are comprehensively descriptive of the clinical nursing practice
VII. PAPERS - Implication of Nursing Classifications for Telehealth Nursing (Continued)

elements of the NMDS. The NANDAi classification includes the diagnoses that nurses treat, the NIC (Iowa Intervention Project, 2004) is a classification of nursing treatments, and the NOC (Iowa Outcomes Project, 2004) is a classification of patient, family, and community outcomes that are responsive to nursing interventions. Advantages of the three classifications, in addition to their comprehensiveness, are that they are research based; developed using both inductive and deductive approaches; grounded in clinical practice; use clear, clinically useful language for names; optimize information; and can be used by other disciplines.

NANDA describes a nursing diagnosis as a clinical judgment about individual, family, or community responses to actual or potential health problems/life processes. The definition further states that a nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable. The 2004/2005 NANDA classification contains 167 diagnoses, including 12 new readiness diagnoses and three revised diagnoses. In the current classification, there are three types of diagnoses: actual, risk, and wellness diagnoses. Actual nursing diagnoses truly exist in an individual with defining characteristics and related factors. Risk nursing diagnoses may develop because defining characteristics of risk are observed. Wellness nursing diagnoses are conceptualized as readiness to achieve a higher state of wellness. NANDA nursing diagnoses include a label, a definition, defining characteristics, and related factors. Defining characteristics are observed signs and reported symptoms. NANDA used to call related factors etiologies, but these are not necessarily causal and most often are conditions or events that are associated with a diagnosis.

NOC outcomes describe variable patient, family, and community states that are measured on a continuum from most to least desirable. The outcomes include a label, a definition, a list of outcome indicators, and a five-point measurement scale or scales. The scale(s) are used to measure each indicator as well as the overall outcome. The outcomes can be used to select a goal for the patient as well as to measure the outcome status of the patient at baseline and over time. Minimally, an outcome should be measured when selected and when the patient is discharged from an episode of care. There are other times, however, when it is important to measure outcomes to monitor progress or lack of progress. The specific intervals for an outcome to be measured depend on the nurse’s clinical judgment. The difference between a baseline rating of the outcome and the post intervention rating(s) of the outcome is the change score and can be: positive (rating increased), negative (rating decreased), or no change (rating stayed the same).

The fourth edition of the NOC book, published in 2004, contains 330 outcomes. Like the majority of outcomes that are traditionally used to evaluate physician practice, however, NOC outcomes are not influenced by any one discipline alone. They are outcomes determined to be most sensitive to nursing interventions and essential for the evaluation of nursing practice, based on concept analysis and content validation by nurse experts (Iowa Outcomes Project, 2000). More recently, the reliability, validity, sensitivity, and usefulness of 169 of the NOC outcomes were evaluated in 10 clinical field sites (Iowa Outcomes Project, 2004).

A NIC intervention is any treatment, based upon clinical judgment and knowledge that a nurse performs to enhance a patient outcome. Nursing interventions include direct and indirect care of individuals, families, or communities. They may be nurse-initiated, physician-initiated, or other-provider-initiated. NIC interventions have a label, a definition, and a list of activities that are performed to deliver the intervention. NIC includes 417 interventions (Iowa Interventions Project, 2004).
VII. PAPERS - Implication of Nursing Classifications for Telehealth Nursing
(Continued)

NANDA, NOC, and NIC all share similar structures. All three include a label and a definition. They all also include defining data, but for nursing diagnoses the data are the patient’s characteristics that define a diagnosis. For NOC, they are indicators of the outcome and, for NIC; they are the activities of the nurse in carrying out the intervention. It is important to note that nursing diagnoses and nursing outcomes characterize the patient, family, or community; while nursing interventions describe the nurse’s behaviors. Clinical reasoning includes the collection of assessment data from which the diagnosis is inferred, the outcomes and indicators are selected and rated, and goals are defined. Outcomes are rated to monitor progress, or lack of progress, following intervention. A recent publication of linkages among nursing diagnoses, nursing outcomes, and nursing interventions provides decision support for nurses’ clinical reasoning and is especially useful for nursing students and beginning nurse clinicians (Johnson, Bulechek, Butcher, Dochterman, Maas, & Swanson (2006). The linkages also provide a guide for nurses and data systems personnel who are implementing nursing classifications in electronic clinical information systems.

The Nursing Management Minimum Data Set (NMMSDS), recognized by ANA in 1994, complements the NMDS by identifying contextual and structural factors that can affect the quality of nursing. The 17 contextual variables are organized in three categories: environment, nursing care resources, and financial resources (Delaney, Mehmert, Prophet, & Crossley, 1998; Delaney, Reed, & Clark, 2000; Huber, Schumacher, & Delaney, 1997). Although standardized nursing languages are included in some nursing clinical information systems and clinical software programs and are increasing daily, local terminologies are often automated to document clinical decisions and interventions (Iowa Interventions Project, 1992; McCormick, K, 1991). Few, if any, reference models linking nursing language synonyms are used in electronic clinical information systems. Software companies have tended to develop shells that can be individualized for each organization rather than producing software that creates comparable data across organizations and settings. Standardized nursing languages need to be included in clinical information systems and software products of vendors so that nurses can use them to document their practice. The NMDS and NMMSDS elements can then be extracted from local clinical systems and added to large national data sets.

Nursing Effectiveness Research

Because nurses mostly have not recorded their practice using standardized nursing nomenclatures, the effectiveness of nursing interventions is largely not evaluated in health care settings. In addition, national data sets are not routinely analyzed for health policy decisions (Pollard, et al., 1996). Without the use of standardized nursing languages to describe clinical practice, nursing is in the position that medicine would be in if there were no International Classification of Diseases (ICD9), Diagnostic and Statistical Manual (DSMIV), or Current Procedural Terminology (CPT) in use to document medical practice. It is hard to imagine medical practice without these languages. Without the use of nursing classifications, nursing will continue to be mostly invisible in health care. In addition, nursing’s contribution to patient outcomes will not be analyzed and recognized. This is also true for telehealth nursing if nursing classifications are not used to document the practice.

Lacking the ability to abstract uniform nursing data from local clinical data repositories, the inclusion of a Nursing Minimum Data Set (NMDS) and a Nursing Management Minimum Data Set in large national health care databases, such as the Hospital Discharge Data Set (HDDS), is not possible (Brook, 1989, Lang & Marek, 1991; Strickland, 1997; Zielstorff, 1994). This means
VII. PAPERS - Implication of Nursing Classifications for Telehealth Nursing

(Continued)

that nursing data are often not available for quality analyses in healthcare organizations and nursing processes and outcomes are essentially not represented in national data sets that are routinely analyzed for health policy decisions. It should be clear that the quality of healthcare cannot be adequately determined to inform health policy if the effectiveness of the practice, including telenursing, of the largest group of providers (nurses) in achieving patient outcomes is not evaluated.

Telenursing and Nursing Classifications

Although telehealth holds many opportunities for the delivery of nursing care to persons in distant locations, potential uses have only begun to be implemented. As noted, telehealth technologies can be used to provide a number of services, including patient care; the provision of staff and patient education; research data aggregation and comparison among multiple sites; and nursing administration and management. While much attention has been paid to technology and innovative equipment, very little work has been accomplished in the area of systematically evaluating the efficiency and effectiveness of telehealth applications (Hersh, Helfand, Wallace, et al., 2001; Robinson, Patrick, Eng, et al., 1998; Specht, Wakefield, & Flanagan, 2001). An exception has been randomized, controlled clinical trials establishing the efficacy of telephone-delivered care for a broad range of patient populations (Balas, Jaffrey, Kuperman, et al., 1997).

Many questions remain to be answered about the efficacy and effectiveness of the use of telehealth technology for nursing care delivery. Mainly, there is need to systematically evaluate the efficacy, effectiveness, and cost effectiveness of telenursing interventions. For nursing, these efforts would be greatly advantaged by the use of standardized nursing languages for diagnoses, interventions, and outcomes in clinical reasoning as well as for the documentation and monitoring of patient progress, or lack of progress, using measurable patient outcomes. As with more traditional modes of nursing practice, documentation of telenursing practice using standardized nursing languages in clinical information systems is needed to build comparable nursing databases that can be used to analyze the effectiveness of telenursing interventions. Research to determine the cost effectiveness of achieving specific outcomes with specific telenursing interventions would also be advantaged by the use of standardized nursing languages. Again, as with other modes and settings of nursing delivery, electronic documentation using standardized nursing languages is needed to build electronic decision support for telenursing providers and to enhance communication among nurses, patients, and other disciplinary providers.

Conclusion

Nursing classifications are important for telenursing and for nursing in general. The classifications facilitate communication, speed the development of nursing knowledge, and provide data that can be analyzed to evaluate quality and cost effectiveness of nursing interventions, and to assess the contribution of nursing to patient outcomes (Pollard, et al., 1996).

As noted, nursing practice data are rarely available in large local or national data sets, yet the results of analyses of these data sets are often used for quality analyses and to influence health policy. For the most part, this lack of nursing data is due to the slow adoption of nursing classifications, which also slows the development of nursing theory and evidence-based practice. Few comparable, large clinical nursing data sets exist and elements of the NMDS are
not routinely extracted for inclusion in large national data sets. Therefore, there are few studies on the effectiveness and cost effectiveness of nursing interventions in achieving outcomes.

Fawcett and Russell (2005) describe an evolving conceptual model of nursing and health policy grounded in the social contract between nursing and society. Level I of the model uses nursing research to determine the effectiveness of nursing interventions on patient outcomes. Policies that determine the data that are included in national and international data sets need to be revised so that these analyses incorporate the NMDS and NMMDS, given the large portion of health care provided by nurses. These nursing data should also contain nursing diagnoses, interventions, and outcomes delivered by telehealth. Telenursing will become an increasingly common means of delivering care. The data that are needed to show the cost-effective contribution of telenursing are therefore highly important and the use of nursing classifications in telenursing is necessary.
VII. PAPERS - Implication of Nursing Classifications for Telehealth Nursing  
(Continued)

References


Hersh, WR; Helfand, M; Wallace, J; Kraemer, D; et al. (2001). Clinical outcomes resulting from telemedicine interventions: A systematic review. *BMC Medical Informatics and Decision Making, 1*:5.

VII. PAPERS - Implication of Nursing Classifications for Telehealth Nursing -
References (Continued)


Pollard, PB; Andres, NK; Dobson, A; and American Nurses Association. (1996). *Nursing care report card for acute care*. Washington, DC.


VII. PAPERS - Implication of Nursing Classifications for Telehealth Nursing-
References (Continued)

Specht, JK; Wakefield, B; & Flanagan, J. (2001). Evaluating the cost of one telehealth
application connecting an acute and long-term care setting. Journal of Gerontological Nursing,
27(10), 34-39.

Werley, HH & Lang, NM. (1988). Identification of the Nursing Minimum Data Set. New York:
Springer.

Werley, HH; Ryan, P; Zorn, C.R; & Devine, EC. (1994). Why the Nursing Minimum Data set
(NMDS)? In JC McCloskey & HK Grace (Eds.). Current Issues in Nursing (Fourth ed., pp. 113-

Medsurg Nursing; 3(2):144-145.
VII. PAPERS (Continued)

C. Telemedicine: The Opportunities and Challenges of Innovation
   Marita G. Titler, RN, PhD, FAAN

Introduction
Telehealth focuses on the transfer of basic patient information over networks and the
diagnosis, treatment, monitoring, and education of patients using systems that allow access to
expert advice and patient information. A technical definition of telehealth technology includes
those devices and software that enable healthcare providers and educators to diagnose, consult
with, monitor, treat, and educate patients and consumers remotely (US Dept. of Commerce,
2004).

The purpose of this paper is to describe the opportunities and challenges for promoting the
use of telemedicine from an innovation adoption framework (Rogers, 2003; Titler, 2001a).
Evidence-based practice and adoption of innovations is overviewed, followed by application of
innovation adoption principles to telehealth. Although the benefits of telehealth have been
demonstrated through various types of studies ranging from randomized controlled trials to case
reports, this innovation has been slow to take off/be adopted by mainstream healthcare
services (Currell, 2000; Kleinpell, 2005). In addition, two federal reports, among others, call for
more efficacy and cost-effectiveness studies using rigorous research designs to unequivocally
explicate the evidence-base, and return on investment for telehealth services, particularly for
interactive (synchronous) telehealth systems (US Dept. of Commerce, 2004; Hersh, 2001;
Hakasson, 2000).

Overview of Evidence-Based Practice
Evidence-based practice (EBP) is the conscientious and judicious use of current best
evidence, in conjunction with clinical expertise and patient values, to guide healthcare decisions
(Jennings, 2001; Sackett, 2000; Titler, 2006). Translation of research into practice (TRIP) is a
multifaceted, systemic process of promoting adoption of EBPs in delivery of healthcare services
that goes beyond dissemination of the evidence-base (Berwick, 2003; Farquhar, 2002; Rogers,
1995; Silagy, 2001; Titler, 2001a). Multiple models of EBP and Translation Science are
available (Barnsteiner, 1995; Berwick, 2003; Dufault, 2001, 2004; Goode, 1999; Logan, 1999;
Olade, 2004; Rosswurm, 1999; Rycroft-Malone, 2002; Soukup, 2000; Stetler, 2003; Titler,
2001a; Titler, 2001b; Wagner, 2001). Common elements of these models are syntheses of
evidence, implementation, evaluation of the impact on patient care, and consideration of the
context/setting in which the evidence is implemented.

Although review of these models is beyond the scope of this paper, implementing
innovations and evidence in practice must be guided by a conceptual model to organize the
strategies being used, and to elucidate the extraneous variables (e.g., behaviors and facilitators)
that may influence their adoption (e.g., organizational size, characteristics of users).

Overview of Innovation Adoption and Application to Telemedicine
Innovation adoption is a process rather than an event. Based on Rogers’ diffusion of
innovation model (2003) and the writing of Titler and Everett (2001), the characteristics of an
innovation, and how it is communicated to users in a social system affects the rate and extent of
adoption (See Figure 1). This model serves as an organizing framework for testing multifaceted
interventions for promoting adoption of innovations in various settings. Implementation
strategies (strategies to promote innovation adoption) must be multifactorial and address each
of these four areas as detailed below.
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Figure 1. Translation Research Model (Redrawn from Rogers 1995; Titler & Everett, 2001)

Characteristics of the Innovation

Several attributes of an innovation discussed herein, can account for 49-87% of the variance in rate of an innovation being adopted (Greenhalgh, 2005; Rogers, 2003). Innovations that have a clear unambiguous advantage in terms of effectiveness, cost-effectiveness, social prestige, relevance to the task, and/or perceived relevance for doing part of a job will be more easily implemented. However, relative advantage alone does not guarantee widespread adoption. Innovations that are compatible with the values, norms, and perceived needs of intended users will be more readily adopted. Compatibility with professional and/or organizational norms, values, and ways of working also influences adoption.

Complexity of an innovation influences rate of adoption as illustrated in Figure 2. Innovations that are perceived by key players as simple to use (Innovation I in Figure 2) are more easily adopted in less time than those that are more complex (Innovation II in Figure 2). Perceived complexity can be reduced by practical experience and demonstration. Partitioning the innovation into modules for incremental adoption will promote use of the innovation. Simple innovations that are perceived to have a clear advantage over what they are intended to replace, which are compatible with the adopters’ values, easy to use and try on a limited basis, do not require major changes in the organization or in personal routines, and have observable impact are more likely to be adopted. When experimentation with the innovation is planned as part of the assimilation process, the innovation is more likely to be adopted. Such experimentation can be encouraged through provision of “trialability” space.

If the benefits of an innovation are visible to intended users, it will be more easily adopted (observability). Initiatives to make the benefits more visible increase adoption.

If potential adopter can adapt, refine, or modify the innovation to suit his or her own needs, it will be more easily adopted (“reinvention”). If the knowledge required for the innovation’s use can be codified and separated from one context so that it is transferable to another context, innovation will be more easily adopted. If the innovation carries a high degree of uncertainty that the individual perceives as personnel risk, it will be less likely to be adopted. The risk and benefits of an innovation in an organization are not evenly distributed. The more the risk-benefit
balance maps to the power base of the organization, the greater the chance of assimilation. Perceived risk can be reduced through familiarity and opinion-leader endorsement.


If the innovation is relevant to the performance of intended user’s work and improves workflow processes, it will be more easily adopted. Interventions to increase the feasibility and workability of innovations for key staff members and teams improve the chances of successful adoption. If a technology is supported as an augmented product, with customization, training, and a help desk, it will be more easily adopted. The innovation/system fit is also important; when organizational structures and systems are modified to fit with the irreducible pieces of the innovation, then the innovation is more likely to be adopted.

An important principle to remember with innovation adoption as it relates to characteristics of the innovation is that the innovations attributes as perceived by users and stakeholders are neither stable features of the innovation nor sure determinants of their adoption. Rather it is the interaction between the innovation, the intended users, and a particular context that determines the adoption rate (Greenhalgh, 2004; Rogers, 2003; Titler & Everett, 2001a).

Application of these characteristics to telehealth reveals some insight into why telehealth is not yet a mainstream technology used in care delivery. The relative advantage of telemedicine is high in certain areas and contexts such as radiology, home health services (e.g., heart failure), medical specialties (e.g., dermatology), and provision of specialty consultative services to remote areas (US Dept. of Commerce, 2004). Teleradiology was one of the few specialties that developed quickly during the first generation of telehealth and the first specialty to establish a record of interoperability and sustainability (US Dept. of Commerce, 2004).

A Cochrane review (Currell, 2000) of 7 trials and over 800 individuals comparing telemedicine with face-to-face patient care found, however, that telemedicine did not
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Demonstrate unequivocal benefits. No formal economic analysis was provided although telemedicine was well accepted by patients with no detrimental effects. The relative advantages of telehealth have not yet been clearly demonstrated and the economic benefits remain unclear (US Dept. of Commerce, 2004; Currell, 2000; Hersh, 2001). The compatibility with traditional clinical values is low and the complexity of this innovation is high but improving with third generation telemedicine systems (US Dept. of Commerce, 2004). Trialability of telehealth is not easily achieved or may be accomplished on a limited basis through grant-funded research that then wanes as the grant funding ceases. Observability of telehealth is high with reinvention moderate as telehealth systems move from first and second generation to third generation systems (US Dept. of Commerce, 2004).

Use of telemedicine is small, but growing, and there is evidence that the technology can work (US Dept. of Commerce, 2004; Hersh, 2001). The longevity of telemedicine programs beyond the initial grant funding period is unclear and many may fail to survive beyond initial funding or enthusiasm (Hersh, 2001). Brantley (2004) offers several recommendations to address issues about the characteristics of the telemedicine innovation including better coordination among federal stakeholders, and government, academic, and private sectors to foster synergies that should lead to greater innovation, demand, and investment. Additionally, attention to interoperability and integration standards is essential for telehealth to be integrated into clinical care and electronic clinical record databases (US Dept. of Commerce, 2004).

Communication and Influence

Interpersonal communication channels, methods of communication, and influence among social networks of users affect the rate and extent of the adoption of innovations (Rogers, 2003; Valente, 1999). Use of opinion leaders, change champions, and consultation by innovation experts along with education of users are all essential strategies for promoting adoption of innovations.

Education is necessary, but not sufficient by itself, for innovation adoption. Continuing education alone does little to change practice behavior (O'Brien, 2001). Interactive and didactic education, used in combination with other practice-reinforcing strategies, have more positive effects than education alone (Bero, 1998; Schneider, 1998; O'Brien, 2001). It is important that users know the scientific basis and advantages of the innovation. They also need to know the improvements in care anticipated by adopting the innovation as well as how the innovation will affect them and their work. Disseminating this information to staff needs to be done creatively using various communication strategies. Education of staff must include ensuring that they are competent in the skills necessary to use the innovation. For example, if telemedicine is being adopted to care for heart failure patients in the home, it is critical that the clinicians are knowledgeable and skillful in using this technology to deliver care. During the early use of an innovation, users need ongoing access to information about the innovation and what it does, along with sufficient training and support on task issues as well as integrating the innovation into daily workflow.

Several studies have demonstrated that opinion leaders are effective in changing behaviors of health care practitioners (Berner, 2003; Bero, 1998; Cullen, 2006; Greenhalgh, 2005; Lococ, 2001; Soumerai, 1998; O'Brien, 1999), especially in combination with outreach or performance feedback. Opinion leaders are from the local peer group, viewed as a respected source of influence, considered by associates as technically competent, and trusted to judge the
fit between the innovation and the local situation (Oxman, 1995; Soumerai, 1998; O'Brien, 1999). They use the innovation, influence peers, and alter group norms (Collins, 2000; Rogers, 2003). The key characteristic of an opinion leader is that he or she is trusted to evaluate new information in the context of group norms. To do this, an opinion leader must be considered by associates as technically competent and a full and dedicated member of the local group (Oxman, 1995; Rogers, 2003; Soumerai, 1998).

Role expectations of opinion leaders include providing organizational leadership for adoption of the innovation and fostering an organizational infrastructure to support integration and use of the innovation. Opinion leadership is multifaceted and complex, with role functions varying by the circumstances, but few successful projects to implement innovations in organizations have managed without the input of identifiable opinion leaders (Greenhalgh, 2005). Social interactions such as “hallway chats”, one-on-one discussions, and addressing questions are important, yet often overlooked, components of translation (Berwick, 2003; Rogers, 2003). Thus, having local opinion leaders discuss the innovation with members of their peer group is necessary to translate research into practice. If the innovation that is being implemented is interdisciplinary in nature, it is recommended that an opinion leader be selected for each discipline.

Change champions are also helpful for implementing innovations (Rogers, 2003; Shively, 1997; Titler, 2004a; Titler, 1999). They are practitioners within the local group setting (e.g., clinical or patient care unit) who are expert clinicians, passionate about the innovation, committed to improving quality of care, and have a positive working relationship with other health professionals (Harvey, 2002; Rogers, 2003; Titler, 1998; Titler, 1999). They circulate information, encourage peers to adopt the innovation, arrange demonstrations, and orient staff to the innovation (Shively, 1997; Titler, 2004). The change champion believes in an idea; will not take “no” for an answer; is undaunted by insults and rebuffs; and above all, persists (Greer, 1988). For practice innovations to reach direct care providers, it is imperative that one or two change champions be identified for each patient care unit or service where the change is being made (Titler, 2003).

Outreach and consultation by an expert (termed by some as an expert opinion leader) promote positive changes in practice behaviors of nurses and physicians (Greenhalgh, 2005; Hendryx, 1998; O'Brien, 1997). An expert opinion leader is someone who meets one-on-one with practitioners in their settings to provide information about the innovation and feedback on provider performance (Davis, 1995; Hendryx, 1998; Hulscher, 1997; Oxman, 1995; O'Brien, 1998). This strategy alone or in combination with other strategies result in positive changes in healthcare practices (Davis, 1995; Hendryx, 1998; Jiang, 1997; Pippalla, 1995; O'Brien, 1997; White, 1999). The expert opinion leader is generally not local to the setting, has formal academic authority about the innovation, and is respected by virtue of having higher knowledge about the innovation. Expert opinion leaders are able to explain the innovation to others and respond convincingly to challenges and debates (Greenhalgh, 2005). Advanced practice nurses (APNs) may serve as expert opinion leaders as they provide one-on-one consultation to staff regarding use of the innovation with specific patients, assist staff in troubleshooting issues related to the application of the innovation, and provide feedback on provider performance using the innovation. Studies have demonstrated that use of advanced practice nurses as facilitators of change promotes the use of innovations and new evidence-based practices (Bauchner, 1998; Hendryx, 1998; Titler, 2001b; Watson, 2004).
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Application of these principles to adoption of telemedicine into mainstream healthcare necessitates empirical evidence of efficacy and cost-benefit. For example, practitioners and leaders of healthcare systems need to be convinced that improvements in patient outcomes and positive cost-benefits of this technology justify adopting it and re-sourcing the efforts to integrate telehealth into mainstream clinical practice. Although telemedicine has been demonstrated to work, there is a paucity of high quality research demonstrating efficacy and cost-effectiveness (US Dept. of Commerce, 2004; Currell, 2000; Hersh, 2001). “Innovation, demand, and investment in telehealth will be impeded as long as evidence of its clinical efficacy and cost-benefit is unavailable or not widely accepted” (US Dept. of Commerce, 2004) (pg.15). The inability of the telehealth community to prove efficacy and cost-effectiveness through high quality, peer-reviewed clinical studies is a barrier to provider acceptance, third-party-payer reimbursement, and liability. Lack of rigorous business case analyses for telehealth make it difficult to justify public funding for mainstream applications of telehealth (US Dept. of Commerce, 2004). Managers, policy makers, and investors sometimes lack fundamental data for analyzing and making decisions about use of telehealth systems. Although conduct of peer-reviewed clinical studies is relatively limited, some have demonstrated promising results, for example, in managing high risk pregnancies, and telehomecare for patients with heart failure (US Dept. of Commerce, 2004). Telehealth cannot advance without evidence created by quality studies, but quality studies are not being undertaken because of lack of coordination, funding, or focus. Recommendations to explicate the efficacy and cost-benefit of telehealth include:

1) Avoid funding of demonstration projects,
2) Conduct randomized controlled trials that assess patient outcomes and costs for entire episodes of care,
3) Coordinate efforts for data collection, planning for research, and use of standardized measures of effectiveness, and
4) Foster coordination and collaboration for conduct of research across the major telehealth programs. (US Dept. of Commerce, 2004; Hersh, 2001).

Furthermore, there is very little research on how to promote the adoption of telehealth beyond grant-funded initiatives. To accelerate acceptance of telehealth and its integration with clinical procedures, it is essential that a telehealth curriculum is available to medical and nursing schools and that telehealth champions work actively throughout the nation’s healthcare delivery system (US Dept. of Commerce, 2004). Expert opinion leaders from telemedicine centers at public and private universities need to communicate the benefits of telehealth to practice agencies not involved in telehealth research and collaborate with these sites if telehealth is to become part of mainstream healthcare. Additionally, local opinion leaders and change champions are needed to reduce the uncertainty about implementability and lead efforts to adapt the technology to the local healthcare context. Academic detailing, a strategy for innovation adoption, necessitates unequivocal to use in the academic detailing process, this type of evidence is not yet available.

Users of the Innovation

Members of a social system that are potential users of an innovation influence how quickly and widely an innovation is adopted (Rogers, 2003). When an innovation is being implemented, it is critical to identify who will use the innovation. For example, telemedicine may be used only by nurses and physicians or may include other disciplines such as physical and
respiratory therapists. Characteristics of users such as educational preparation, practice specialty, views on innovativeness, tolerance of ambiguity, intellectual ability, motivation, values, and learning style influence adoption of an innovation (Greenhalgh, 2005; Retchin, 1997; Rogers, 2003; Rutledge, 1996; Salem-Schatz, 1997; Schneider, 1998; Shively, 1997).

Audit and feedback, performance gap assessment (PGA), and trying the innovation are strategies to promote innovation adoption (Berwick, 1986; Lomas, 1991; Rogers, 2003; O'Brien, 1998; Titler, 2003; Titler, 2004; Titler, 2001b). PGA and audit and feedback have consistently shown a positive effect on changing practice behavior of providers (Berwick & Cohn, 1986; Lomas, 1991; McCartney, 1997; O'Brien, 1998). PGA (baseline practice performance) informs members, at the beginning of change; about a practice performance and opportunities for improvement, (e.g. Emergency room visits for heart failure patients). Specific practice indicators selected for performance gap assessment are related to the practices that are the focus of innovation such as decreasing the number of emergency room visits of heart failure patients that receive home-based telemedicine.

Audit and feedback is ongoing monitoring of performance indicators throughout the implementation process and discussing the findings with practitioners during the innovation implementation process (Jamtvedt, 2006; Titler, 2004). This strategy helps staff know and see how their efforts to use the innovation are improving care and patient outcomes. Audit and feedback should be done at regular intervals (e.g., every 4 to 6 weeks) throughout the implementation process (Jamtvedt, 2006; O'Brien, 1998). Successful adoption of an innovation is more likely if adequate feedback is provided to intended users on the consequences of the innovation (Greenhalgh, 2005). Performance gap assessment and audit and feedback data can be provided in run charts, statistical process control charts, or bar graphs (Carey, 2003).

Users of an innovation usually try it for a period of time before adopting it in their practice (Meyer, 1988; Rogers, 2003). When “trying an innovation” (piloting the change) is incorporated as part of the implementation process, users have an opportunity to use it for a period, provide feedback to those in charge of implementation, and modify the practice if necessary. Piloting the innovation as part of implementation has a positive influence on the extent of adoption (Greenhalgh, 2005; Rogers, 2003; Shively, 1997; Titler, 2003; Titler, 2001b).

User strategies to promote innovation adoption apply to telehealth in several ways. First, the potential adopters of telehealth may be technology enthusiasts, practitioners, and patients in remote sites. These users have very different needs, questions, and perceptions about use of telehealth. For example, enthusiasts may view telemedicine as a way of expanding services or improving access at an affordable price. Skeptics may perceive that face-to-face patient encounters are fundamental to healthcare and telemedicine can never be as good as direct patient contact. Others may find the technology too difficult to use, or at times, inoperable. The gap between technical expertise of the user and human factors engineering of the technologist can be narrowed with more “user friendly” technologies or features that are intuitive to providers. A comprehensive needs assessment regarding telehealth technology and use, directed toward end users is necessary to advance telehealth initiatives (US Dept. of Commerce, 2004).

Use of performance gap assessment and audit and feedback as strategies for promoting adoption of telehealth systems receive limited attention in the telehealth literature. An example of using performance gap assessment for promoting use of telehealth in chronic disease management might include examining baseline data on unplanned readmissions, ER visits, and specific clinical signs and symptoms (e.g., Hgb A1C or blood pressure) for specific patient cohorts in rural areas. Demonstrating an opportunity for improving patient outcomes can be set
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forth, with an opportunity to detail how telehealth programs have been effective in improving care. Although overall effectiveness and cost-effectiveness remain equivocal, there are clear examples of particular initiatives that demonstrate benefit (US Dept. of Commerce, 2004). Selecting indicators for ongoing audit and feedback of data to clinicians is essential to implement and sustain telehealth implementation. The selected indicators should include both quality (e.g., improved HgbA1C) and resource use indicators (e.g., length of stay or cost per case). The telemedicine community should arrive at a core set of quality and resource use indicators for clinicians to use in implementing and evaluating telehealth services (US Dept. of Commerce, 2004).

Concerns of users include usability, infrastructure support, and acceptance by patients, safety, applicability for other services or settings, and potential business spin-offs. As telehealth technology advances and costs decline, “trialability” has increased (US Dept. of Commerce, 2004). Clinicians who would not describe themselves as technical enthusiasts are beginning to try it out. This will have a positive impact on telehealth adoption.

Social System

Clearly, organizational context matters when implementing innovations (Ciliska, 1999; Denis, 2002; Fleuren, 2004; Fraser, 2004a, 2004b; Institute of Medicine, 2001; Morin, 1999; Rogers, 2003; Thompson, 2001; Vaughn, 2002). For example, investigators demonstrated the effectiveness of a prompted voiding intervention for urinary incontinence in nursing homes. However, sustaining the intervention in day-to-day practice was limited when the intervention responsibility was shifted to nursing home staff (rather than the investigative team), and the required staffing levels in excess of that available in most nursing home settings (Engberg, 2004).

Several organizational factors affect innovation adoption (Greenhalgh, 2005; Rogers, 2003). Large, mature, functionally differentiated organizations (e.g., those divided into semi-autonomous departments and units) that are specialized, with a foci of professional knowledge, slack resources to channel into new projects, decentralized decision making, and low levels of formalization will more readily adopt innovations. Larger organizations are generally more innovative because size increases the likelihood that other predictors of innovation adoption will be present such as the necessary financial and/or human resources and differentiation. However, these organizational determinants only account for about 15% of the variation in innovation adoption between comparable organizations (Greenhalgh, 2005). Adler and colleagues (2003) hypothesize that while more structurally complex organizations may be more innovative and hence adopt innovations relatively early, less structurally complex organizations may be able to diffuse innovations more effectively. Establishing semi-autonomous project teams is associated with successful implementation of innovations, and thus should be considered in managing organizational units (Adler, 2003).

Absorptive capacity for new knowledge is a second social system factor that affects innovation adoption. Absorptive capacity is the knowledge and skills to enact the innovation, networks and communication patterns (versus silos), remembering that the strength of evidence alone will not promote adoption. An organization that is able to systematically identify, capture, interpret, share, reframe, and re-codify new knowledge; and put it to appropriate use will be better able to assimilate innovations – especially those that include technologies (Barnsley, 1998; Ferlie, 2001). A learning organizational culture and proactive leadership that promotes
knowledge sharing are important components of building absorptive capacity for new knowledge.

In addition to absorptive capacity for new knowledge, components of a receptive context include strong leadership, clear strategic vision, good managerial relations, visionary staff in key positions, a climate conducive to experimentation and risk taking, and effective data capture systems. Leadership is critical in encouraging organizational members to break out of the convergent thinking and routines that are the norm in large, well-established organizations (Greenhalgh, 2005; Rogers, 2003).

An organization may be amenable to innovation in general but not ready or willing to assimilate a particular innovation. Elements of system readiness include tension for change, innovation-system fit, assessment of implications, support, and advocacy for the innovation, dedicated time and resources, and capacity to evaluate the impact of the innovation during and following implementation. If there is tension around specific work or clinical issues and staff perceives that the situation is intolerable, a potential innovation is likely to be assimilated only if it can successfully address the issues and, thereby, reduce the tension. Innovations that fit are compatible with existing values, norms, strategies, goals, skill mix, supporting technologies, and ways of working and so are more likely to be assimilated. Assessing and structuring workflow to fit with a potential innovation is an important component of fostering innovation adoption. If implications of the innovation are fully assessed, anticipated, and planned for; the innovation is more likely to be adopted. If supporters for an innovation outnumber and are more strategically placed within the organizational power-base than opponents are, the innovation is more likely to be adopted by the organization. Having a budget line of time and resources for the innovation and the implementation process is more likely to result in adoption of the innovation. Organizations that have the capacity to evaluate the impact of the innovation are more likely to assimilate the innovation. Effective implementation needs both a receptive climate and a good fit between the innovation and intended adopters’ needs and values.

In terms of application to telehealth, use of telemedicine should be thought of, not as a piece of hardware, but as a complex technology-supported process among human actors in a healthcare context. Implementation of telehealth applications has been successful in the military and Department of Veterans Affairs. The Army’s Telemedicine and Advanced Technology Research Center has invested over $100 million for research in telehealth, the Army Medical Department sponsors a Competitive Telemedicine Program for individual Army units to apply for innovative programs and funds over 4 million in projects. The Department of Veterans Affairs operates the largest telehealth program in the county with more than 300 thousand teleconsults annually. The Office for the Advancement of Telehealth (OAT) has funded a number of innovative programs. OAT is the largest federal programs, outside the Department of Defense and VA, with telehealth programs all over the US. OAT demonstration grants are comparable to implementation of telehealth in an open system. Public and private universities are implementing and conducting research on telehealth systems. The success of telehealth in these types of systems is associated with the context in which they operate. For example, telehealth centers in universities are connected with academic medical centers that provide a stable and significant patient population as well as the research and teaching environment and associated capabilities inherent in university settings. These large systems are more likely to have the “slack” for implementing telehealth systems.

The VA is a closed system that offers the size and stability necessary for successful application of telehealth. In addition, the VA leadership has emphasized the importance of
telehealth by creating an organizational expectation, as well as re-sourcing the technology and related human resources to integrate telehealth with clinical practice on a very broad scale. Through the leadership and vision in the VA, a receptive context for telehealth is promoted. However, telemedicine threatens many of the inter- and intra-organizational structures and cultures of “traditional” healthcare settings. If telemedicine were to take off, healthcare systems would look very different. As a critical mass of telehealth programs that could collaborate on research emerges and the merits and benefits of collaboration are realized, there will be an even greater need for coordination and greater opportunities for collaboration among these centers of telehealth excellence (US Dept. of Commerce, 2004).

Absorptive capacity, the knowledge and skills to enact telehealth and foster telehealth networks, is essential for telehealth adoption. Rigorous, scientific telehealth information is not, however, readily available to healthcare providers nor available in large quantities in well-established medical journals. The telehealth community needs to spend considerable efforts to ensure that telehealth information is more widely available to practitioners, and integrate telehealth information into main stream healthcare publications (US Dept. of Commerce, 2004). Perhaps the success of the VA in using telemedicine is related to their ability to diffuse the knowledge and skills necessary for telehealth, and to capture, interpret, share, reframe, and reconify new knowledge systematically; and put it to appropriate use in clinical practice. Technical systems often remain poorly adapted to the human infrastructure of healthcare such as the work environment, needs and preferences of clinicians, patients, and organizational decision-makers responsible for re-sourcing telehealth systems. These issues are being addressed by telehealth centers, the VA, and the DoD, and thus contribute to successful implementation.
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(Continued)

References


Berner, ES; Baker, CS; Funkhouser, E; Heudebert, GR; Allison, JJ; Fargason, CA; et al. (2003). Do local opinion leaders augment hospital quality improvement efforts? A randomized trial to promote adherence to unstable angina guideline. Medical Care, 41(3), 420-31.


Ciliska, D; Hayward, S; Dobbins, M; Brunton, G; & Underwood, J. (1999). Transferring public-health nursing research to health-system planning; assessing the relevance and accessibility of systematic reviews. Canadian Journal of Nursing Research, 31(1), 23-36.


VII. PAPERS - Telemedicine: The Opportunities and Challenges of Innovation - References (Continued)


VII. PAPERS - Telemedicine: The Opportunities and Challenges of Innovation - References (Continued)


Harvey, G; Loftus-Hills, A; Rycroft-Malone, J; Titchen, A; Kitson, A; McCormack, B; et al. (2002). Getting evidence into practice: The role and function of facilitation. *Journal of Advanced Nursing, 37*(6), 577-88.


Hersh, WR; Wallace, JA; Patterson, PK; Shapiro, SE; Kraemer, DF; Eilers, GM; et al. (2001). *Telemedicine for the Medicare population,* (Evidence Report/Technology Assessment: Number 24). AHRQ publication number 01-E011. Rockville, MD: Agency for Healthcare Research and Quality.


VII. PAPERS - Telemedicine: The Opportunities and Challenges of Innovation - References (Continued)


O'Brien, MA; Oxman, AD; Haynes, RB; Davis, DA; Freemantle, N; & Harvey, EL. (1999). Local opinion leaders: Effects on professional practice and health care outcomes. *The Cochrane Database of Systematic Reviews*. Issue 1: CD000125.


VII. PAPERS - Telemedicine: The Opportunities and Challenges of Innovation - References (Continued)


Rutledge, DN; Greene; P; Mooney, K; Nail, LM; & Ropka, M. (1996). Use of research-based practices by oncology staff nurses. *Oncology Nursing Forum*, 23(8), 1235-44.


Soumerai, SB; McLaughlin, TJ; Gurwitz, JH; Guadagnoli, E; Hauptman, PJ; Borbas, C; et al. (1998). Effect of local medical opinion leaders on quality of care for acute myocardial infarction: A randomized controlled trial. *JAMA*, 279(17), 1358-63.


VII. PAPERS - Telemedicine: The Opportunities and Challenges of Innovation - References (Continued)


Titler, MG; Kleiber, C; Steelman, VJ; Rakel, BA; Budreau, G; Everett, LQ; et al. (2001b). The Iowa Model of Evidence-based Practice to Promote Quality Care. Critical Care Nursing Clinics of North America, 13(4), 497-509.


Vaughn, TE; McCoy, KQ; Bootsmiller, BJ; Woolson, RF; Sorofman, B; Tripp-Reimer, T; et al. (2002). Organizational predictors of adherence to ambulatory care screening guidelines. Medical Care, 40(12), 1172-85.

Wagner, EH; Austin, BT; Davis, C; Hindmarsh, M; Schaefer, J; & Bonomi A. (2001). Improving chronic illness care: Translating evidence into action. Health Affairs (Millwood), 20, 64-78.


VI. PAPERS (Continued)

D. Policies Issues for Telehealth and Nursing

Carole Bickford, RN, BC, PhD

The quest to identify policy issues for telehealth and nursing mandates at least a cursory assessment of today’s healthcare environment. Completing such an examination assists in the confirmation of the characteristics of the “As Is” world. This type of study or review also helps establish an understanding of the complexity and interrelationships that must be considered when creating the envisioned and improved “To Be” state. The what, who, where, when, why, and how questions provide a framework for teasing out the telehealth policy issues and opportunities that must be addressed and may suggest the various associated strategies and initiatives that lead to solutions and new, more effective healthcare and business processes.

What?

What is the focus of health care in the United States today? What is the big picture? Most often reimbursement, disease, and pathology garner the attention. Contemporary buzzwords of evidence-based practice, emergency preparedness and surveillance, best practices, quality, and patient safety pepper presentations, programs, papers, and Internet sites. Much talk targets the “broken healthcare system” that is bankrupting our nation with calls for needed reform. Less frequent commentary addresses the concerns of nurses and nursing, such as wellness, prevention, health promotion, and symptom management.

The cacophony is best described and depicted as silos and Towers of Babel with much noise and very little communication and collaboration. Silos refer not only to isolated data structures, but also to the sort of thinking that creates and maintains them. (Lager, 2005). This results in even less understanding. Without concurrence on definitions of terms and concepts, the necessary research and policy decisions cannot be completed. Norma Lang’s pronouncement remains true today: "If you cannot name it, you cannot control it, finance it, teach it, or put it into public policy."

Discussions about consensus definitions help promote consistent use. Let us begin with the contemporary definition of nursing recently provided by the American Nurses Association (ANA) in Nursing: Scope and Standards of Practice (2004, p. 7):

*Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations.*

The specialty practice most closely affiliated with telehealth is nursing informatics. Nursing Informatics is the nursing specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice. Nursing informatics facilitates the integration of data, information, and knowledge to support patients, nurses, and other providers in their decision-making in all roles and settings. This is accomplished using information structures, information processes, and information technology (ANA, 2001).

The ANA defines telehealth as the removal of time and distance barriers for delivery of health care services and related health care activities through telecommunication technology (Milholland, 1997). The focus of telehealth most often addresses the technologies of medical
VII. PAPERS - Policies Issues for Telehealth and Nursing (Continued)

devices, cameras, black boxes, computers, wires, and wireless capacities. Less attention is placed on the people, such as the clinician, educator, patient, student, consultant, and technicians, and the actual data and information content. Most often the discussions of data and information relate to store-and-forward images, paper-based clinical notes, clinical information from monitors and recorded observations, synchronous and asynchronous communications, codes and bills for payment for telehealth services, and not how these data fit within an informatics environment and the information lifecycle activities (generation, analysis, storage and retention, communication, and disposition).

Industry discussion and development of consensus definitions of the following concepts are needed to facilitate clarity, action, and evaluation, as well as policy development:

- Diagnosis
- Intervention
- Outcome
- Quality
- Symptom management
- Virtual presence
- Coordination of care
- Case management
- Electronic health record and personal health record
- Healthcare services
- Patient, client, person, population
- Provider

Where?

Policy issues associated with the “where” question may become quite complex when considering local, state, regional, national, and international locations, and the issues of overlapping boundaries, regulations, and laws. Similarly, emergency preparedness initiatives at these levels increase the complexity of telehealth discussions related to jurisdiction, implementation, funding, oversight, and the hand-off of data and information to the participating entities. The current federal health information technology directives related to the national health information infrastructure (NHII) and regional health organizations (RHIO) are expected to evolve to include not only acute care, ambulatory care, and provider office practices, but also to encompass skilled nursing and assisted living facilities, homes, correctional facilities, schools, faith communities, homeless shelters, and street settings. How will the increasingly more affordable telehealth resources be integrated into and then maintained within such environments?

Another approach to the discussion of the policy issues associated with the “where” of telehealth encompasses the views from the healthcare provider, personal health, and population health dimensions presented by the National Committee on Vital and Health Statistics (NCVHS, 1999). Alternative perspectives emerge when the discussion is framed from the differing views of practice, education, administration, and research within nursing and interdisciplinary healthcare settings. Fresh perspectives can also come from professional practice, legal and regulatory, institution and organization, and individual practitioner levels that are included in Figure 1.
VII. PAPERS - Policies Issues for Telehealth and Nursing (Continued)

Figure 1: Model of Professional Nursing Practice Regulation

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The availability of new combinatorial technologies beyond sole function wired, mobile, or cell phones, pagers, blackberries, and embedded or attached devices now permit global position system (GPS) reporting as well as Internet access and communications. The bottom line: ubiquitous telehealth capacity is now possible and the environment is ripe for extensive policy discussions and stakeholder decision making.

**Who?**

Policy discussions and decisions must encompass all stakeholders. The definition of the consumer must expand beyond the most commonly identified persons, families, groups, populations, and organizations, to also include those enterprises that self insure for healthcare services and actively support health promotion and prevention (i.e., Pepsico). Such stakeholders must join clinicians, administrators, researchers, and educators as interested parties in telehealth policy development.

Licensing and regulatory entities, such as state boards of nursing and the National Council of State Boards of Nursing (NCSBN), are also stakeholders. Local, state, and national governments assume diverse stakeholder positions in their varied roles as providers, consumers, and regulators. The World Health Organization (WHO) and International Council of Nurses (ICN) have an international interest in telehealth programs and policy development and dissemination.

The differing perspectives of the technology solutions’ providers, standards organizations, and quality management advocates may create significant tensions that must be identified, addressed, and satisfactorily resolved. Foundations, agencies, and other grant sources, as well
VII. PAPERS - Policies Issues for Telehealth and Nursing (Continued)

as coalitions for healthcare reform, may be collaborators or dissenting entities. Lobbyists and advocates for privacy, confidentiality, and security add to the mix. Although seldom recognized, venture capitalists and futurists have a role in policy development for telehealth and other healthcare information system concerns and issues.

When?
Telehealth services can be provided anytime, if electricity is present to support the technologies and telecommunications structures. The expectation of 24/7 means new resource requirements, including personnel coverage and assurance of continuous quality services. Policy decisions may need to address such access availability and the assurance that no digital divide (difference caused by inability to access computer and telecommunications resources) exists. The current telehealth environment in some areas may reflect a patchwork of pilot and demonstration projects that represent a start stop syndrome dependent on unsteady sources of monies and resources. Extensive policy discussions and decisions will most likely be needed to establish a secure and continuous funding stream.

For telehealth to succeed, standards must be in place and always followed, especially for security, confidentiality, and privacy mandates. Similarly, users must be appropriately prepared via initial and continuing education and appropriate skills development programs. Numerous policy issues and decisions surround each of these topics.

How?
Telehealth first encompassed paper and pencil tools for documenting care delivery for those at a distance. The addition of the telephone provided another communications source that also relied on the tried and true paper and pencil documentation and record-keeping resources. Today’s telehealth environment has expanded to encompass facility or enterprise intranet and Internet capacities and knowledge portals, thereby spawning a host of associated complexities, concerns, issues, and opportunities. Technology issues related to the necessary interface of clinical instruments and other equipment create additional policy development requirements. Inclusion of simulation and distance learning capacities provide new learning and policy development opportunities. Again, standards that foster inter-operability, connectivity, and communication are vital to successful telehealth solutions.

To date telehealth has not reflected an integrated planning perspective and a common vision. The extensive federal NHII initiatives have not included discussions of telehealth considerations. Similarly, an integrated industry wide program about quality measures and best practices has not been established to identify and incorporate lessons learned. To approach telehealth as an evidence-based practice, the following issues will need to be addressed from an interdisciplinary perspective:

- Patient-provider partnership
- Patient as decision-maker
- Patient-centered focus
- Health as the focus, not just disease
- Ethics
VII. PAPERS - Policies Issues for Telehealth and Nursing (Continued)

Why?
When addressing the “why” question, can telehealth be best described as a technology looking for an application? Which of the following perspectives is the truth about telehealth compared with a person-to-person healthcare encounter?

- No demonstrated difference from a person-to-person encounter
- Difference not significant
- Significant negative difference but do telehealth anyway
- Significant difference showing telehealth better than person-to-person
- Never evaluated but do telehealth anyway

Policy issues related to consumer choice and preference, patient empowerment, and provider choice and preference need consideration. Insurance company or other payer mandates need to be addressed. If telehealth is less expensive, more cost effective, and permits improved access for rural and underserved populations, as well as for those affected by traffic congestion or geographic isolation; can telehealth centers for excellence create new models of healthcare practice? Will telehealth counter today’s clinician shortage, protect the patient and community, and do more with less?

What policy decisions must be made to ensure telehealth services have a population health focus for education, prevention, surveillance, and reporting? Similarly, policy decisions are critical to promote telehealth as an effective education vehicle for healthcare consumers and clinicians. Increasing reliance on internet recruitment and on-line surveys can help enhance research capacity, answer questions, and permit an international connection and perspective. This use of telehealth also will need to involve policy decisions and ethics considerations.

Conclusion
Registered nurses are key participants in establishing and conducting telehealth services and in those capacities have extensive opportunities to identify needed telehealth policies. They must not continue to remain the silent partners in formulating those necessary policies and abdicate their decision-making responsibilities. Registered nurses can seize this opportunity to assist in mainstreaming telehealth initiatives within contemporary healthcare system solutions.
VII. PAPERS - Policies Issues for Telehealth and Nursing (Continued)

References


VIII. CONFERENCE OUTCOMES

Using the consensus process described earlier, the participants sifted through all the responses to each question and identified first and second tier priorities. Although the pursuit of research studies with clearly identified populations, standard outcomes, and standard methodologies emerged as the primary research goal, other, more specific issues were also identified.

- **Focus Question 1:** What are the specific phenomena of concern that Telehealth nursing practice seeks to address? What are the nursing diagnoses, problem statements, presenting complaints and patient needs that the nurse in Telehealth addresses?

  **Answers Question 1 - Priority 1:**
  - Patient need to manage own chronic disease
  - Coordination of care
  - Multiple co-morbidities
  - Patient knowledge + skill re how to manage symptoms

  **Answers Questions 1 - Priority 2:**
  - Screening for disease prevention
  - Timeliness of care
  - Creating therapeutic presence

- **Focus Question 2:** What specific interventions do nurses in Telehealth practice provide in response to stated needs? Are there interventions that are unique to Telehealth nursing practice?

  **Answers Question 2 – Priority 1:**
  - Symptoms management

  **Answers Question 2 - Priority 2:**
  - Responding to critical data
  - ‘modified’ physical assessment
  - Matching technology to clinical need, desired outcomes and patient ability
  - Virtual presence
  - Monitoring + trending (tracking)
  - Family involvement in care
  - Coordination of multidisciplinary care

- **Focus Question 3:** Among the interventions that nurses employ in Telehealth practice, which show the highest potential for demonstrating the clinical efficacy of this practice model?

  **Answers – Question 3 – Priority 1:**
  - Chronic disease management
  - Patient empowerment
  - Teaching self management using technology

  **Answers – Questions 3 – Priority 2:**
  - ability of nurse to export expertise regardless of geography
  - telepresence
VIII. CONFERENCE OUTCOMES (Continued)

- Increased access for persons seeking services
- Change in health status

- **Focus Question 4:** Among the interventions that nurses employ in Telehealth practice, which show the highest potential for demonstrating cost effectiveness?

  **Answers – Question 4 – Priority 1:**
  - enhanced self care management
  - early detection of health deterioration
  - symptom management

  **Answers – Question 4 – Priority 2:**
  - management of chronic disease
  - value of nursing
  - utilization of standards

- **Focus Question 5:** Among the interventions that nurses employ in Telehealth practice, which show the highest potential for creating evidence-based future practice directives?

  **Answers – Question 5 – Priorities:**
  - create standardized care delivery studies to determine outcomes
  - Having a different view of patient-centered care in telehealth – because patient accesses care/initiates etc.
  - Employ/understand similarities and differences in contexts which alter processes and outcomes in which telehealth is delivered
  - Changing-different kind of nursing admin. practice based on telehealth
  - How telehealth alters how patients access care
  - Demonstrate how telehealth breaks down barriers that deter desired outcomes

- **Focus Questions 6:** Among the interventions and clinical outcomes specific to Telehealth nursing practice, which, if studied, have the greatest potential for shaping future health policy initiatives?

  **Answers – Question 6 – Priority 1:**
  - create partnerships among key stakeholder to achieve desired policy outcomes

  **Answers – Question 6 – Priority 2:**
  - innovate – use new pedagogies for emerging generations
  - professional practice roles in telehealth

  **Answers – Question 6 – Priority 3:**
  - determining best practices
  - how to build on going revolution
  - identify ways to use technology proactively
  - shifting balance of power in healthcare from providers to consumers
  - patient empowerment
  - break down parochialism healthcare professionals to enable inter-professional service (practice)
VIII. CONFERENCE OUTCOMES (Continued)

- Focus Question 7: What strategies are the most promising in creating a program of research in Telehealth nursing that would provide nurses with evidence-based practice opportunities?

  Answers – Question 7 – Priority 1:
  - increase studies to support cost effectiveness of telehealth with clearly identified populations, standard outcomes, standard methodologies
  - educate and lobby those with funds (NINP, NINR, RWJ, AARP)
  - work to get telehealth nursing leaders appointed to Nat. Adv. Council of fed funding agencies (NINR, etc)

  Answers – Question 7 – Priority 2:
  - test nursing interventions in telehealth across levels of technology
  - form partnerships between nurse research methods people + those in telehealth who have data

- Focus Question 8: Among all the priorities generated at this conference, which are the most urgent in guiding stakeholders in planning future research initiatives?

  Answers – Question 8 – Priority 1:
  - Increase studies to support cost effectiveness of telehealth with clearly identified populations, standard outcomes, standard methodologies

  Answers – Question 8 – Priority 2:
  - Create program of levels of research development, i.e., move from descriptive… to experimental, etc.
  - Affirm commitment to common definition of telehealth, establish blueprint for telehealth and identify an end point for goal achievement
  - Partner with educational institutions doing basic nursing education to build optimal conditions for telehealth research + practice interest
  - Think of telehealth agendas as aspect of existing priority research agendas, national, international
  - Move toward international state of the science conference on telehealth sponsored by national/international agencies/orgs (e.g., NINR, NIH, AHRQ, ICN)
  - Create partnerships among key stakeholders (defined broadly) in telehealth
  - Define key stakeholders
  - Publicize outside of telehealth world – get visible!
  - Standardization and regulation based on best practices to ensure consistency
IX. FUTURE CHALLENGES

Although the conference generated a specific research agenda and a renewed enthusiasm for the pursuit of that telenursing agenda, researchers still face significant challenges.

- *Establishing and maintaining a telenursing presence in professional organizations outside those whose primary interest is telehealth.* Telenursing pioneers need to nurture an interest in telehealth in all the nursing organizations. They also need to work to increase the presence of telehealth practitioners on boards and regulatory boards at all levels.

- *Mounting the kind of evidence-based studies needed to evaluate telehealth.* This means overcoming the problems with the data being collected and publishing rigorous statistically valid studies.

- *Matching limited resources, both human and financial, to the needed research projects.* This challenge requires a major policy shift in the field of telehealth to provide reimbursement for provider-to-patient telehealth visits as well as marshalling limited resources to improve access to health care. The limited reimbursement from Medicare and Medicaid hampers the diffusion of telehealth care into the mainstream.

- *Finding “doable” projects that can be undertaken with little delay.* Telenursing researchers need to make their presence known by publishing outcomes research on existing areas, such as the management of chronic diseases (including home health care).

- *Reaching the majority of professional nurses to disseminate the results of the conference.* In addition to the use of listservs and websites from various nursing organizations, the AT&T Center for Telehealth Research and Policy at UTMB will include the proceedings in their virtual library.

- *Resolving licensure and practice regulation issues.* Telenursing practitioners need to join forces with other healthcare providers to implement policy changes that will make the practice of telemedicine more feasible, such as reciprocal licensing agreements.
X. CONCLUSIONS

By an overwhelming margin, the conference participants felt that the pursuit of studies with clearly identified populations, standard outcomes, and standard methodologies to support the cost effectiveness of telehealth should be the highest priority for the field of telenursing. Within those parameters, further research concerns emerged. Group consensus identified chronic disease management, patient empowerment, and enhanced self care as potential areas for future research.

They also assessed the potential fit between existing nursing classification systems and the nursing interventions and outcomes appropriate to telehealth nursing and generated research priorities for the further development of telehealth nursing. These research priorities should focus on evidence-based practice approaches and public policy implications. In addition, the group felt that a policy shift towards increased cooperation between all healthcare providers was necessary to bring telehealth research into the mainstream of healthcare research.

These conclusions represent the foundation of a strategy for furthering the development of a telehealth nursing research agenda.
XI. BIBLIOGRAPHY


APPENDICES
A. Pre-Conference Reading List

**Online Documents:**


2. International Council of Nurses [Fact Sheet – Telenursing]
   http://icn.ch/matters_telenursing.htm


4. You may wish to look at the articles in the *Online Journal of Issues in Nursing*, Topic 16 focused on Telehealth nursing.
   http://nursingworld.org/ojin/topic16/tpc16toc.htm

**Mailed Documents:**


XII. APPENDICES (Continued)

B. Concept Maps

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**TELEHEALTH NURSING: CURRENT STATE**

Current telehealth nursing activities tend to be focused around a specific service or technology medium with little or no interface among foci. This limits the impact of outcome evaluation and research effort.

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**TELEHEALTH NURSING: CREATING OUR PREFERRED FUTURE**

Research and program outcome evaluation related to telecommunication modalities used in health care.
XII. APPENDICES (Continued)

C. ATA Handout-11th Annual Meeting May 7-10, 2006 – San Diego, CA

BACKGROUND

Conference Development

The idea for the invitational conference, Creating a National Telehealth Nursing Agenda, emerged from the observations of nurse leaders at the University of Texas Medical Branch (UTMB) Telehealth Center. They noted that current telehealth nursing activities tend to be focused around a specific service or technology medium with little or no interface among foci, which limits the impact of outcome evaluation and research efforts. Telehealth has tremendous potential as a tool for improving access to health care, particularly in rural populations and care of the elderly and chronically ill. Nurses play a vital role in delivery of clinical services in telehealth. Despite the efforts of the Nursing Special Interest Group of the American Telemedicine Association and The American Nurses Association, there has not yet been a concerted effort to create a common framework for defining or evaluating telehealth nursing as a practice arena.

The University of Texas Medical Branch (UTMB) Telehealth Center (now the Electronic Health Network) proposed an invitational conference to develop a consensus among key stakeholders that represents a research agenda for telehealth nursing. This purpose of this agenda is to define the research questions to be addressed and the evidence base needed to integrate telehealth nursing further into the mainstream of healthcare delivery.

The conference was held on October 9, 10 and 11, 2005 at Mount Aloysius College in Cresson, Pennsylvania. A conference planning committee (consisting of key experts in telehealth nursing, nursing and health policy, nursing classification systems, and evidence-based practice) guided the development and implementation of the conference. An internationally recognized expert in mediation and consensus work facilitated the conference, which consisted of short papers on key issues and a consensus process, from which the Telehealth nursing research agenda was developed. Conference co-sponsors included Mount Aloysius College, Division of Nursing in Cresson, PA; UTMB Hospitals and Clinics Nursing Department; and Polycom Worldwide, a leader in provision of voice, video, data, and web collaboration technology for telehealth. Conference proceedings will be disseminated through a number of websites: UTMB Electronic Health Network, the American Telemedicine Association, American Nurses Association, and International Council of Nurses.

Identification of the Need

In recent decades, the United States has been unable to fully achieve its healthcare goals or adequately address the issues of healthcare access, quality, and cost for all citizens. The U.S. now spends more than 14% of its gross domestic product on health care, or more than one trillion dollars per year—a greater percentage than any other nation. (Bean JR, 2005; Chernew ME, 2005) Despite this enormous fiscal investment, access to high quality health services is denied many Americans. Increasing numbers of low-income and minority individuals, estimated now at more than 42 million, are without health insurance. (Cohen JJ, 2003) Despite this changing demographic composition of the United States, due in part to an increasingly aging population of “baby boomers” and a growing proportion of minorities, this situation is only expected to worsen. Strategies to improve access and reduce expenditures while providing quality care are urgently needed.

Telehealth has shown potential as a tool for improving access to health care while maintaining or reducing costs (Dimmick SL, et al., 2003). Despite these successes and the fact that some telehealth-related technology has been in place since the 1950s, the market has remained relatively small realizing only a fraction of the potential for this technology (US Department of Commerce, 2004). For the most part, telehealth remains a type of technical sub-specialty that has not yet been accepted within the mainstream of healthcare delivery.

One of the major goals of Healthy People 2010, to improve access to comprehensive, high quality healthcare services, identifies a number of structural barriers to care that lead to disparities in access.
These include a lack of access to health facilities and health professionals because of geographic barriers. (US Department of Health and Human Services, 2000) Telehealth can help address this problem by bringing care to underserved communities and individuals. (Bratton RL, 2000; Ricci M, 2003) These key policy documents indicate that telehealth nursing can play a more important role in fulfilling the strategic direction for health care.

The UTMB Electronic Health Network has the vision, expertise, and clinical experience to pursue the creation of a national research agenda for telehealth nursing successfully. The institution has been a leader in telehealth since 1994 and is nationally and internationally recognized as such. Since that time, medical specialists, nurse practitioners, and ancillary services have conducted more than 256,000 patient visits using videoconferencing. The program currently averages almost 5,000 visits per month. EHN's extensive experience in telehealth has led to the recognition of the vital importance of strategic thinking at a national level regarding the future direction of telehealth nursing. This agenda must be pursued aggressively to achieve telehealth nursing's full potential as an innovative tool for improving healthcare access, quality, and cost.

EXECUTIVE SUMMARY OF CONFERENCE PROCEEDINGS
Summary prepared by Phyllis Beck Kritek, Facilitator

Advocates and users of emergent telehealth, both practitioners and recipients of care, have experientially demonstrated the potential of this healthcare modality, while the exponential explosion of creative technology further unveils its as yet unrealized possibilities. Nurses have become active advocates and participants in this emerging future, creating the specialty of telehealth nursing.

Pressing unmet healthcare challenges, the traditions and values of nurses, and the need for systematic study of this practice have made the delineation of clear telehealth nursing research priorities a compelling goal. To that end, a group of engaged stakeholders convened to generate a beginning articulation of these priorities. The intent of this group was to create an initial statement of priorities that would further dialog among all stakeholders and support focused research initiatives.

The group convened October 9-11, 2005 in Cresson, PA hosted by Mount Aloysius College. Dr. Janet Grady, chairperson of the Division of Nursing at Mount Aloysius and Dr. Poldi Tschirch, then Director of Distance Education at the University of Texas Medical Branch (UTMB) Telehealth Center in Galveston provided leadership. A grant awarded to Dr. Tschirch by the Agency for Health Research and Quality (AHRQ R13-HS0115961-01) supplied partial funding for the conference. Additional sponsors included Mt. Aloysius College, Nursing Service and the Electronic Health Network at UTMB, and Polycom.

The conference leaders organized a process that first explored germane topics through the presentation of papers by experts. Using these papers as catalysts, participants then collectively responded to a set of questions by means of brainstorming followed by weighted voting. Brainstorming questions (eight) emerged from the stated goals of the gathering, and outcomes were a set of priorities (identified by weighted voting) viewed by the group as the most compelling answers to the questions. The overriding goal of the group was the identification of priority research initiatives for telehealth nursing. While several were identified as important, the overriding key recommendation was as follows: Increase studies with clearly identified populations, standard outcomes, and standard methodologies that support the cost effectiveness of telehealth.

The initial stimulus paper was presented by Dr. Loretta Schlacta-Fairchild who discussed the clinical standards and competencies in telehealth nursing. The initial question asked participants: What are the specific phenomena of concern that telehealth nursing practice seeks to address? What are the nursing diagnoses, problem statements, presenting complaints, and patient needs that the telehealth nurse addresses? Priority responses focused on chronic care issues: the need for patients to manage their own diseases and demonstrate skill and knowledge about their symptoms, the importance of coordination of care, and the impact of co-morbidities. Creating therapeutic presence, screening for
XII. APPENDICES – ATA Handout (Continued)

disease prevention, and the importance of timeliness of care were also identified as important responses to this question.

Dr. Meridean Maas provided participants with a tour through the terrain of nursing classification systems and their implications for telehealth nursing. Her presentation created context for responses to the second question: What specific interventions do nurses in telehealth practice provide in response to stated needs; are some interventions unique to this practice? The predominant group response to this question emphasized symptom management, though participants also identified several additional important interventions. These included responding to critical data; conducting “modified” clinical assessments; matching technology to clinical needs, desired outcomes, and the patient’s ability; virtual presence; monitoring and trending (tracking) the patient’s health status; family involvement in care; and the coordination of multidisciplinary care. While the primary focus on symptom management had centrality for participants, it is noteworthy that the added emphases point to emergent interventions and those unique to telehealth nursing.

Evidence-based practice was elucidated by a presentation by Dr. Marita Titler that set the stage for the group to respond to the next three questions. These questions asked participants: Among the interventions that nurses employ in telehealth practice, which show the highest potential for demonstrating the clinical efficacy of this practice model? Which show the highest potential for demonstrating cost effectiveness? Which show the highest potential for creating evidence-based future practice directives?

Question three focused on clinical efficacy of the nurse’s practice model. Participants posited that clinical efficacy was most evidenced through chronic disease management, patient empowerment, and teaching self-management using technology. A second level of importance included the efficacy of telepresence, increased access for persons seeking services, attention to changes in the patient’s health status, and the ability of the nurse to export expertise regardless of geography.

The fourth question centered on cost effectiveness. Participants indicated that the cost effectiveness of telehealth practice was most readily demonstrated with interventions that focused on enhanced self-care management, early detection of health deterioration, and symptom management. As in prior questions, a second level of responses tended to emphasize the future more, by accentuating the potential demonstration of cost effectiveness in the management of chronic disease, the value of nursing, and the utilization of standards.

Question five focused on evidence-based practice directives. In response, participants identified several areas of development where telehealth nursing practice has a high potential for creating such directives. The group indicated that the creation of standardized care delivery studies and a different view of patient-centered care were unique factors in telehealth nursing. They also identified the need to employ and understand the similarities and differences in contexts, which alter processes and outcomes of telehealth delivery. They placed substantive emphasis on the uniqueness of telehealth nursing practice, noting how telehealth nursing changes nursing administration, alters patients’ access to care, and breaks down barriers that prevent desired outcomes.

Dr. Carol Bickford and Ms. Kristen Hellquist presented the final papers on policy issues. Question six therefore asked participants: Among the interventions and clinical outcomes specific to telehealth nursing practice, which, if studied, have the greatest potential for shaping future health policy initiatives? This question elicited a high consensus response from the group, with primacy given to creating partnerships among key stakeholders to achieve desired policy outcomes. The group also supported innovation with new pedagogies for emerging generations and the exploration of professional practice roles in telehealth. Several other ideas garnered enough group interest to be noteworthy. These include determining best practices, building an on-going revolution, identifying ways to use technology proactively, patient empowerment, the shifting of the balance of power from providers to consumers, and the break down of parochialism among healthcare professionals to enable inter-professional service and practice.

Question seven moved from policy initiatives to the actual strategies needed to achieve the primary aim of the conference, the identification of research priorities in telehealth nursing: What strategies are the most promising in creating a program of research in telehealth nursing that would
provide nurses with evidence-based practice opportunities? The group consensus supported increasing studies to support the cost effectiveness of telehealth with clearly identified populations, standard outcomes, and standard methodologies. They recommended educating and lobbying groups with research funds, such as National Institute for Nursing Research (NINR), Robert Wood Johnson Foundation (RWJ), and the American Association of Retired Persons (AARP). The group also supported working to get telehealth nursing leaders appointed to the national advisory councils of selected federal funding agencies such as NINR. Further strategies emphasized the need to test nursing interventions across levels of technology and the formation of partnerships between nurse research methods experts and those in telehealth who manage the data.

The final brainstorming question explored by the group essentially served as the culmination point: Among all the priorities generated at this conference, which are the most urgent in guiding stakeholders in planning future research initiatives? The top priority of the group, garnering significantly more votes than other topics, was an increase in studies with clearly identified populations, standard outcomes, and standard methodologies to support the cost effectiveness of telehealth.

A second level of priorities with several key items was also identified. Participants recommended the creation of programs of levels of research development, i.e., moving from descriptive to designs that are more experimental. They affirmed the need for a common definition of telehealth with a blueprint for development and an identified end point for goal achievement. Partnering with educational institutions doing basic nursing education to build optimal conditions for telehealth research and practice interests was identified as a useful strategy, as was integrating telehealth agendas into existing priority research agendas, both nationally and internationally. Participants recommended defining key stakeholders in telehealth nursing and creating partnerships among those stakeholders, along with increasing visibility by publicizing outside the telehealth world. Looking to the future, participants gave priority to the standardization and regulation of telehealth based on best practices to ensure consistency, and envisioned an international state-of-the-science conference on telehealth sponsored by one or more key national and international agencies or organizations such as the NINR, International Council of Nurses (ICN), National Institutes of Health (NIH), or AHRQ.

Finally, participants provided individual recommendations or reported individual concerns in writing to augment conference outcomes.
XII. APPENDICES – ATA Handout (Continued)

BRAINSTORMING QUESTIONS AND PRIORITIES

Focus Question 1: What are the specific phenomena of concern that telehealth nursing practice seeks to address? What are the nursing diagnoses, problem statements, presenting complaints and patient needs that the nurse in telehealth addresses?
Priorities:
- Patient need to manage own chronic disease
- Coordination of care
- Multiple co-morbidities
- Patient knowledge + skill re how to manage symptoms

Focus Question 2: What specific interventions do nurses in telehealth practice provide in response to stated needs? Are there interventions that are unique to Telehealth nursing practice?
Priorities:
- Symptoms management

Focus Question 3: Among the interventions that nurses employ in telehealth practice, which show the highest potential for demonstrating the clinical efficacy of this practice model?
Priorities:
- Chronic disease management
- Patient empowerment
- Teaching self management using technology

Focus Question 4: Among the interventions that nurses employ in telehealth practice, which show the highest potential for demonstrating cost effectiveness?
Priorities:
- Enhanced self care management
- Early detection of health deterioration
- Symptom management

Focus Question 5: Among the interventions that nurses employ in telehealth practice, which show the highest potential for creating evidence-based future practice directives?
Priorities:
- Create standardized care delivery studies to determine outcomes
- Having a different view of patient-centered care in telehealth –because patient accesses care/initiates etc.
- Employ/understand similarities and differences in contexts which alter processes and outcomes in which telehealth is delivered
- Changing-different kind of nursing admin. practice based on telehealth
- How telehealth alters how patients access care
- Demonstrate how telehealth breaks down barriers that deter desired outcomes

Focus Questions 6: Among the interventions and clinical outcomes specific to telehealth nursing practice, which, if studied, have the greatest potential for shaping future health policy initiatives?
Priorities:
- Create partnerships among key stakeholder to achieve desired policy outcomes
XII. APPENDICES – ATA Handout (Continued)

Focus Question 7: What strategies are the most promising in creating a program of research in telehealth nursing that would provide nurses with evidence-based practice opportunities?
Priorities:
- Increase studies to support cost effectiveness of telehealth with clearly identified populations, standard outcomes, standard methodologies
- Educate and lobby those with funds (NINR, RWJ, AARP)
- Work to get telehealth nursing leaders appointed to Nat. Adv. Council of fed funding agencies (NINR, etc)

Focus Question 8: Among all the priorities generated at this conference, which are the most urgent in guiding stakeholders in planning future research initiatives?
Priorities:
- Increase studies to support cost effectiveness of telehealth with clearly identified populations, standards outcomes, standard methodologies

CONCLUSIONS

By an overwhelming margin, the conference participants felt that the pursuit of studies with clearly identified populations, standard outcomes, and standard methodologies to support the cost effectiveness of telehealth should be the highest priority for the field of telenursing. They also assessed the potential fit between existing nursing classification systems and the nursing interventions and outcomes appropriate to telehealth nursing and generated research priorities for the further development of telehealth nursing. These research priorities should focus on evidence-based practice approaches and public policy implications. These conclusions represent the beginnings of a strategy for furthering the development of a telehealth nursing research agenda.

REFERENCES


XII. APPENDICES – ATA Handout (Continued)


EXECUTIVE SUMMARY

Advocates and users of emergent telehealth, both practitioners and recipients of care, have experientially demonstrated the potential of this health care modality, while the exponential explosion of creative technology further unveils its as yet unrealized possibilities. Nurses have become active advocates and participants in this emerging future, creating a specialty of telehealth nursing.

Pressing unmet health care challenges, the traditions and values of nurses, and the need for systematic study of this practice have made the delineation of clear telehealth nursing research priorities a compelling goal. To that end, a group of engaged stakeholders convened to generate a beginning articulation of these priorities. The intent of this group was to create an initial statement of priorities that would further dialog among all stakeholders and support focused research initiatives.

The group convened October 9-11, 2005 in Cresson, PA hosted by Mount Aloysius College. Dr. Janet Grady, Chairperson of the Division of Nursing at Mount Aloysius and Dr. Poldi Tschirch, Director of Nursing Informatics at the University of Texas Medical Branch (UTMB) in Galveston, Texas provided leadership. A grant awarded to Dr. Tschirch by the Agency for Health Research and Quality (AHRQ R13-HS0115961-01) supplied partial funding for the conference. Additional sponsors included Mt. Aloysius College, UTMB Hospitals and Clinics Nursing Department the Electronic Health Network at UTMB, and a corporate sponsor, Polycom Worldwide.

The conference leaders organized a process that first explored germane topics through the presentation of papers by experts. Using these papers as catalysts, participants then collectively responded to a set of questions by means of brainstorming followed by weighted voting. Brainstorming questions (seven) emerged from the stated goals of the gathering, and outcomes were a set of priorities (identified by weighted voting) viewed by the group as the most compelling answers to the questions. The overriding goal of the group was the identification of priority research initiatives for telehealth nursing. While several were identified as important, the overriding key recommendation was as follows:

Increase studies with clearly identified populations, standard outcomes, and standard methodologies that support the cost effectiveness of telehealth.

The following narrative documents that systematic process of papers and group consensus that created this central conference outcome.

The initial stimulus paper was presented by Dr. Loretta Schlacta-Fairchild who discussed the clinical standards and competencies in telehealth nursing. The initial question asked participants: What are the specific phenomena of concern that telehealth nursing practice seeks to address? What are the nursing diagnoses, problem statements, presenting complaints, and patient needs that the telehealth nurse addresses? Priority responses focused on chronic care issues: the need for patients to manage their own diseases and demonstrate skill and
knowledge about their symptoms, the importance of coordination of care, and the impact of co-morbidities. Creating therapeutic presence, screening for disease prevention, and the importance of timeliness of care were also identified as important responses to this question.

Dr. Meridean Maas provided participants with a tour through the terrain of nursing classification systems and their implications for telehealth nursing. Her presentation created context for responses to the second question: What specific interventions do nurses in telehealth practice provide in response to stated needs; are some interventions unique to this practice? The predominant group response to this question emphasized symptom management, though participants also identified several additional important interventions. These included responding to critical data; conducting “modified” clinical assessments; matching technology to clinical needs, desired outcomes, and the patient’s ability; virtual presence; monitoring and trending (tracking) the patient’s health status; family involvement in care; and the coordination of multidisciplinary care. While the primary focus on symptom management had centrality for participants, it is noteworthy that the added emphases point to emergent interventions and those more unique to telehealth nursing.

Evidence-based practice was elucidated through a presentation by Dr. Marita Titler that set the stage for the group to respond to the next three questions. These questions asked participants: Among the interventions that nurses employ in telehealth practice, which show the highest potential for demonstrating the clinical efficacy of this practice model? Which show the highest potential for demonstrating cost effectiveness? Which show the highest potential for creating evidence-based future practice directives?

Question three focused on clinical efficacy of the nurse’s practice model. Participants posited that clinical efficacy was most evidenced through chronic disease management, patient empowerment, and teaching self-management using technology. A second level of importance included the efficacy of telepresence, increased access for persons seeking services, attention to changes in the patient’s health status, and the ability of the nurse to export expertise regardless of geography.

The fourth question centered on cost effectiveness. Participants indicated that the cost effectiveness of telehealth practice was most readily demonstrated with interventions that focused on enhanced self-care management, early detection of health deterioration, and symptom management. As in prior questions, a second level of responses tended to emphasize the future more, by accentuating the potential demonstration of cost effectiveness in the management of chronic disease, the value of nursing, and the utilization of standards.

Question five focused on evidence-based practice directives. In response, participants identified several areas of development where telehealth nursing practice has a high potential for creating such directives. The group indicated that the creation of standardized care delivery studies and a different view of patient-centered care were unique factors in telehealth nursing. They also identified the need to employ and understand the similarities and differences in contexts which alter processes and outcomes of telehealth delivery. They placed substantive emphasis on the uniqueness of telehealth nursing practice, noting how telehealth nursing changes nursing administration, alters patients’ access to care, and breaks down barriers that deter desired outcomes.
XII. APPENDICES – Conference Summary (Continued)

Dr. Carol Bickford and Ms. Kristen Hellquist presented the final papers on policy issues. Question six therefore asked participants: Among the interventions and clinical outcomes specific to telehealth nursing practice, which, if studied, have the greatest potential for shaping future health policy initiatives? This question elicited a high consensus response from the group, with primacy given to creating partnerships among key stakeholders to achieve desired policy outcomes. The group also supported innovation through the use of new pedagogies for emerging generations and the exploration of professional practice roles in telehealth. Several other ideas garnered enough group interest to be noteworthy. These include determining best practices, building an on-going revolution, identifying ways to use technology proactively, patient empowerment, the shifting of the balance of power from providers to consumers, and the break down of parochialism among healthcare professionals to enable inter-professional service and practice.

Question seven moved from policy initiatives to the actual strategies needed to achieve the primary aim of the conference, the identification of research priorities in telehealth nursing: What strategies are the most promising in creating a program of research in telehealth nursing that would provide nurses with evidence-based practice opportunities? The group consensus supported increasing studies to address the cost effectiveness of telehealth with clearly identified populations, standard outcomes and standard methodologies. They recommended educating and lobbying groups with research funds, such as National Institute for Nursing Research (NINR), Robert Wood Johnson Foundation (RWJ), and the American Association of Retired Persons (AARP). The group also supported working to get telehealth nursing leaders appointed to the national advisory councils of selected federal funding agencies such as NINR. Further strategies emphasized the need to test nursing interventions across levels of technology and the formation of partnerships between nurse research methods experts and those in telehealth who manage the data.

The final brainstorming question explored by the group essentially served as the culmination point: Among all the priorities generated at this conference, which are the most urgent in guiding stakeholders in planning future research initiatives? The top priority of the group, garnering significantly more votes than other topics, was an increase in studies with clearly identified populations, standard outcomes and standard methodologies to support the cost effectiveness of telehealth.

A second level of priorities with several key items was also identified. Participants recommended the creation of programs of levels of research development, i.e., moving from descriptive to more experimental designs. They affirmed the need for a common definition of telehealth with a blueprint for development and an identified end point for goal achievement. Partnering with educational institutions doing basic nursing education to build optimal conditions for telehealth research and practice interests was identified as a useful strategy, as was integrating telehealth agendas into existing priority research agendas, both nationally and internationally. Participants recommended defining key stakeholders in telehealth nursing and creating partnerships among those stakeholders, along with increasing visibility by publishing outside the telehealth world. Looking to the future, participants gave priority to the standardization and regulation of telehealth based on best practices to ensure consistency, and envisioned an international state of the science conference on telehealth sponsored by one or
XII. APPENDICES – Conference Summary (Continued)

more key national and international agencies or organizations such as the NINR, International Council of Nurses (ICN), National Institutes of Health (NIH), or AHRQ.

In addition to the brainstorming and voting process, participants were also invited to add images or ideas to a concept map. This visual tool provided a “space” to introduce additional ideas and enhance creative thinking. Finally, participants provided individual recommendations or reported individual concerns in writing to augment conference outcomes.

Summary prepared by Phyllis Beck Kritek, Facilitator
CONFERENCE ABSTRACT

Evaluation:
To date, we have processed 8 evaluations, 36.4% of the total of 22 participants. The conference evaluations received so far tended to reflect the diverse interests of the group. The following report is based on the responses to the evaluation form.

Most significantly, 55% of the conference participants strongly agree and 40% agree that the use of a consensus process was an effective strategy for developing a national research agenda for telehealth nursing.

The majority of the conference participants felt that the conference objectives were met and responded very positively to the format and process of the conference. Some of those in attendance would like to see research emphasize the outcomes and effects of telehealth delivery compared to in-person, face-to-face delivery.

The majority of the conference participants think there is still a significant amount of work to be done in the field of telehealth nursing. To further this research, people from various backgrounds in telehealth nursing need to work together to move telehealth forward and integrate it into nursing practice.

What we would do differently in the future:
Some participants would have liked to focus more on the conceptual maps and to have generated more detailed information on the definitions and concepts of telehealth nursing. Others would have liked to have had more input from “front line” telehealth nurses, such as those with the VA system. Consideration of specific nursing interventions and outcomes of telehealth delivery could also have been a valuable part of the conference process.

Another thing we would do differently would be to allow at least 4-8 more hours for the conference. The additional time could be spent developing the conceptual map of the desired future state of telehealth nursing. This need was identified by both conference leaders and participants.

The planning and implementation of this conference was a challenging and valuable experience. One aspect of the conference, which was most challenging, was the facilitation of such a diverse group. This represents the first time in our experience that scholars with expertise in nursing classification systems and evidence-based practice were included in dialogue with front-line clinicians delivering care via telenursing. The key questions were validated and broad consensus reached. This conference focused on broad goals and a number of participants were interested in moving down to identification of very specific goals and interventions. This should be one of the next steps.

Lessons learned:
- The consensus process works effectively for focusing a diverse group on a common goal.
- More time should have been allotted for the conference.
- Scholars and clinicians both have significant contributions to make to the field of telenursing. Together their contribution is greater than either group could make alone.
XII. APPENDICES (Continued)

E. Dissemination Information

- AMIA (http://www.amia.org/)
- American Academy of Ambulatory Care Nursing-AAACN (http://www.aaacn.org)
- ANA (http://www.nursingworld.org/)
- CARING (http://www.caringonline.org/mc/page.do)
- TIE (http://tie.telemed.org/)
XII. APPENDICES (Continued)

F. Evaluations & Results of Evaluations

8 evaluations tabulated to date out of 22 participants – 36.4% returns

Conference Process:

- 45% of the conference participants strongly agree, and 60% agree, that the invitational conference format facilitated achievement of the specific aims of the conference
- 55% of the conference participants strongly agree, 40% agree, that the use of a consensus process was an effective strategy for developing a national research agenda for telehealth nursing.

![Conference Process - Specific Aims Achieved](chart1.png)

![Conference Process - Effective for a National Research Agenda for Telehealth Nursing](chart2.png)
XII. APPENDICES – Evaluations & Results of Evaluations (Continued)

Conference Objectives:

- 9% of the conference participants strongly agree, 30% agree, that the conference helped to create a conceptual map of the field of telehealth nursing which will include existing work on role definition, competencies, clinical standards and protocols, and quality indicators.

- 5% of the conference participants strongly agree, 30% agree, that the conference helped to assess the utility of existing nursing classification systems for defining the nursing interventions and outcomes appropriate to telehealth nursing.
XII. APPENDICES – Evaluations & Results of Evaluations (Continued)

- 9% of the conference participants strongly agree, 15% agree, that the conference helped to generate research priorities for the further development of telehealth nursing that will address:
  - Evidence-based practice approaches to care provision including clinical efficacy and cost-effectiveness (18% strongly agree, 15% agree, 50% neither agree nor disagree).
  - Public policy implications (27% strongly agree, 5% agree, 50% neither agree nor disagree)

![Conference Objectives - Priorities Generated for the Development of Telehealth Nursing](image1)

![Priorities Addressing EBP Approaches to Care Provision (Clinical Efficacy & Cost-Effectiveness)](image2)
• 32% of the conference participants strongly agree, 5% agree, that the conference helped to generate strategies for furthering the development of a telehealth nursing research agenda.
XII. APPENDICES – Evaluations & Results of Evaluations (Continued)

Conference evaluation questions:

1. **Were your expectations for the conference met?**
   
The majority of the conference participants answered very positively. Some would like to see an emphasis on research priorities on the outcomes and effects of telehealth delivery of specific interventions versus the delivery of in-person, face-to-face.

2. **What are the most valuable ideas that you will take away from the conference?**
   
   Most of the conference participants in the majority think there is a lot of work still to be done in the field of telehealth nursing.

   - The theory that nursing does not clearly articulate its meaning when defining what is being done and why it is being done, seems to be reinforced. There is always a sort of a barrier in the field of nursing when trying new and cutting edge innovations.
   - The environmental context of telehealth nursing and consensus building are two other valuable ideas that are emerging from the conference.
   - People from various background in telehealth nursing need to partner together to move telehealth forward and integrate it into nursing practice as well as other disciplines, such as mainstream telehealth.
   - There is a better understanding of the potential of telehealth nursing. This conference is a good reminder of conflict resolution and consensus facilitation strategies.

3. **What should have been done differently?**
   
   Some participants would have liked to focus more on the conceptual maps, and have more detailed information on the definitions and concepts of telehealth nursing. Others would have liked to have more input from “front line” telehealth nurses, such as with the VA system for example. Some of the participants would have like to see the group consider specific nursing interventions and outcomes that lead themselves to telehealth delivery and what ones are priorities for research.

4. **What do you think are the most important next steps to advance the research agenda?**
   
   Some of the participants think that developing your research questions, one that will cross all disciplines to obtain interest in this program, and obtain data on telehealth nursing, are very important. Publishing in professional journals, invite congressmen to observe telehealth in practice, send proceedings to several federal agencies, create partnerships with practices, are all important next steps to advance the research agenda in the field of telehealth nursing.
XII. APPENDICES – Evaluations & Results of Evaluations (Continued)

There is also a strong desire to have those using telehealth delivery to document using standardized nursing languages to build databases that could be analyzed separately but also combined for analysis of research questions.

General conference comments:

Overall, all the participants were very impressed by the diversity of the participants and the quality of the presenters. They enjoyed the opportunity to participate and the networking process of the conference.