

A RURAL NURSING CENTER WITHOUT WALLS

Clarann Weinert, SC, PhD, RN, FAAN¹

Amber Spring, BS²

Shirley Cudney, MA, RN, GNP³

¹Professor, [College of Nursing](#), Montana State University, cweinert@montana.edu

²Project Manager, [College of Nursing](#), Montana State University, aspring@montana.edu

³Associate Professor (Retired), [College of Nursing](#), Montana State University, scudney@montana.edu

Key Words: Research Center, Rural Nursing Research, Chronic Illness

ABSTRACT

Background. Conducting nursing research with rural populations is complicated by multidimensional characteristics of rural dwellers; rural environment; paucity of nurse scientists prepared and supported to conduct rural research; and institutional constraints of academic entities serving rural communities. Unique research strategies are required to meet these challenges.

Purposes. To review the history of the Center for Research on Chronic Health Conditions in Rural Dwellers (CRCHC), report the degree to which its objectives were met, summarize its accomplishments over five years, and explicate the strategies used to overcome the challenges of conducting rural nursing research in the western United States.

Findings. The CRCHC was successful in building human research capacity, supporting the development of rural nursing science, and increasing research productivity.

Conclusions. A Center model is one mechanism that has been demonstrated to effectively meet the challenges of conducting rural nursing research in the rural mountain west.

INTRODUCTION

A sense of charm and nostalgia is associated with rural living—at least as it is characterized in literature and lore—which tends to perpetrate the myth that “rural” is one-dimensional and associated with open spaces, fresh air, bucolic life style, and healthy people. While it is true that the rural lifestyle has many positive characteristics, it is no longer, if it ever was, unidimensional or homogeneous. It is a vast and varied tapestry, populated with communities rich in historic, cultural, economic, geographic, occupational, and demographic diversity. It is often presumed that rural dwellers are healthy and robust. In reality, they are burdened with a vast array of health needs associated with chronic health conditions, limited access to health care services, poverty, social issues such as drug abuse, suicide, domestic violence, alcoholism, smoking, and the likelihood of employment in hazardous occupations that expose workers to chemicals and dangerous machinery.

The increasingly fluid socio-cultural and demographic profile, geographic contrasts, and health status challenges of many rural dwellers present barriers to an adequate rural definition and to conducting rural health-related research (Weinert & Burman, 1994). Nursing research with rural populations is influenced by the multidimensional characteristics of the population, the rural environment, and rural sub-cultural values. Likewise, rural nursing research differs widely in its levels of sophistication (Weinert & Burman, 1996; Weinert, 2006), and there exist only a few nurses prepared to conduct research in the rural context—factors which impact the state of rural nursing research. Ideally, rural nursing research is best done by nurse scientists working in academic settings located in rural areas who understand the rural subculture, rural health needs, and rural health care delivery systems. In reality, these rural academic environments are often

isolated geographically from other higher education units, have an underdeveloped research infrastructure, and, because there are few faculty members prepared at the doctoral level, have limited resources and expertise for developing programs of nursing research or seeking support from extramural grant funding.

With baccalaureate nursing education as the most common primary program focus, faculty members shoulder heavy dyadic and clinical teaching responsibilities, as well as obligations related to governance of the academic unit. Their small numbers result in added assignments that include multiple committee memberships, curriculum development and implementation, and advisement of large numbers of students. In the face of these constraints, it is difficult to develop and support the critical mass of nurse investigators required to conduct research that addresses the health issues of rural dwellers. Thus, in the face of these challenges, developing a strategy to nurture investigators and foster collaboration among nurse researchers across rural academic settings was imperative to the success of rural nursing science.

An organizational entity that was created to overcome some of the barriers to conducting rural nursing research was the Center for Research on Chronic Health Conditions in Rural Dwellers (CRCHC), located in the College of Nursing at Montana State University (MSU). Collaborating Center investigators and their research teams were located in Iowa, Montana, Nebraska, Nevada, North Dakota, and Wyoming--all rural areas characterized by an agricultural economic base, wide open spaces, sparse populations, limited access to health care, few academic settings, and notable geographic distance between nurse investigators.

In an earlier publication, Weinert, Lotts, & Winters (2004) discussed structure, objectives, and some of the proposed strategies for attaining them. The purposes of this current article are to: a) review the history of the CRCHC; b) report on the degree to which its objectives were attained; c) summarize the accomplishments of the Center over its five years of operation; and d) further explicate the strategies used to overcome the challenges of conducting rural nursing research in the greater intermountain region of the western United States. While some of the techniques used to build research skills, link researchers, maximize resources, and develop a true community of scholars over geographic distance can be adapted, there is no intent to generalize this discussion to other rural settings.

HISTORY OF THE CRCHC

The CRCHC was funded as a P20 Center by the National Institutes of Health/National Institute for Nursing Research (1P20NR07790-01) and later supplemented by the SC Ministry Foundation. The Center was in operation from August of 2001 until August of 2006 and was designed to enhance the quality, quantity, and potential impact of rural nursing research. The CRCHC was under the leadership of Director Clarann Weinert, SC, PhD, RN, FAAN, and Associate Director, Charlene Winters, DNSc, APRN, BC, with the assistance of a Center Manager.

OBJECTIVES OF THE CRCHC

The CRCHC was established on five foundational objectives which were to:

1. Increase the human capacity for conducting sound rural nursing research;
2. Develop the infrastructure to facilitate the development of programs of research to generate new knowledge;
3. Provide small grant funding and technical support for pilot projects;

4. Provide a focal point for synergistic linkages of scholars across Montana and the region; and
5. Develop a knowledge base for addressing the multiple complex issues associated with chronic illness management for persons living in sparsely populated areas.

The overarching goal of the CRCHC was to reduce health disparities and improve the health of rural residents.

ACHIEVING THE OBJECTIVES: STRATEGIES AND OUTCOMES

Research Capacity Building

The first, and foundational objective, was to enhance the prerequisite research skills needed to increase the human capacity for conducting sound rural research. To do so, a basic toolbox of resources was made available to aspiring rural researchers that included on-call writing assistance and consultation about all aspects of the research process from the Director, who served as the lead mentor, and two external consultants who were knowledgeable about grant writing and statistical methods. In addition, a variety of strategies were used to enhance the research skills of investigators in Montana and the region that included linking with resources at other universities, research brown bag sessions, visiting scholars, a writing support group, and Principal Investigator meetings.

University linkages. The CRCHC linkages were with the Universities of Washington, Iowa, and Wyoming. The University of Washington (UW) School of Nursing multi-talented faculty shared their bi-monthly research seminars on a wide variety of research topics with the CRCHC investigators and other interested professionals via telephone connection. For those unable to attend, a video of each session was provided, supplemented with an accompanying handout--all of which have been catalogued and are available on request.

Collaboration with the Gerontological Nursing Interventions Research Center at the University of Iowa, College of Nursing provided a variety of resources. As a seasoned researcher and Center Director, Dr. Toni Tripp-Reimer provided invaluable research insights, the staff at the Iowa Center were generous in providing us with technical information on the running of a Center, and one project was jointly funded through the Iowa Center and the CRCHC.

The other key linkage was with the Nightingale Center for Nursing Scholarship (NCNS) located at the University of Wyoming. The CRCHC and NCNS collaboratively supported a writers' group, promoted one another's research activities on a joint website, and explored the development of joint databases and a mechanism to conduct mock reviews of grant proposals.

Research Brown Bag Sessions. Monthly, the CRCHC hosted an hour-long Research Brown Bag Session, featuring eminent nurse scholars from around the country who addressed multiple and varied research topics. These sessions, using the College of Nursing teleconference system, were a low-cost method of providing exposure to some of the foremost scholars from North America. Handouts were disseminated to the participating sites prior to the sessions. In all, 23 speakers representing 20 institutions reached over 500 participants (faculty, staff, students, clinical colleagues) at 15 sites across Montana and 14 sites in 11 other states. See Table 1 for the list of speakers and topics. The Research Brown Bag Sessions were enthusiastically embraced and were a highly successful research capacity-building strategy.

Table 1
Research Brownbag Session Speakers and Topics

Date	Speaker	Topic
9/16/2002	Mary Ann Curry Oregon Health & Sciences University	Research with High Risk Populations: Persons with Disabilities
10/21/2002	Lauren Aaronson University of Kansas	Unfolding Human Subjects Regulations
11/18/2002	Toni Tripp-Reimer University of Iowa	Certificate of Confidentiality and Memorandum of Understanding
3/17/2003	Leslie Schmidt Montana State University	How Grants and Contracts Can Help You!!
4/21/2003	Carole Hudgings NIH/NINR	Techniques and Tips for Developing a Competitive Research Application
10/20/2003	Angela McBride University of Indiana	Mentors, Mentoring, and Career Development
9/15/2003	Joan Shaver University of Illinois	Thoughts on Creating and Sustaining Programs of Research
12/15/2003	Lillian Nail Oregon Health & Sciences University	Sustaining a Career, Help Along the Way
11/17/2003	Linda Cronewett University of North Carolina	Becoming a Successful Nurse Scientist
3/22/2004	Margaret Heitkemper University of Washington	Building Teams: It Takes a Village, Part One
4/19/2004	Nancy Woods University of Washington	Building Teams: It Takes a Village, Part Two
9/20/2004	Martha Lenz University of Washington	Writing a WINning Abstract
10/18/2004	Adeline Nyamathi University of California San Francisco	Recruiting Participants from Vulnerable Populations
11/15/2004	Terry Badger University of Arizona	Scholarly Dilemmas: Recruitment and Dissemination
1/21/2005	Peggy Chinn Yale	Scholarship: The Paradoxes of the 14 C's
3/21/2005	Rosemary Donley,SC Catholic University	The Relationship Between Research and Policy
4/18/2005	Marie Lobo University of New Mexico	When the Blinded Data Collector Knows About the Intervention
9/19/2005	Alyce Schultz Arizona State University	Clinical Nurse Scholars: Building a Community of Evidence-Based Practice Mentors
10/17/2005	Linda Everett University of Iowa	Setting the Stage for Evidence-Based Practice in an Acute Care Setting
11/21/2005	Suzanne Prevost Middle Tennessee State University	Finding the Resources to Support Evidence-Based Practice
1/30/2006	Carole Estabrooks University of Alberta	Knowledge Translation: State of the Science
3/20/06	Russ McGuire Appalachian Regional Healthcare, Inc.	Evidence-based Nursing Practice Implementation and Utilization in Central Appalachia
4/17/2006	Maureen Dobbins McMaster University	Around the World in Sixty Minutes: Lessons Learned in Evidence-Based Nursing

Visiting scholars. The more conventional workshop model was also used as a strategy to enhance research skills. The one-to-two day workshops were usually held on the MSU Bozeman campus, and faculty and students drove from across the state and region to participate. Distinguished presenters and their topics were: Carole Hudgings, PhD, RN, FAAN, from NIH/NINR--grant writing; Toni Tripp-Reimer, PhD, RN, FAAN, University of Iowa--qualitative research; Shirley Moore, PhD, RN, FAAN, Case Western Reserve--Electronic Interventions in Nursing; and Ruth Kleinpell, PhD, RN, ACNP, Rush University--scientific writing (telephone workshop). The opportunity to be in the physical presence of these distinguished scholars and be able to personally exchange ideas with them added a new dimension to the experience of building the novice researcher's personal research capacity.

Western Writers' Coercion Group. Ongoing support for the improvement of writing skills and for increasing scholarly productivity was encouraged through the Western Writers' Coercion Group (WWCG). The overall goal of the group was to facilitate scholarship productivity through multi-disciplinary and inter-institutional ongoing support, critique, mentoring, and scholarly exchange. The WWCG first began the summer of 2001 in the University of Wyoming Nightingale Center for Nursing Scholarship (NCNS) as a local innovation. By the summer of 2002, the group expanded to include faculty from other disciplines such as social work and mathematics. The composition of the group was eclectic (faculty members – nursing, social work, mathematics, doctoral student, clinical nurse researcher) who were located in a variety of settings in Montana, Nebraska, North Dakota, New Mexico, and Wyoming.

Meetings (weekly during the summer and bi-weekly during the academic year) were conducted from Wyoming's NCNS with support from Montana's CRCHC for the teleconference connection and website. At each meeting, individual goal attainment was assessed, manuscripts were discussed, and support/encouragement was given. All participants paid a \$5.00 filing fee to join the group, and those who, by self-report at the meetings, had not met their goals were "fined" \$5.00. Over time, the accumulated fees/fines were used to buy a Sigma Theta Tau International Brick Paver and to make an additional contribution to the Honor Society's Research Fund. A total of 22 faculty participated, with an average of 10 participating at each meeting. The WWCG was disbanded in December, 2006, with a notable record of productivity. There were 74 manuscripts prepared (53 published, 9 in press, and 5 in review). WWCG members presented symposia about the writing support group at the Western Institute of Nursing Conference (2004) and at the State of the Science Congress (2006). The impact of such a group as a research capacity-building strategy was reflected in observations from the group members that included: an appreciation for the collegial support and encouragement received; a sense of group loyalty; a feeling of gratitude for the "gentle coercion" to stay on track with individual goals; and the value of the regular accountability to the group. A more detailed description of the Western Writers' Coercion Group is provided in a publication by Cumbie, Weinert, Luparell, Conley, and Smith, (2005).

Principal Investigator meetings. Principal Investigators of current and prior pilot projects met periodically by teleconference with the Associate Director for the purposes of mutual support, problem solving, and generation of ideas. The group ranged from very senior and seasoned researchers to more novice investigators. This rich mixture provided additional opportunities to learn the research process and to develop skills in problem-solving issues related to conducting rural research.

Infrastructure Development

The second objective--the development of the infrastructure to facilitate the development of programs of research to generate new knowledge—added the physical, technical, and resource support needed to complement the gains in human research capacity building. As well as providing a physical environment to house Center activities (office space and equipment, access to the teleconferencing system, etc.), the CRCHC provided investigators with a wide range of resources to aid them in their research efforts. The Center staff assembled a clearinghouse of information useful to researchers in an easily-accessible format on the CRCHC's well-developed website where they could connect to a "research toolbox" with useful research links, seminar information, writing tools, the CRCHC library, audio and video tapes, and consultation services. The CRCHC staff provided assistance with budget preparation, grant writing, editing, proofreading, and dissemination efforts. These resources were open to all interested investigators from across the region and beyond, as well as to MSU students and faculty. This strong infrastructure made it possible to build upon prior research efforts, strengthen ongoing research, stimulate initiatives, increase funding, attract investigators, and enrich student research opportunities (Weinert, Lotts, & Winters, 2004).

Support for Pilot Projects

To enhance human capacity building, forge regional linkages, and promote rural nursing science, the CRCHC provided grant funding and technical support for pilot projects related to chronic illness in adults and children living in rural areas—its third objective. Through the Pilot Project Program, three studies were funded each year. Awards were a maximum of \$10,000 and one year in length. Collaborative endeavors were encouraged among faculty investigators and master's prepared faculty, clinical nurses, and inter-disciplinary and inter-institutional projects. The research questions evolved from a wide range of issues related to management of chronic health conditions within the context of the rural environment. Study topics addressed the promotion of healthy behaviors, prevention of complications, encouragement of self-management, and support of the family in managing chronic health conditions.

The Pilot Project Program funding process was a mentored endeavor from the initial conceptualization of the idea, through the development of the research team, preparation of a PHS398 format proposal, conduct of the research, dissemination of findings, and finally, assistance with follow-up funding acquisition. The day-to-day grant management and interface with the MSU entities, e.g., Office of Sponsored Projects, Personnel, Institutional Review Board, was handled by the Center Manager. Grant management was complicated by the fact that none of the Principal Investigators and few of the research team members were located on the Bozeman campus. To enable the investigators to focus on the science, all necessary paperwork (payroll, personnel, contracts, travel forms, reimbursement, budget tracking, etc.) was handled by the Center staff. Although it was more efficient for the CRCHC to assume these duties, the investigators were consistently informed about these processes and engaged in discussions of evolving issues as strategies for enhancing their understanding of grant management.

Pilot Project Program proposals were prepared in an iterative process with the Center Director. A system of formal review for each proposal included review by the Pilot Core which consisted of one MSU non-nurse faculty, one external nurse reviewer, and three College of Nursing reviewers. In addition, each proposal was reviewed by two content experts who were external to Montana State University and the universities with which the Principal Investigator and research team were affiliated.

Investigators were encouraged to submit a poster abstract during their year of funding and a podium abstract the year following funding to be presented at the Western Institute of Nursing's annual conference. The Principal Investigators provided a written progress report and a final grant report and were required to submit a manuscript for publication, present at a regional, national, or international scientific conference, and submit a research proposal for extramural funding within one year after completing the study. All of these activities were supported and facilitated by the CRCHC staff. In addition, the pilot project investigators were expected to participate in and support CRCHC events such as the research workshops, Research Brown Bag Sessions, and Principal Investigator meetings.

Toward what was, ultimately, to be the end of operations of the CRCHC because of lack of monetary support, two Pilot Program Project proposals were prepared, submitted, reviewed, and recommended for funding. However, despite their high quality, they could not be funded because of the demise of the CRCHC.

One of the proposals, "A Descriptive Analysis of the Health Status of a National Asbestos-related Disease Cohort," was prepared by five MSU nursing faculty members under the leadership of the CRCHC Associate Director. The purpose of the study was to establish a comprehensive understanding of the health status and impact of chronic illness on persons exposed to asbestos in Libby, Montana. The research team, with the assistance of the CRCHC, revised the proposal, and, though rejected by one foundation, it was ultimately funded by the HRSA Office of Rural Health Policy (R04RH07544-01-01).

The second unfunded CRCHC-approved proposal was "Sustained Breastfeeding: Preventing Chronic Illness in Rural, Hispanic Infants," headed by a nurse investigator from the University of Nebraska. Her research team included three nurse scientists from the Universities of Nebraska, Wyoming, and Montana. This study was a direct outcome of a CRCHC-funded project by the same research team whose overall interest is promoting infant respiratory health in rural settings through sustained breastfeeding and interventions targeted at decreasing environment triggers. The research team re-conceptualized its approach and is currently funded for two projects. The first, "Motivational Interviewing to Promote Sustained Breastfeeding," funded by the Minority Health Research Seed Projects at the University of Nebraska, is in progress on a Native American reservation in South Dakota. The second, "Screening Native American Children for Asthma," is also funded and is being implemented on a second South Dakota reservation.

Overall, the CRCHC Pilot Project Program funded 13 projects, under the umbrella of chronic illness management, which involved a total of 29 investigators from nine employment affiliations. These researchers were Montana State University nursing faculty (n=12); nursing faculty from other universities/organizations (n=12), and non-nursing investigators (n=5). On Table 2 are displayed the name, discipline, affiliation, and project(s) for each investigator. The Pilot Project Program was a major strategy of the CRCHC that was used to successfully advance the state of the science in areas of chronic illness and rural health.

Table 2

Pilot Program Investigators: Discipline, Affiliation, Research Project

Investigator	Discipline	Affiliation	Team
1. Brandt	Nursing	St. Vincent Hospital - Billings	Pain Management/Telehealth Crow Indians
2. Zulkowski (PI)	Nursing	MSU	Pain Management/Telehealth for Crow Indians
3. Cumbie (PI)	Nursing	U of Wyoming	Nursing Care Model
4. Burman	Nursing	U of Wyoming	Nursing Care Model
5. Conley	Nursing	U of Wyoming	Nursing Care Model
6. Weinert	Nursing	MSU	Nursing Care Model; Spirituality & Chronic Illness; Rural Data Collection; Isolated Rural Women; Native American Elders; Health Care Choices
7. Sullivan	Nursing	MSU	Cancer Management; Health Care Choices; Isolated Rural Women
8. Craig (PI)	Nursing	OHSU	Spirituality & Chronic Illness
9. Walton	Nursing	Carroll College	Spirituality & Chronic Illness
10. Derwinski-robinson	Nursing	MSU	Spirituality & Chronic Illness
11. Holkup (PI)	Nursing	MSU	Native American Elders
12. Tripp-Reimer (PI)	Nursing	U Iowa	Native American Elders
13. Salois	Social Work	Independent	Native American Elders
14. Ide	Nursing	U North Dakota	Health Care Choices
15. Nichols	Nursing	MSU	Health Care Choices
16. Shreffler-Grant (PI)	Nursing	MSU	Health Care Choices; Medical Assistance Facilities; Hospice use of CAM
17. Mayer	Nursing	MSU	Men's Heart Network
18. Winters (PI)	Nursing	MSU	Men's Heart Network; Isolated Rural Women
19. Parker (PI)	Nursing	MSU	Cancer Management
20. Rodehorst	Nursing	U of Nebraska	Rural Data Collection
21. Wilhelm	Nursing	U of Nebraska	Rural Data Collection
22. Stepan (PI)	Nursing	U of Wyoming	Rural Data Collection
23. Smith	Physiology	U of Wyoming	Rural Data Collection
24. Kuntz (PI)	Nursing	MSU	Methylmercury Risk
25. Hill	Nursing	MSU	Methylmercury Risk; Men's Heart Network
26. King	Engineering	MSU	Methylmercury Risk
27. Lande	Health & Human Dev	MSU	Methylmercury Risk
28. Linkenbach	Health & Human Dev	MSU	Methylmercury Risk
29. Running (PI)	Nursing	U of Nevada	Hospice use of CAM

Creating Scholarly Linkages

To achieve the fourth objective—provide a focal point for synergistic linkages of scholars across Montana and the region—several mechanisms that were available locally, throughout the state, and across the region were utilized to link investigators with the resources of the CRHC. These mechanisms included: Center Affiliates, Center Collaborators, Center Investigators, and Pilot Program Investigators.

Center Affiliates. Center Affiliates were an integral part of the overall CRCHC and contributed to its mission through their support of Center goals and participation in Center activities. These were non-university related investigators/organizations that promoted the CRCHC efforts by: a) participating in research that addressed issues related to chronic illness in rural dwellers; b) being involved with the training efforts of the Center; and c) engaging in the dissemination of information through workshops, conferences, and media. Center Affiliates had full access to all CRCHC resources. Likewise, Center Affiliate investigators could identify with a larger entity when submitting grant proposals and receive assistance from the CRCHC for preparation of grant applications, help with dissemination efforts, and consultation about conducting research.

Center affiliation for institutions/organizations provided a research connection for individuals within their institution/organization and the opportunity to identify with research efforts across the state and region. They received advance notice of guest speakers, other educational opportunities, and the Center newsletter. The six Center Affiliates were seen as valued friends and collaborators, a win-win situation for Center Affiliates and for the CRCHC.

Center Collaborators. Center Collaborators included partner universities, industry, and private community researchers who shared common interests with the CRCHC. They joined with the CRCHC to write grants, contracted with the staff for consultation or assistance, or teamed with CRCHC investigators to conduct ongoing research.

One Center Collaborator project, titled “Spirituality and Suicide,” was headed by a chaplain from a local hospital. His research team consisted of a retired minister, a nursing colleague from Oregon Health & Sciences University, and the CRCHC Director. The goal of this study, funded by a private family foundation, was to better understand the role of spirituality in dealing with suicide and the attendant dynamics of spiritual support and personal faith beliefs of family members coping with this type of loss (Craig, Weinert, & Vandecreek, 2007). To pursue this understanding, the theological difficulties or conflicts experienced by suicide loss survivors in integrating their faith with the tragedy of suicide, the personal trauma of suicide loss, and the appropriate intervention to provide spiritual support for survivors that help lead to healthy resolution of grief were explored.

The “cross pollination” of the Center Collaborators with the other Center Investigators added to the synergistic health and/or rural nursing research efforts. Through this strategy, lasting research relationships evolved, and contributions were made to the overall state of nursing science and health in the USA.

Pilot Project Program Investigators. The Pilot Project Program strategy, as previously described, was a key player in the forging of inter-institutional and interstate (Iowa and Wyoming) linkages between nine institutions as well as the non-nursing disciplines of social work and applied physiology. A secondary gain from the interstate linkages was the sharing of the expertise of the more experienced researchers from Iowa with the less experienced CRCHC staff.

The strategy of creating scholarly linkages among nurse researchers of the west has been highly productive. Weinert and colleagues (2004) emphasized that “Through these linkages, the CRCHC works to develop both nursing science and nurse scientists which, over time, helps to generate the critical mass necessary to conduct quality rural nursing research that will enhance nursing practice and improve the health of rural dwellers” (p. 70).

Table 3

Pilot Project Titles, Teams and Descriptions

Project title	Team	Project description
Pain Management and Telehealth for Crow Indians	Zulkowski (PI) Brandt	Determine the feasibility of nursing management of chronic pain using telehealth Native American Crow
Exploring Chronic Illness in Isolated Rural Women	Winters (PI)\ Sullivan, Weinert	Secondary analysis of Women to Women data to identify themes related to illness uncertainty and illness management.
Care for Chronic Conditions in Medical Assistance Facilities	Shreffler-Grant (PI)	Develop method to assess quality of care for acute exacerbations of chronic health problems in low-acuity low volume facilities
Spirituality: Rural Dwellers and Chronic Illness	Craig (PI) Derwinski-robinson, Walton, Weinert	Examine spirituality and health behaviors, quality of life, and illness management and nature of spirituality among rural dwellers with chronic illness.
Caring for Native American Elders	Tripp-Reimer (PI) Holkup ,Salois, Weinert	Develop, pilot, and assess the feasibility of an intervention - the Family Care Conference (FCC).
Cancer Management: Rural Dwellers and Their Spouses	Parker (PI), Sullivan	Determine how older rural individuals living with cancer and their spouses manage the symptoms following cancer-related treatments.
Nursing Care Model for the Chronically Ill	Cumbie (PI), Conley, Burman, Weinert	Test a client-centered nursing intervention with selected chronically ill rural persons in a clinic setting,
Men's Heart Network	Winters (PI) Mayer, Hill	Adapt the Women to Women2 protocols and materials for use with isolated rural men with CVD
Health Care Choices	Shreffler-Grant (PI), Ide, Nichols, Sullivan, Weinert	Explore the extent of use, perceived efficacy, and availability of complementary therapies for chronic conditions.
Testing Protocols for Rural Sample Data Collection	Stepans (PI), Smith, Rodehorst, Wilhelm, Weinert	Develop protocols for monitoring biomarkers and aeroallergens reflective of inflammatory response of the respiratory system of babies (12 - 18 months).
Caring for Native American Elders: Prairie Addition	Holkup (PI), Tripp-Reimer, Salois, Weinert	Gather background and contextual data from one additional Tribal community in Montana to expand the testing of the Family Care Conference.
Easing Chronic Suffering: A Survey of Hospices Use of Complementary Therapy	Running (PI) Shreffler-Grant	Explore use of complementary therapies by hospice in managing chronic conditions for rural elders at the end of life.
Methylmercury Risk and Awareness in American Indian Women of Childbearing Age	Kuntz (PI) Hill, King, Lande, Linkenbach	Construct and adapt culturally appropriate instrumentation and methods to assess risk for methylmercury exposure in American Indian women of childbearing age living on rural reservations.

Developing a Knowledge Base for Chronic Illness Management

The final objective of the CRCHC was to develop a knowledge base for addressing the multiple complex issues associated with chronic illness management for persons living in sparsely populated areas. The pilot project titles listed in Table 3 represent the contribution the CRCHC has made to the knowledge base related to chronic illness management of rural dwellers across the life span. Information obtained about chronic pain management through telehealth, eldercare, and methylmercury risk in Native American populations should benefit a traditionally underserved rural population. The knowledge gained about the impact of chronic illness on the emotional and spiritual health of rural dwellers will guide the design of interventions intended to enhance adaptation to chronic illness. Delivery of care by rural health care facilities that is appropriate to the needs of those with chronic illness will be informed by the results of the medical facilities study and complemented by the testing of a nursing intervention that can be translated into a client-centered nursing care model for the rural chronically ill. The role of cancer symptom management, health care choices, and complementary therapy in the chronic illness/end of life experiences of elders and others will be illuminated. Two protocols have addressed chronic illness issues at opposite ends of the life continuum:

1. The Women to Women protocols for assisting rural dwellers to adapt to chronic illness have been applied to men with heart disease;
2. Protocols for monitoring biomarkers and aeroallergens in babies are being tested.

CRCHC contributions such as these have added to the knowledge base related to the multiple complex issues associated with chronic illness management of rural dwellers and have strengthened rural nursing science.

Accomplishments of the CRCHC

The productivity of the Center Investigators and Center Collaborators is noteworthy especially when measured from the point where most of these investigators began in terms of research engagement, skills, and scholarly productivity. To date, 50 manuscripts have been prepared with 40 published, 2 in press, and 8 in review. There have been 73 published abstracts, 74 papers presented, and 37 poster sessions. Seventeen of the 38 follow-up grant proposals have been funded.

CONCLUSIONS

The CRCHC came about through the serendipitous combination of the factors of location, leadership, and a focus on rural nursing research at Montana State University College of Nursing. The College in which the CRCHC was located was geographically situated in a prime western location. With the encouragement and support of a nationally acknowledged nurse scientist, Dr. Clarann Weinert, the faculty had begun to focus on forging and fostering bonds among rural nurse researchers scattered across the west in geographically isolated, less research-intensive institutions. At the same time, the College of Nursing was becoming nationally recognized in the area of rural nursing research. The CRCHC was ideally positioned to facilitate the creation of linkages between western nurse scientists, provide research consultation, and promote collaboration among nurse investigators through inter-institutional research projects, seminars, and the Western Writers' Coercion Group.

From its inception, the CRCHC facilitated the creation of linkages among investigators across Montana and the region. Often investigators from the less research intense settings had no senior researchers to serve as mentors, and the CRCHC was an optimal venue for providing that research mentorship. The multi-site, multi-institutional linkages have: a) further strengthened the rural nursing research efforts in Montana; b) enriched both nursing science and nurse scientists; and c) helped to generate the critical mass necessary to conduct quality rural nursing research to enhance nursing practice and improve the health of rural dwellers. With its regional, inter-institutional impact, the CRCHC evolved into a "scholarly community without walls." It is noteworthy that six of the research teams (which include investigators from across Montana and from Nebraska, Wyoming, Iowa, Oregon, North Dakota), that were forged through the Center, continue to actively conduct research to date. These teams have been able to continue to expand and develop their programs of research, have been successful in obtaining intra or extra-mural funding and have been productive in the dissemination of their findings.

The challenges to conducting rural nursing research such as distance, research resource-poor environment, and lack of nurse investigators were addressed through the CRCHC using a variety of techniques. Distance was often bridged by low tech methods such as the telephone conference system. This system provided a low cost means for:

1. Research teams to meet;
2. Consultation sessions with the CRCHC Director;
3. The principal investigators meetings;
4. Western Writers Coercion Group meetings; and
5. The Brown Bag sessions.

A CRCHC website provided a mechanism for user-friendly access to critical research information. A toll-free telephone number allowed investigators to call the CRCHC without charge to themselves. At times the Center Director traveled to distance sites across Montana and the region to meet face-to-face with research teams and some teams traveled to Bozeman for consultation. Common meeting sites such as the WIN Communicating Nursing Research Conference and the State of the Science Conference were used as times for sharing among CRCHC investigators. The pilot program funding provided monetary support to launch projects, as well as, the full array of grant management support from the CRCHC Program Director. The ongoing mentoring, along with the linkages forged among investigators across Montana and the region helped to offset the limitations of research resource-poor environments. To provide research expertise to each project, in addition to ongoing mentoring, the Center Director served as a co-investigator to every project that was headed by a non-MSU nursing faculty. Likewise, she served as a co-investigator to a significant number of the projects for whom a faculty colleague was the principal investigator. This along with the contributions of Dr. Toni Tripp-Reimer provided research teams with assistance from seasoned and well funded nurse scientists.

The Center mechanism, as means of addressing issues associated with the management of chronic illness within the rural context, has been very successful. Indicators that the objectives of the CRCHC to increase research skills, improve the research infrastructure, support pilot projects, and increase the knowledge base related to the management of chronic illness in the rural setting are most apparent. It is clear from indicators such as the number of individuals and institutions involved, the breadth of the pilot projects, the successful funding of follow-up studies, the impressive dissemination statistics, and the feedback from those involved, that the CRCHC was a success. Unfortunately, despite the successes of the CRCHC, the university and College of Nursing were not financial positioned to support the center. A very serious pursuit

for funds to sustain the CRCHC was undertaken and numerous proposals to various agencies, organizations, and foundations were submitted. Interest in funding a Center was found to be very low, as most funding bodies were interested in specific discrete projects. However, one foundation grant allowed the CRCHC to continue functioning after the end date of the P20 funding.

The bonds of collegueship and friendship among investigators are treasures gained well beyond the nursing science impacted by the CRCHC. These bonds are the foundation for continued collaboration across geographic distance and other rural barriers which are establishing a lasting culture of rural nursing scientists that will make a difference in the health and well-being of rural dwellers. What started as a long-standing dream of one nurse scientist grew into the realization of a rural nursing research center that has developed, motivated, and energized rural nurse investigators and their colleagues. During its relatively short tenure, the CRCHC succeeded in positioning rural investigators to conduct the research necessary to reduce some of the health disparities faced by rural residents and contribute to the improvement of the health status of chronically ill Native Americans and rural dwellers across the lifespan. Although it no longer exists, the influence of the CRCHC endures, and will continue to do so into the foreseeable future.

REFERENCES CITED

- Craig, C., Weinert, C., & Vandecreek, L. (2007). Women's experience of the suicide of a close family member. Manuscript submitted for publication.
- Cumbie, S., Weinert, C., Luparell, S., Conley, V., & Smith, J. (2005). Developing a scholarship community. *Journal of Nursing Scholarship*, 37(3), 289-293. [[MEDLINE](#)]
- Weinert, C. (2006). Rural health revisited. In J. Fitzpatrick & M. Wallace (eds.), *Encyclopedia of Nursing Research* (2nd ed.) (p. 535-537). New York: Springer.
- Weinert, C., & Burman, M. (1996). Nursing of rural elders: Myths and reality. *Advances in Gerontological Nursing*, 1, 57-80.
- Weinert, C., & Burman, M. (1994). Rural health and health seeking behaviors. *Annual Review of Nursing Research*, 12, 65-92. [[MEDLINE](#)]
- Weinert, C., Lotts, K., & Winters, C. (2004). The CRCHC: A strategy for enhancing rural nursing research. *Nursing Leadership Forum*, 9(2), 67-73. [[MEDLINE](#)]