

# Translational Research: Why Nursing's Interdisciplinary Collaboration Is Essential

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The heightened demand for benefit from scientific contributions has driven scientific initiatives such as the NIH Roadmap, the recently established Clinical Translational Science Awards, and requests for applications for funding by the National Institutes of Health (NIH) and Agency for Health Research and Quality (AHRQ) to support studies of translational efforts. Our article focuses on a rapidly developing area—translational research—and the value, if not necessity, of nursing's contributions to interdisciplinary efforts. Our objectives are to: 1. Relate the changing nature of research (and clinical practice) to the need for interdisciplinary efforts in translational research; 2. Delineate the skills necessary for translation of research to clinical and community-based practice; 3. Review nursing's contributions to national interdisciplinary initiatives; 4. Identify critical areas for nursing leadership in translational research and consequences of our absence from these efforts; and 5. Propose a translational research agenda for nursing.

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Over the past four decades nurses have studied how to enhance the use of research findings in our work with great determination and with some remarkable successes. The recent Evidence-Based Practice movement in nursing has been championed by several national leaders and textbooks written on the effort (see Melnyk & Fineout-Overholt, 2005 as one example). For the past 5 years faculty around the country, including those at the University of Washington, have been engaged in developing and launching a Doctor of Nursing Practice Program in which practice inquiry is one of the three curricular pillars (Magyary, Whitney, & Brown, 2006). In recent months, the University of Washington faculty has held workshops on practice inquiry for our faculty, preceptors, and clinical partners addressing the appraisal of evidence, translation of evidence into practice, and

evaluation. Magnet hospitals in our city have robust research translation efforts underway. At the same time, many of us have the sense of miles to go . . .

We have seen exciting, perhaps transformative changes in our discipline, science and practice, which have been intimately connected to (a) advancement in technology used in studying health and delivering health care, (b) dramatic changes in the aging of the population along with the demographic shifts to a multicultural society, and (c) the press to see benefit from the advancement of health sciences that was fueled by the Human Genome Project. The heightened demand for benefit from scientific contributions has driven scientific initiatives such as the NIH Roadmap, the recently established Clinical Translational Science Awards, and requests for applications for funding by the National Institutes of Health (NIH) and Agency for Health Research and Quality (AHRQ) to support studies of translational efforts. A confluence of the developing patient safety *movement* in clinical services with development in information technology and the demand for accountability to the public for funding to support rapid development of scientific ventures in the basic sciences has created a perfect storm. Nursing's efforts at translation of research findings into clinical practice may be in the eye of the hurricane—that is the place of relative calm—owing to our long history of assisting patients to understand and adopt treatment. Perhaps it is more realistic to consider ourselves in the midst of the maelstrom as we work to insinuate our efforts in the new interdisciplinary ventures of the CTSAs.

Our article focuses on a rapidly developing area—translational research—and the value, if not necessity, of nursing's contributions to interdisciplinary efforts. Our objectives are to:

1. Relate the changing nature of research (and clinical practice) to the need for interdisciplinary efforts in translational research
2. Delineate the skills necessary for translation of research to clinical and community-based practice
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4. Identify critical areas for nursing leadership in translational research and consequences of our absence from these efforts
5. Propose a translational research agenda for nursing.

## TRANSLATIONAL RESEARCH: WHY?

Basic to considering the involvement of multiple disciplines in translational research is an understanding of its current meanings. The origins of the term are relatively recent, but the notion of transferring of research findings to practice is not. Publications about research utilization in our discipline date to the 1970s and 1980s. What's new?

The contemporary conversation about translational research surfaced in the *Journal of the American Medical Association* (JAMA) in an editorial published in 2002 in which "translation of the new knowledge, mechanisms, and techniques generated by advances in basic science research into new approaches for prevention,

diagnosis, and treatment of disease” was declared essential for improving health (Fontanarosa & De Angelis, 2002, p. 1728). Between 2000 and 2005, the Institute of Medicine Clinical Research Roundtable (2005) identified two major blocks in the translational research effort across the clinical research continuum. The first block is defined as obstacles to the translation of basic scientific discoveries to human studies, that is, to determine whether the new approach is safe and efficacious in humans. The second block is defined as obstacles to the translation of new knowledge into everyday clinical practice and health decision-making, that is, determining whether the new approach is cost-effective for widespread adoption. In an effort to address these two translational blocks, Sung and colleagues (2003) elaborated four central challenges facing the clinical research enterprise: (a) enhancing public participation in clinical research, (b) developing information systems, (c) providing an adequately trained workforce, and (d) ensuring adequate funding to support clinical research. This concern about translational blocks and related challenges persisted in a subsequent set of editorials and articles, including one authored by Dr. Zerhouni (2005), then NIH director, who urged advancement of biomedical science to “identify individuals at risk of disease based on precise molecular knowledge . . . and to intervene to preempt disease before it strikes” (p. 1352). Using the gloss of medicine to refer to health research and health care, Zerhouni advocated for the reengineering of the national clinical research enterprise and the NIH Roadmap as a vehicle for generating needed changes. In addition, he asserted the necessity for “transformation of translational clinical science and for the novel interdisciplinary approaches that will advance science and enhance the health of the nation” (Zerhouni, 2005, p. 1352). From these early articles, translational research became part of the lexicon of NIH-funded investigators, if not part of the mandate for the development of CTSAs and the research agendas emanating from scientists affiliated with them.

Over the years, translational research has come to mean more than the “bench-to bedside enterprise of harnessing knowledge from basic sciences to produce new drugs, devices, and treatment options for patients” (Woolf, 2008, p. 211). Woolf (2008) argues that “for health services researchers and public health investigators translational research refers to ensuring that new treatment and research knowledge actually reach the patients or populations for whom they are intended and are implemented correctly” (p. 211). Translational research has become identified closely with TR1, which has consumed most of the energy and funding for CTSAs in the United States. Although there are promising links to TR2 in some, these efforts are often viewed more as relationships with communities to facilitate their participation in research rather than a scientific venture that would engage the communities in developing research agendas that matter to them and advising on elements of study design and the like. A true research laboratory in communities, especially those whose disparities in health put them at greatest risk, is a rarity, yet an aspiration in some Clinical and Translational Science Awards (CTSAs); for example, Duke University aims to improve the health of the population of Durham as one outcome of its DTMI (Duke Translational Medicine Institute, 2009).

Recent discourse about translational research in *JAMA* has revealed the origins of some of the roadblocks and detours on the roadmap. Among these are the

unmet goals of the country as recorded in Healthy People 2010. These challenges remind us to reexamine the underlying philosophical assumptions about the very nature of science and our conduct of research. Graham (2008), writing about the Canadian Institutes of Health Research's notions of *knowledge translation*, points out that the parliamentary mandate translation in Canada is defined more inclusively than the T2 notion. "Knowledge translation is a dynamic and iterative process that includes synthesis, dissemination, exchange, and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products, and strengthen the health care system" (Graham, 2008, p. 2149). Moreover, Graham points out that knowledge translation is not merely "'end of grant' knowledge translation," but also integrated knowledge translation—a different way of doing research that meaningfully engages knowledge users in the research process, including determining the research questions. He goes on to describe collaborative, action-oriented, participatory research involving two-way interactions between researchers and knowledge users, broadly defined to encompass members of communities who can benefit from new knowledge about health and how to promote it.

Interesting debates such as these reveal divergence of the assumptive worlds of health research in a country contiguous to ours but with a very different social fabric. And we have not yet focused on the "blue highways on the NIH roadmap" (Westfall, Mold, & Fagnan, 2007), analogous to the small blue versus large red interstate highways on the actual US road map, those relatively small institutions such as ambulatory primary care practices where most of the population receives its health care. Where are they on the continuum of clinical research? And where are health department clinics? And home care? TR2 is not enough if it does not encompass those receiving health care in the "blue highways" segment of our health care system. Indeed Westfall and colleagues (2007) proposed that the bridge from bedside to practice should include a TR2 focused on translation to patients: guideline development, meta-analyses, systemic reviews, *and* a TR3 focused on translation to practice: dissemination research and implementation research. They point to the first 12 CTSA's funded as having strong collaborations with community partners—clinicians, practices, and organizations. The networks of practice-based researchers linked by AHRQ may be the link between blue highway primary clinics and big red interstates of the academic health centers. Nonetheless, this is not enough. Community-based participatory action research, public health research, and policy analysis need to be added to the continuum of clinical research and translational efforts. Communities as well as primary care centers need to be regarded as the laboratories in which new knowledge will be generated and the chasm bridged between the efforts of T1 and the public at large.

The University of Washington Institute of Translational Health Sciences (ITHS) has modified a framework for considering translational health research based on a model proposed by Khoury and colleagues' (2007) views from genomic medicine. Although the Khoury model of four phases was developed in the context of genomic medicine, the concepts are useful for translational research in general. The University of Washington framework (2009) encompasses a bidirectional continuum

of five translational research phases (T0–T4). Phase T0 identifies opportunities and approaches to health problems. Phase T1 is designed to move a basic discovery into a candidate health application. Phase T2 research is designed to assess the value of the application for health practice, leading to the development of evidence-based guidelines. Phase T3 research efforts are designed to move the guideline into health care practice by means of delivery, dissemination, and diffusion research, and Phase T4 research is designed to evaluate the real-world health outcomes of population health practice. The ultimate goal is to extend research efforts into the domain of the public where they can benefit the public health.

## NECESSARY SKILLS FOR TRANSLATION OF NEW RESEARCH TO CLINICAL PRACTICE AND COMMUNITIES

Team science and interdisciplinary efforts are necessary skills for translational research. Past models of scientific development, particularly in the basic sciences, looked quite different than contemporary models. In the period of a decade, basic science laboratories that were structured as single investigator operations pursuing a single problem with a single set of methods grounded in a single discipline have either disappeared or have been transformed into multiple investigators, multidisciplinary, or interdisciplinary ventures. Teams representing diverse disciplines are able to investigate better several problems or at least several dimensions of the same health problem, benefiting from various theoretical and methodological approaches. It is now not unusual to find scientists from many different disciplines and university departments as co-principle investigators on grant proposals, the elaboration of institutes within university campuses or sometimes jointly supported by private sector and public university funding (Duke University DTRI), and in yet other cases individual scientists with appointments to many different institutions. In my university, many faculty have appointments in the School of Public Health, Fred Hutchinson Cancer Research Center, or Group Health Cooperative Center for Health Studies, with creative arrangements for sharing their contributions among institutions that are not part of the same organizational chart but who embrace the same mission.

Health research has experienced a transition from multidisciplinary efforts in which scientists in several different disciplines worked on a single problem in parallel to interdisciplinary efforts in which scientists work on a single project across their disciplinary boundaries. There are even some examples of transdisciplinary work in which investigators create new perspectives or frameworks that cross the traditional boundaries of the disciplines. True transdisciplinarity requires understanding the language of the relevant disciplines, integrating their individual perspectives to form a shared problem. This is a significant effort because how one *names* the problem may drive how it is studied. Coming to an understanding of what the problem is and carrying out the research to solve the problem jointly is a hallmark of transdisciplinarity (Nowotny, Scott, & Gibbons, 2001). Driven by complexity, a

sense of urgency among scientists, and shared need to address grand challenges, how we “do science” has changed dramatically.

In addition to adapting to new ways of doing science, investigators are simultaneously being challenged to transition to a new social contract for how one does science. The older contract sustained the production of “reliable knowledge,” whereas the new one is to ensure production of “socially robust knowledge” (Gibbons, 1999). Old contracts were between institutions, with the universities, industry, and government the contractors. The emergent social contract will require that there is more open, socially distributed, self-organizing systems of knowledge production generating their own accountability. Whereas the old contract left scientists to make their discoveries and then reveal them to society, the new contract is based on the joint production of knowledge by society and science. This means that the authority of science will need to be legitimated again and again. This requires us to team up with the residents of the blue highways and their communities, consistent with the Canadian Institutes of Health Research model.

If we are to produce socially robust knowledge, is it enough to merely add a genetist to the team? An ethicist? A behavioral scientist? Or do we need to rethink everything from the starting point of our research programs? Include communities or patient populations as team members? Do we need to travel the blue highways and even go off road?

Talking about interdisciplinary translational science at the University of Michigan seems like bringing coals to Newcastle. Michigan is well-established in the translation of nursing research to clinical practice: Maxine Loomis, Joanne Horsley, and Joyce Crane established their Research Utilization Network projects here in the 1980s, and Marita Titler has joined the Michigan faculty to advance this work. Indeed, Dr. Titler has already led one academic health center in the effort to use evidence to inform practice and promote practice-based inquiry in nursing. What could be next?

Dr. Titler’s article on evidence-based practice implementation from *Patient Safety and Quality: An Evidence-Based Handbook for Nurses* anticipates our need to dive deeply into translation science, the investigation of methods, interventions, and variables influencing adoption of evidence-based practices by individuals and organizations (Titler, in press). Indeed, the University of Washington DNP curriculum currently devotes two courses to topics of appraising evidence and translating evidence into practice as a basis for enhancing health care outcomes and requires a capstone project dedicated to this effort. This theory-driven area of investigation, itself, is inherently interdisciplinary, relying on conceptual models of adult learning, health education, social influence, marketing, and organization and behavior theories; models such as Everett Rogers’ Diffusion of Innovation Model (Rogers, 2003), the Promoting Action in Research Implementation in Health Services (PAHRIS) model (Rycroft-Malone, 2007; Rycroft-Malone et al., 2002), and the Institute for Healthcare Improvement (IHI) model (Berwick, 2003) to name a few. Ongoing research focused on translating research into practice (TRIP) interventions, such as those funded by AHRQ, will generate support for the types of interventions that are effective, determining with whom, and in what settings and broader contexts, as well as studies focusing on the mechanisms by which the TRIP interventions work.



Just as the public is increasingly engaging in planning studies of interventions, so also are practitioners engaging in planning of these kinds of studies—a qualitatively different contribution than being the “studied.”

Skills for translational research of the TR1 and TR2 variety are quite distinct. Woolf (2008) has described those essential for negotiating the TR2 laboratory of community and ambulatory care settings, where “population-based interventions and practice-based research networks bring the results of T1 research to the public” (p. 211). Among these are mastery of dissemination and implementation sciences involved in fielding and evaluating interventions in real-world settings, including disciplines such as clinical epidemiology and evidence synthesis, communication theory, behavioral science, public policy, financing, organizational theory, system redesign, informatics, and mixed methods/qualitative research to name just a few. Applying the TR1 through TR4 model proposed by Khoury et al. (2007) beyond the scope of genomic medicine, we find these skills required to move efficacious guidelines into standard practice or TR3, which is a component of effectiveness research. The final translational goal of TR4, that is, widespread adoption that yields tangible benefit to the public health, depends on these same necessary skills. With much of the T3 and T4 effort delegated to AHRQ instead of the NIH, there has been only limited financial support for these studies—and they are in their toddlerhood.

Fortunately for nursing, we have Dr. Titler’s leadership in this arena (along with Estabrooks and colleagues in Canada—Estabrooks, 2007, 2008; Estabrooks, Midodzi, Cummings, Ricker, & Giovannetti, 2005; Estabrooks, Midodzi, Cummings, & Wallin, 2007) and Titler has outlined a set of research implications to stimulate the kinds of work we need (Titler, Everett, & Adams, 2007). She urges us to consider the context for translation of research to practice as well as the translators, the use of a variety of methods for data gathering that are understandable to clinicians, investment in change strategies that transcend didactic education (we clinicians need more than classes), and recognition of the importance of tailoring the interventions to the context in which they are to be implemented and to multiple levels of the organization. If we are to learn why and how interventions work, we will need both process and outcome evaluation.

As nurses and colleagues try to understand why and how interventions work, a growing emphasis is placed on common dimensions and universal aspects of intervention processes often referenced as relationship dimensions. A growing body of evidence suggests that therapeutic alliance, partnership building, and effective communication with patients are proving to be significant predictors of outcomes, especially interventions delivered in the context of primary care and mental health services. Nursing has a rich tradition of placing value on the relational elements of health care, and trying to measure and understand relationship-centered care (Benner & Leonard, 2005; Swanson, 1999, 2006; Watson, 2008a, 2008b). Other disciplines such as family physicians and psychologists are also placing more emphasis on the importance of relationship-centered care and its link with health outcomes (Beck, Daughtridge, & Sloane, 2002; Karver, Handelsman, Fields, & Bickman, 2005; Kurtz, Silverman, & Draper, 2005; Shirk & Karver, 2003). As we engage in translational research, more emphasis needs to be placed on how relationship

variables explain differential treatment effects when translating evidence-based clinical guidelines, clinical protocols, specifically targeted treatments, and even pharmacological interventions to everyday practice. A specific treatment may be efficacious, but the efficacy may be minimized when it is delivered by clinicians with problematic communication patterns with patients, especially with culturally diverse clinical populations.

Inherent in relationship-centered care is the notion of matching treatments with patient's preferences and health beliefs. "Manualized" treatment protocols without flexibility and consideration of patient and community preferences may prove to be culturally insensitive. And yet, to what extent should treatment fidelity be retained to achieve maximum effectiveness? A translational dilemma exists described by Rebchook, Kegeles, Huebner, and the TRIP Research Team (2006) as "ongoing tension in the literature about the importance of implementing intervention with fidelity to the original methods used in the efficacy research versus the need to tailor or adapt an intervention to local communities" (p. 125). Inevitably, communities tend to modify community-based interventions, but little is known as to why (Rogers, 2003).

An increasing number of translational studies are addressing questions about modification. In collaboration with community clinics and public health departments across the nation, Rebchook et al. (2006) have shifted focus to studying why and how different communities modify their efficaciously proven HIV Prevention Program and the implications of the modification. Are multicomponent interventions overly complex and too expensive for most community-based agencies to implement? Why and how are empirically supported practices modified to fit the complexity of the real world? What can be modified without minimizing effectiveness? Can simplification occur to address fiscal constraints without significantly compromising therapeutic impact? How are providers documenting why clinical guidelines are modified? With increasing proliferation of clinical guidelines and evidence-based best practices, more consideration has been given to the distillation of therapeutics by identifying key salient elements referenced in the literature as "minimum intervention needed for change," "core immutable dimensions," "most important crucial components," and "essential active ingredients." Nurse investigators in collaboration with nurse clinicians and other colleagues and stakeholders have a key role in studying the best approaches to distilling complex and multicomponent clinical guidelines, protocols, and interventions. This stems from the established nursing role of making timely and complex clinical decisions in consideration of multiple factors, including patient preferences and characteristics.

What is nursing's role in building translation science? How can we contribute to, if not lead, some of these efforts? And for which efforts should we assume accountability? How do we foster interdisciplinary participation?

## **NURSING'S UNIQUE CONTRIBUTIONS TO INTERDISCIPLINARY TRANSLATIONAL RESEARCH INITIATIVES**

Fortunately we have leaders whose interdisciplinary work has been exemplary. Indeed, nursing investigators from the Midwest are thriving in some of the new



interdisciplinary ventures in the nation as indicated by their leadership positions in several national interdisciplinary research initiatives. Janet Carpenter (IUPUI) serves as one of the PIs for the five clinical trials included in the newly funded Management Strategies—Finding Lasting Answers for Symptoms and Health (MS-FLASH) trials network, and Carolyn Sampsel was an initial investigator in Michigan's site for the Study of Women across the Nation (SWAN) study of menopause. Nurses such as Marilyn Rothert, past president of the North American Menopause Society, are distinguished in executing their leadership roles in interdisciplinary professional associations and sought for consultation by other societies. Nurse investigators are also serving as true collaborators in Specialized Centers of Research, for example, Janis Miller (inventor of the knack maneuver) as part of the University of Michigan SCOR on Pelvic Floor Disorders, and are frequently directing some of the cores for the newly funded CTSAs, for example, Jackie Dunbar-Jacob at the University of Pittsburgh, Catherine Gilliss of the Duke Translational Nursing Institute, and Carolyn Sampsel at the University of Michigan.

Having established the importance of our roles as leaders and interdisciplinary collaborators in research, we need to turn to some of the issues related to translational research that are particularly relevant to our discipline and profession. First, what should our future contributions to these efforts be? How should we foster interdisciplinary collaboration that integrates the best of what we have to contribute? Second, are there critical substantive areas of translational science that will benefit most from our expertise? Areas that will not be well developed if we do not engage in this research? Third, are there critical areas that we can and should lead? Fourth, what is our agenda about translation of new findings into practice and into widespread adoption by the public?

## **CRITICAL AREAS FOR NURSING LEADERSHIP IN TRANSLATIONAL RESEARCH**

Future ventures for nursing should include leadership with the CTSAs that matters—not merely serving as a “token biosketch” with the right interdisciplinary flavor, but taking on the time-intensive roles of transforming the cores that so often focus on communities only as sources of subjects. We could lead efforts to engage communities in setting their own research agendas. With so many nurse investigators educated in the methodologies and methods of community-based participatory action research, in collaboration with our colleagues from social work and public health, we should be contributing our leadership to these efforts and demonstrating the importance of funding these cores so they are effective in influencing health outcomes. This kind of leadership will go a long way toward helping balance the TR1 with TR2, TR3, and TR4 efforts.

In addition, we should be assuming leadership for the majority of translational science projects conducted in our nation's hospitals, including those off the interstates and on the blue highways. Our rural hospitals and health care systems are seriously underfunded and understaffed. We need to identify optimal mechanisms for enriching the care provided in the more remote communities in our nation.

Also, nursing has had long-established historical efforts at studying broad range outcomes in health care, which positions us very well to lead, including establishing institutes focusing on translation within hospitals and health systems. Nursing homes and other long term care services and home care should be very high on our priority list.

Given nursing's commitments to addressing health disparities, we must assume more leadership responsibilities for translational research that illuminates how the communities at greatest risk can benefit from the very expensive work we are all doing. It is not good enough to continue to generate studies that show how we can change health and health care in communities that have access to high quality health care as well as adequate housing, nutritionally adequate diets, and good health education. We should be devoting more of our efforts to the census tracts in our inner city and rural areas with health statistics that rival those of sub-Saharan Africa or war-torn countries of the world—and working with our colleagues there as part of global networks to not only share our learning but also learn from them as we translate their research into our practice.

Linda Aiken's exemplary work showing that nurses' level of education influences outcome, including patient mortality, has pointed us in the direction of policy shifts and organizational changes essential to ensure nurses have the educational background to understand the kinds of evidence needed to justify changing their practice and has also incited legislation for nurse:patient staffing ratios (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). Without the close collaboration of nursing educators and clinical executives in preparing the next generations of nurses with these capabilities, we will have little chance of sustaining the efforts we have set in motion.

As we reflect on where we can do the most good in the efforts to translate our science to patients and the public, I believe there are some important hints in the very origins of our discipline. I would urge us to revisit Nightingale's early writings in which she emphasizes the importance of focusing on the person in the context of her or his environment (Nightingale, 1859). At the same time, I would urge us to interpret Nightingale's writings with a futuristic perspective envisioning those areas in which we are growing nursing science. Over the past decades, nurse researchers have built science focusing on vulnerable populations, spanning the range of human development from prematurely born infants to the oldest old, focusing on vulnerability in relation to genetic, physiological, cognitive, emotional, and other dimensions of human health. Our work has emphasized adaptation of individuals and their families to illness, challenging social environments, physically, and mentally risky situations, such as exposure to violence in the home, in our institutions, and on the streets. Our theoretical orientations ground us in a view of human beings as adaptive creatures capable of changing our environments as well as ourselves, social beings whose health, if not lives, depend on family and social networks, and whose biobehavioral functions are resilient, but sometimes malfunction.

Our practice is distinguished from most other health disciplines by the fusion of the biological, psychological, and sociocultural perspectives in our orientations to people. We are one of the few professions licensed to touch the human body in

our therapeutic ministrations. We have an ethos of prevention, educated to constantly scan the surroundings of our patients for sources of danger—whether that is in an intensive care unit or in a neighborhood or family. We have a tradition of practice with the most vulnerable in our society and because of that have learned to offer simple, cost-effective interventions in whatever setting we find ourselves practicing. We have brought these strengths to our practices inside contemporary institutions—advocating for prevention, noninvasive treatments where possible and efficacious, and for the autonomy of our patients. Our history of leading efforts to support self-care and autonomous decision-making of our patients positions us as the “most trusted of professionals” in our (US) society. We have begun translational efforts in hospitals, and now it is time to focus some of our energies on translational models for community-based health care settings, public health initiatives, and direct-to-the-public efforts. Our use of interpretive methods positions us to offer some unique contributions to these efforts as we have access to understanding how and what people think about their health (Chesla, 2008).

Communication is central to our discipline’s practice, and we can lead efforts to help people in their effort to care for themselves and their families. Books by nurses are becoming more accessible, as exemplified by Julia Seng’s new volume *Survivor Moms: Women’s Stories of Birthing, Mothering, and Healing after Sexual Abuse* (Sperlich & Seng, 2008) and Ivy Alexander’s recent volumes: *100 Questions and Answers on Menopause* and *100 Questions and Answers on Osteoporosis* (Alexander & Knight, 2006), Marie Annette Brown’s book *The Body Blues on Subclinical Depression in Women* (Brown & Robinson, 2002), and Polly Bednash’s book *Ask A Nurse* (Bednash, 2001). Linking the rich research literature that nursing has contributed over recent decades to literature accessible to members of the public should be a requisite return-to-the-public on their research grant funding investment. Because of our leadership in the Centers for Health Disparities Research, we should be leading efforts to translate research findings to the public most in need of them. Our experience and research in tailoring messages to diverse patient populations is needed!

If we fail to take on these challenges, we will most assuredly find ourselves lamenting the lack of information available to my generation as we need long-term care and end of life services, will be saddened to see our daughters face menopause with the same lack of useful information to guide their self-care and health care decisions in midlife that we experienced, will mourn the less healthy lives and perhaps the loss of some of our children and infants. Not only will the nature of translational science suffer, people’s lives and well-being may be at risk.

Our strong and consistent contributions to the science of self-care and self-management, particularly that related to chronic illness and end of life care, warrant our leadership in translating this work to practice. Published and ongoing work on symptom management, use of technology in chronic disease care, and support strategies to help patients manage complex regimens are areas we are well-prepared to lead.

Our history of integrating health promotion, prevention, and self-management into mainstream health care and our growing scientific literature about how to achieve that integration warrant our leadership. As an example, Nola Pender’s

early work on a health-promoting lifestyle stimulated a great deal of research in nursing, which needs to find its way to primary care practices (Pender, Murdaugh, & Parsons, 2006).

We are in the midst of a crisis in primary care. Physician residencies in family medicine and other primary care areas are not filling nationally. Each year we graduate thousands of nurse practitioners in the United States, yet we have relatively few means to support their use of evidence in their practices. Many nurse practitioners are practicing with the most remote and high risk populations in the nation. In comparison to medicine, few nurse clinicians and nurse investigators have obtained AHRQ funding and technical support through various translational initiatives and clinical demonstration projects. Although few nurses have received AHRQ funding, exemplars do exist. For example, Lynne Nemeth and her colleagues obtained AHRQ funding through a primary care practice-based research network (Practice Partners Research Network) to study how nurses facilitate quality improvement endeavors using electronic medical record systems (Nemeth et al., 2007; Nemeth, Feifer, Stuart, & Ornstein, 2008; Nemeth, Nietert, & Ornstein, 2009).

As a discipline, how can we magnify nursing efforts to seek out and obtain funding to support nursing's leadership and participation in collaborative endeavors through practice-based translational research networks that are interdisciplinary, or primarily focused on nursing? We should be declaring the need and leading the effort to meet it. Multiple opportunities exist through various initiatives such as Translating Research into Practice (TRIP), Effective Health Care Programs (EHC), Primary Care-Based Research Network (PBRN), Evidence-Based Practice Centers (EPCs), Developing Evidence to Inform Decisions about Effectiveness (DECIDE) Network, Accelerating Change and Transformation in Organizations and Networks (ACTION), and Centers for Education & Research on Therapeutics (CERTs) in collaboration with the John M. Eisenberg Clinical Decisions and Communications Science Center. The overarching goal is to accelerate the dissemination and implementation of research into improved clinical decision making, health care practices, and policy. Each of the initiatives place importance on similar elements such as collaborative networks, multiple stakeholders, real-world applicability, applied health informatics, health care delivery change, and organizational support.

In addition to AHRQ, private foundations and professional organizations are focusing on the acceleration of translating evidence to everyday practice through quality improvement endeavors as a way to enhance safe and efficacious health care. For example, just recently, the University of North Carolina School of Nursing and the American Association of Colleges of Nursing (AACN) together obtained a Robert Wood Johnson Foundation multimillion dollar grant to conduct an innovative project "aimed at preparing future nurses to continuously improve the quality and safety of health care systems within which they work" (AACN, 2009). These types of educational endeavors will prepare nurses to successfully obtain funding to support translational projects and quality improvement studies.

Public health nurses are becoming a vanishing species in some parts of the country, yet there is an important literature documenting their impact on children's and adolescent's health, as seen in Olds' studies of home visitation which documented

effects of nurses visiting infants and their parents on their health years later as adolescents (Olds et al., 1997). What is AHRQ doing to support the translation of community-based nursing interventions and population-specific interventions in our communities? What is the CDC doing? We should be advocating for this service and leading the effort to create it.

Our history of promoting research utilization through our professional organizations is having dramatic outcomes. The Oncology Nursing Society has created some outstanding mechanisms for codifying the evidence and placing it in the hands of their members, as has the Association for Women's Health, Obstetric, and Neonatal Nursing. Carolyn Sampsele's early leadership in this organization played a very important role in translating her research findings about incontinence to nursing practice through her work with AWHONN members (Sampsele et al., 1997, 2000). We should be leading these efforts not only in nursing professional organizations but reaching out to help our colleagues in interdisciplinary societies.

## A NURSING AGENDA FOR TRANSLATION OF RESEARCH INTO PRACTICE AND TO THE PUBLIC

As a final contribution to our dialogue at this meeting, I would propose that we engage immediately and assertively in setting an agenda for translation of our research to practice in health care systems and in the hands of the public. In order to achieve some of the goals that I have proposed earlier in this talk, I believe we need to focus on three sectors: the CTSAs; traditional, mainstream health services, including complementary and alternative health services and community health services; and the general public.

1. We must be visible and vocal in engaging in the work of our CTSAs and leading the components focusing on the areas in which we have expertise. We should expect that they exist to embrace, advance, and translate *our* science, given that we have been contributing to clinical science—T2 and T3 for decades—and we should advocate for extension of their agendas to embrace the T2 and T3 with the same levels of enthusiastic support they provide for T1 efforts.
2. We must lead an agenda that redefines the traditional boundaries of health services research as studies of medical practice and incorporates nursing and interdisciplinary efforts. We should make our translational science models visible, and our efforts should be supported by federal agencies such as AHRQ and CDC, as well as NIH.
3. Although direct-to-the-public marketing has its enemies as well as its advocates, contemporary communications media have a great reach and we should be using them more effectively to promote health and self-care. We need to author articles and books for the public, contribute to Internet sources designed to translate research findings to the public for their direct-to-the-public benefit.
4. If we are truly committed to translation of research in our practice, we will resolve to educate clinicians who are capable of the translational work necessary to truly achieve this goal. Although the Doctor of Nursing Practice competencies emphasize appraising and translating evidence to practice, we need to consider



carefully the level of understanding of these processes that should exist among our students who are entering the practice of nursing. Graduate education provides exciting opportunities for nursing PhD students and DNP students to learn how to engage together in collaborative endeavors that focus on the dissemination and implementation of evidence into everyday clinical practice. After graduation, nurse investigators and advanced practice nurses will be better positioned to apply for and obtain AHRQ and CDC funding through practice-based research networks.

If we commit to such an agenda, we will transform translational research beyond drug trials to self-care and self-management initiatives and to those that directly benefit the taxpayers who fund them and those who experience severe health disparities. If we commit to the agenda above, we may also enhance the outcomes of all of our systems of care. And finally, if we commit to this agenda, we will be making good on our part of the social contract between scientists and the public.

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