

**A Senior Health Center Interdisciplinary Team Approach:  
Health and Organizational Outcomes**

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Center for Senior Health**

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## **Executive Summary**

The PeaceHealth Oregon Region (PHOR) Center for Senior Health proposes a four year intervention and measurement study to demonstrate the impact of the Barger Senior Health & Wellness Center (SHWC) interdisciplinary team approach on health outcomes for older adults and organizational outcomes at PHOR. PHOR is an integrated healthcare delivery system consisting of a 430 bed tertiary hospital and fourteen multidisciplinary clinics, including the SHWC. PHOR serves a large geographical area with diverse populations in central and southwestern Oregon. Internists and Family Practice physicians from PeaceHealth Medical Groups (PHMG) have agreed to participate in the study. The Principal Investigator is Ron Stock, M.D., Geriatrician.

The SHWC interdisciplinary team approach will be integrated into all aspects of the senior health service delivery model, particularly those portions of the model that pertain to chronic illness. The core team includes a Geriatrician, Geriatric Nurse Practitioner (GNP), clinic resource nurse (RN), medical social worker, pharmacist, physical therapist, dietitian and chaplain. Others who will be involved in team activities include office nursing support staff, receptionists, home health staff, and a geriatric psychiatrist. All team members and clinic staff will receive senior sensitivity, team building, and self-management skills training. Geriatric syndrome protocol training will be provided. Individual members will develop their own work processes and care protocols to support the team approach. Protocols will include dementia, urinary incontinence, falls/gait disturbance, diabetes, congestive heart failure, and care of the osteoarthritic knee/hip.

The Senior Health and Wellness Center model aims to enhance coordination and continuity along the continuum of care, including outpatient primary care, inpatient acute care, skilled nursing facility care, and skilled home care. The HART (Health Assessment and Risk Test) screen will be used to identify two groups of elderly patients - well or low-risk elderly and frail or high-risk elderly. High risk patients and their caregivers will be invited to participate with the team in developing care plans that include specific self-management and behavioral goals. Software application tools will be used for tracking, monitoring, and visit planning. A registry of patients known to be frail and at "high risk" will be available to help team members provide planned, proactive care. Specific planned interventions include 1) self-management interventions; 2) planned, proactive care interventions; and 3) geriatric-specific clinical interventions.

The PeaceHealth study will compare the impact of an interdisciplinary team model of care with both a physician-care manager model and a traditional physician practice model for geriatric care. It is expected the interventions will significantly improve patients' clinical and functional outcomes and their satisfaction with care, while reducing their use of acute services (e.g., emergency and acute hospitalizations). In addition, the interventions are expected to be cost-effective in the long run relative to usual care, i.e., the rate of decline for elders in the SHWC model will be slower than in other primary care modalities. An implementation manual detailing the tasks and activities required to successfully plan, build, start-up, and operate a Senior Health & Wellness Center will be developed to assist in replicating successful business and clinical aspects of the model.

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## **Description of Applicant Organization**

PeaceHealth is a private, non-profit healthcare delivery organization operating from its corporate office in Bellevue, WA and serving five regions in Washington, Oregon, and Alaska. In Southeast Alaska, PeaceHealth operates Ketchikan General Hospital, a 46 bed regional care facility serving the isolated population of the “Inside Passage” chain of islands. In Northwest Washington, PeaceHealth operates St. Joseph Hospital (250 beds) in Bellingham, and St. John Medical Center (265 beds) in Longview, WA serving Southwest Washington and Northwest Oregon. In Oregon, PeaceHealth operates Sacred Heart Medical Center in Eugene, Peace Harbor Hospital in Florence, and a Community Hospital in Cottage Grove. In addition to its medical centers and hospitals, PeaceHealth also employs and manages several physician groups, behavioral health services, a regional medical reference lab, and home health care programs.

PeaceHealth Oregon Region (PHOR) consists of Sacred Heart Medical Center (SHMC), a 430 bed tertiary care facility, Peace Harbor Hospital, a rural 20 bed facility located on Oregon’s central coast, and the Cottage Grove Community Hospital, a rural 20 bed facility located in southern Lane County. PHOR also manages the PeaceHealth Medical Group (PHMG), which consists of fourteen primary care clinics throughout Lane County.

This study will occur within the organizational structure of the PeaceHealth Oregon Region, and will be managed by the PHOR Center for Senior Health. Participants in the study will include the PeaceHealth Medical Group clinics in Lane County, Oregon. The PHMG is a group practice operating from multiple clinic sites as a staff model component of PHOR. The PHMG-Eugene clinics employ 840 staff members, including more than 100 physicians who provide a wide range of primary care (63 physicians) and specialty services (43 physicians). The fourteen clinics serve approximately 85,000 patients/year, of which 15,000 are 65+ years of age and 2,500 can be classified as chronically ill elderly patients. The clinics are located in both metropolitan and rural areas of Lane County. Two other PHOR clinics will be included in this study - Health Associates in Florence, OR (10 physicians) which serves the central Oregon coast, and South Lane Medical Clinic (11 physicians) which is located 30 miles south of Eugene in Cottage Grove, Oregon.

The PHMG and PHOR administration is committed to assuring that study procedures are implemented in accordance with project requirements. The participating clinics are prepared to accommodate proposed program changes/additions and will provide substantial in-kind support. Several General Internist and Family Practice physicians will participate in the project and recruit their senior patients into the study.

The PHOR Center for Senior Health currently provides care coordination and geriatric training for the various PHMG satellite clinics. The Center has implemented experimental models of senior care at different clinic sites, and will oversee this proposed study. The Senior Health & Wellness Center (SHWC), located at the Barger Medical Clinic, is a geriatric primary and consultative care facility that opened its doors in February 2000. The Center for Senior Health Medical Director is Ron Stock, M.D., Geriatrician, who will be the Principal Investigator for this proposal. An oversight project team will provide ongoing monitoring, evaluation, and reporting on the study (see Appendix 1).

## **Background/Conceptual Discussion of Innovation**

Chronic illness has become the greatest challenge among the elderly population, accounting for 76 percent of direct medical care costs in the nation. Many healthcare systems (including PeaceHealth) that have traditionally focused on providing acute care have commenced the development of innovative, useful and cost-effective methods for treating the chronic diseases of a rapidly aging population. There have been many models developed to try to improve access and clinical quality of primary care to older adults. Packaging services which are facilitated by individuals with geriatric expertise is one model, considered the senior health center model. During the past decade, senior health care (chronic care) models have been introduced through evolving stages that can be categorized as having reached the third generation model.

1<sup>st</sup> Generation: Senior-Friendly Primary Care Clinics – Early changes in healthcare delivery involved development of free-standing geriatric clinics. These were really private practice clinics with a senior-friendly design/location and usually staffed by a physician with interest in geriatric care. Some were fellowship trained or CAQ- certified family physicians or general internists. Many of these centers eventually became outpatient units associated with a hospital. Generally, the development of these clinics improved availability of geriatric expertise for the elderly at a single site. However, these programs seldom included professional geriatric services, care coordination, or interdisciplinary teams. In addition, it is unclear as to the impact this model has had on health outcomes and cost-effectiveness.

**PeaceHealth Status** - During the late 1980's, two Fellowship trained Geriatricians opened primary care practices in the PHOR service area, one in solo practice and the other as part of a large multispecialty group practice. Both practices operated as a traditional PCP model and included in-office geriatric assessments, but no team care approaches to primary care. Both practices were discontinued within five years, and both Geriatricians left the community to work in the region Veterans Administration system. At about the same time, a general internist with a longstanding interest in geriatric medicine initiated a community-wide service to perform comprehensive geriatric assessments (CGA) with a team of community social workers and home health nurses. This physician retired in 1995.

In 1988, a new Geriatrician (later recruited by PeaceHealth) established a primary care practice that also provided comprehensive geriatric assessments. This practice did not include an ancillary support team, but rather depended on office-based and community resources for follow-up services. By 1989, the Sacred Heart Medical Center had implemented a senior care program that offered hospital-based services. Simultaneously, the Eugene Clinic (a local group practice not yet associated with PeaceHealth) developed the ElderHealth program to provide coordinated senior care, comprehensive geriatric assessments, and some geriatric training for their primary care physicians. In the two years prior to the opening of the Barger SHWC, there were no geriatrician staffed primary care practices available in this community.

2<sup>nd</sup> Generation: Senior Health Clinic/Enhanced Primary Care – In an effort to provide better access to primary care and specialty services for seniors, the next emerging models (including the GeriMed and Baylor Model) were structured to enhance quality and reduce cost by monitoring patients with chronic disease and using medical management designed to postpone or avoid acute episodes.<sup>1</sup> Visionary health systems established broad networks of branded primary care centers dedicated exclusively to serving seniors. The centers are usually located in areas with a high density of Medicare eligible persons not currently served by the system's affiliated Primary Care Physician (PCP) network. Given the DRG based fee-for-service profit losses associated with case management, many health systems found they could increase revenue through developing branded senior centers, which have proven particularly effective in markets with primary care shortages. Senior centers provided conveniently

located outlets, senior-friendly interior design, senior sensitive staff, and access to a broad array of health workers with the skills needed to meet the unique needs of seniors.

Second generation models also brought interventions and senior care support in the primary care setting that were introduced with care coordination and geriatric staff training as key components. The Generalist Physician Initiative (GPI) sponsored several innovative programs that explored new ideas for delivering physician-based primary care services for the elderly. The care coordination model focused on partnering physicians with other health workers and expanding each practice's capacity to encompass a broader set of psycho-social, clinical and family issues. An important component was the incorporation of geriatric expertise into PCP practices, either through Geriatrician consultation or PCP/staff training. An evaluation of the GPI programs found that each innovation was influenced by a complex interplay of sub-systems. The national context is ever-changing, and there are regional variations among provider networks. Employing organizations varied across GPI projects, with some physician practices solo or group, others part of managed care groups, and others hospital-based. Overall, the GPI study highlighted the importance of understanding the local environment and the culture of physician practices, while stressing that both should be considered essential for designing effective chronic care models.<sup>2</sup>

The GPI study also highlighted the importance of demonstrating cost-effectiveness for each senior care innovation. Measuring cost outcomes for care coordination models is challenged by the slope of the learning curve at each site and the time required for projects to become integrated into routine practice operations. Evaluation periods were often too short, sample sizes typically small, and intervention groups were usually in poorer health than comparison groups. Still, there was some evidence among GPI sites that intervention patients displayed reduced depression and reduced declines in their functional status. Additionally, significant lower emergency room and hospital utilization was observed at several sites, confirming the hypothesis that lower utilization resulted in lower overall costs, even when the costs of the intervention were considered.

**PeaceHealth Status** - After the Eugene Clinic was purchased by PeaceHealth (1995) and renamed the PeaceHealth Medical Group, the Sacred Heart Department of Senior Services and the ElderHealth programs were merged. The new integrated program was eventually renamed the "Center for Senior Health," which now serves as the launching site for program innovations while providing care coordination and geriatric consultations for PHMG physician practices. Also during this time, the hospital and clinic practices became program components of the newly organized PeaceHealth Oregon Region.

In June, 1998, PHOR redesigned its organizational structure and launched a new "service line" called Care Coordination Services whose primary aim was to focus on patients and families with multiple health concerns and chronic conditions. This "service line" brought together the Center for Senior Health (HeartLine, Senior Peer Counseling, Senior Class, Geriatric Nurse Practitioner Services), Sacred Heart Medical Center Medical Social Work, Home Care Services (Home Health, Hospice, Home Infusion), and RN/MSW Care Management teams that are PCP practice-based. The nurse/social work care management teams currently support all PHMG-Eugene Family Practice and Internal Medicine physician practices. These teams enjoy high satisfaction among patients, caregivers, and providers. We also have data to support that they have had a significant impact on emergency room utilization in the population they manage. The teams operate on referrals from the PCP, risk survey data, and administrative data. They manage patients on a low volume (60-80 clients/care manager), high intensity approach. As with most Physician/Care Manager models documenting cost savings with this service has been a challenge.

Care Coordination Services aim to:

- Maximize patients' health outcomes and functional independence
- Work with patients and their families to ensure the most appropriate provision of care
- Coordinate services, both within and outside of PHOR, to maximize effectiveness and minimize redundancy
- Facilitate communication between patients, families, and providers

3<sup>rd</sup> Generation: Geriatric Center of Excellence – Although senior center/care coordination models prove useful in slowing elderly patients' functional decline and reducing overall costs, the fragmented delivery of services continue to be a challenge for a significant number of seniors seeking healthcare services. A severe shortage of healthcare workers (especially physicians) with geriatric expertise also emerged as a major problem. In addition, the earlier generation models drew attention to the fact that healthcare providers, including those with geriatric expertise, often lack the skills to work together in teams. In 1996, the John A. Hartford Foundation sponsored the Geriatric Interdisciplinary Team Training (GITT) Initiative which helped introduce formal education and geriatric team training into health professions curricula. Many GITT participants felt their teamwork skills had improved and that these improvements benefited their patients.

The introduction of interdisciplinary teams in senior care programs clearly reflects the needs of an evolving health care system that is shifting from acute care to chronic care based in the ambulatory setting with a focus on the continuity of care. Each team member contributes expertise to the individual patient's treatment plan. The team is responsible for coordinating care and tracking patient performance. From a healthcare cost perspective, trained interdisciplinary teams are best utilized for high risk elderly patients who are, or may become, heavy users of health care services. A recent survey<sup>1</sup> of innovative programs for serving chronically ill older persons reports that the use of teams "reflects the growing sense that chronically ill older people need additional expertise and structure in their health care," but that relatively few health systems provide such care.

**PeaceHealth Status** - PHOR recruited a Geriatrician, Dr. Ron Stock, who convened a multi-disciplinary Senior Advisory Committee to help plan a directional vision for the next level of senior health services. In February 1997, the PHOR Governing Board approved their regional strategic priorities, which included senior care service development. The PHOR Executive Team implemented a "Quality Function Deployment" process and the "Voice of the Customer" (VOC) tool to ensure that the services planned were based on customer needs. This process included interviews with patients, families, caregivers, providers of both medical and social services to find out what they needed in a health care delivery system. It also included focus groups of well seniors, frail seniors, and caregivers. This information was evaluated, prioritized, and integrated into the plans for our model of the senior health center. Completion of these planning endeavors produced a mission statement and identification of the scope of services and priorities necessary for a senior health and wellness center concept of care (see Appendix 2). The following mission statement evolved through this process:

*"To develop and implement a model of care for seniors which focuses on patient-centered care, customer-driven services, and collaboration with the community to provide access to health related resources, education and clinical care. The Center for Senior Health will provide the model and leadership to partner with community resources/agencies and to integrate the services of PHMG and SHMC (Sacred Heart Medical Center)."*

This multidisciplinary planning team assisted PeaceHealth in designing an innovative, integrated geriatric primary care model that supported an interdisciplinary team approach within a primary care clinic, along with a system for providing Geriatrician consultations to other PHMG primary care

practices. In May 1998, a business plan was approved by the PHOR Governing. The plan called for development of distinct Senior Health Centers that would be integrated with existing PHMG satellite clinics, and directed that the Senior Health Centers be located in areas where seniors currently have limited access to care. The first of these centers, known as the Senior Health & Wellness Clinic, is located at the Barger Medical Building and opened its doors in February 2000. The Barger Center is a "Geriatric Center of Excellence" providing high quality, patient-centered primary care, consultation, and education services to seniors. These services can be the link to managing the wide range of patient care needs wherever the patient is found in the care continuum, whether it be the hospital, nursing home, or in the patient's home.

As of October 2000, the PHMG will have operated the Barger Senior Health & Wellness Center (SHWC) for eight months with the understanding that the provision of excellent geriatric care requires organizational commitment as well as a coordinated effort that includes partnerships with outside organizations who serve the elderly. The SHWC program focuses on the frail elderly, and provides a comprehensive set of services, all of which address the interrelationships of senior issues, including nutrition, social support, caregiver support, physical activity, medications, and chronic disease.

The Next Generation - As reported in the September 1999 American Journal of Managed Care, geriatric care experts have determined that the ideal care of chronically ill older persons should be proactive, comprehensive, continuous, coordinated, efficient, evidence based, and predicated on the preferences and involvement of patients and their families.<sup>3</sup> Thus far, the practical application of this level of care has been elusive for innovative leaders in geriatric care. Clearly, the evolving innovations in the care for chronically ill older persons have produced mixed results, and the few evidence-based "best practices" have achieved only a modest penetration into mainstream care.

A critical initial step in providing population-based care has been the identification of high risk senior patients. Multiple approaches have been taken to identify the high risk population, such as self-report questionnaires, provider referral, and analysis of administrative data. It is felt that although no screening mechanism is perfect, identifying and then further assessing high risk individuals is a beneficial, cost-effective endeavor. It is not enough, however, to just "screen" for risk, but rather processes must be in place within the health system to do further assessment and plan for evidence-based interventions. The HMO Workgroup on Care Management supported by the AAHP Foundation (February, 2000) recently published their findings and recommendations for risk screening among Medicare members.<sup>4</sup> Some of their recommendations include:

- Risk screening should be performed as a central component of any population-based approach to care,
- Rigorously developed, validated self-report questionnaires are recommended to identify high risk members,
- Risk identification should include a focus on members with geriatric syndromes for which effective interventions are known (i.e., physical activity, falls, depression, incontinence, medications, and undernutrition).

Cost effectiveness has always been a driving force behind the emergence of organized healthcare for seniors, and should create further incentives for applying system changes in order to improve health and functional outcomes for the elderly. However, aggregate studies confirm that most healthcare systems do not effectively deliver care to older patients in a cost efficient manner. Among the most likely barriers to achieving greater success are: 1) the absence of a workable integrated service delivery system; 2) the failure of various health workers and organizations to communicate effectively; 3) the need for access to electronic medical records; 4) the inability to appropriately build and use interdisciplinary teams; and 5) the lack of dedicated resources to research, design, and implement the necessary changes in clinical practices and support service processes. The Geriatric Interdisciplinary Teams in Practice Initiative (GITP) offers promise toward testing models of interdisciplinary team care,

an effort that will help inform health care delivery organizations about the impact of using different team models on health and organizational outcomes.

The PHOR Center for Senior Health is prepared to document the health and organizational outcomes associated with the development of a geriatric interdisciplinary team approach at the Barger Senior Health & Wellness Center. Key factors that make the PeaceHealth “generation” of the senior health center concept distinctive from other models include:

- The PeaceHealth model uses a prepared, proactive interdisciplinary team to support the care in the practice by being able to be “pulled in” based on the individual needs of the patient/family
- Patients/families/caregivers will guide the plan of care, i.e., the plan is not necessarily based on the provider’s directive
- Care will be provided across the continuum
- Connect the risk screening and assessment process to geriatric evidence-based protocols that will guide the delivery and quality of care
- The SHWC is built on the successes and failures of previous models
- Standardized work and workflow will exist in the clinical office
- Ongoing patient and caregiver feedback to continually change and enhance the care model

**Other models for improving the delivery of geriatric primary care-** Many attempts have been, and currently are, being made to improve the delivery of primary care to seniors. Most programs utilize physician-nurse (or nurse practitioner) teams along with social workers to provide more comprehensive assessments, continuity, and efficiency of care. The Chronic Care Clinic (CCC) model (Group Health of Puget Sound) offered a different approach in that it held extended visits for frail primary care patients every 3-4 months dedicated to care planning and attention to geriatric syndrome management. Results of this model demonstrated little or no improvement in health outcomes, cost, and utilization. The model did demonstrate high levels of patient satisfaction with the clinics. Although the CCC interventions addressed access barriers, they did not focus on changing provider/patient behaviors. Clearly, comprehensive system change is needed, rather than a simple clinic redesign. The PeaceHealth SHWC project will address this issue, and has reviewed CCC interventions with a focus on three factors: 1) The CCC model did not include specific geriatric expertise, i.e., Geriatricians, GNPs, and senior trained staff; 2) the interventions were infrequent and less case specific - although SHWC will use protocols and standards, they will be used to tailor frequency according to the individual patient's assessment and care plan; and 3) because CCC programs concluded that their processes were very disruptive to the traditional clinic work, the SHWC project plans to emphasize optimization of actual work flow and integrate team functions into the standard work of the clinic.

The “group clinic” model (Kaiser, Denver) provides another approach to primary care through extended educational outpatient visits for groups of chronically ill older patients. These monthly group meetings are facilitated by their primary physician and nurse and may include a brief visit with the physician. Evaluations of this model have demonstrated improved immunization rates, lower hospital readmission rates, reduced telephone calls to PCP’s, increased satisfaction with care, and reduced visits to the emergency room and specialists among group clinic participants.<sup>5</sup> Overall patient health outcomes, however, did not differ significantly between study and control groups. Although this approach may be beneficial to many chronically ill patients, it may not be appropriate for the frail, high-risk patient. Based on its value for specific patients, the SHWC will use group clinics only for select patients, based on an assessment of individual needs and suitability of the intervention.

Finally, recent attempts have been made to integrate chronic disease care into existing primary care practices. The Institute for Healthcare Improvement (IHI) recently held a 15 month Breakthrough Series on “Improving Chronic Disease in the Elderly” in which the PHOR Center for Senior Health participated. The Chronic Care Model developed by Ed Wagner, MD et al, became the template upon

which a redesign of care for the frail elderly was attempted in a PHMG General Internal Medicine office. Care improvements included development of protocols for five conditions, implementation of health risk assessment screening process for older patients, and development of computer based patient registries. The protocols, health risk screening process, and patient registries have been implemented at the Barger SHWC. We learned from this project that detailed attention to the workflow of an office practice is critical to implementation of a chronic care delivery system redesign. Future focus on implementing a chronic care model in primary care practices will be critical to any system-wide approach in light of limited geriatric expertise (Geriatricians, GNP's, etc) within the context of an aging population.

**Current Realities** - The SHWC Geriatricians are currently providing primary care for patients as part of a team of health professionals within the facility. All SHWC staff, including receptionists and other support staff, receive ongoing training in senior sensitivity. Individual treatment plans are developed for all high risk patients. The multidisciplinary team currently includes the Geriatricians, Geriatric Nurse Practitioners, Medical Social Worker (Care Coordinator), Pharmacist, Dietician, Audiologist, and Physical Therapist. Home Care nurses and a Geriatric Psychiatrist meet on an ad hoc basis. This team meets on a weekly basis to discuss case management issues and determine follow-up needs for individual patients. Following the first eight months of operation, the SHWC is serving about 600 established patients, and is booked with new patient appointments through December 2000. The Center anticipates there will be sufficient patients to maintain full practices for the two new Geriatricians within the next six month period.

Every new SHWC patient is risk screened using the HART (Health Assessment and Risk Tool) proactive risk identification tool (see Appendix 4). This screening instrument was constructed by the Providence Health System Center on Aging and determined to be a valid tool for identifying seniors at risk for hospitalization, nursing home placement, high cost of care, and death. In addition, the Center on Aging found that seniors identified as high risk on the HART were more likely to have functional limitations that lead to the above outcomes. Thus far, fifty percent of the SHWC patients have been identified as high risk seniors. Education classes, covering numerous medical conditions and health issues, are offered to all SHWC patients and Senior Class members (hospital-based senior health education program). In addition, each patient receives the "Healthwise for Life" textbook.

An on-site Dietitian, Pharmacist, and Audiologist provide consultation for patients referred by the SHWC providers and identified through the risk screening and assessment process. Our Pharmacist currently provides medication reviews, medication counseling, and monitoring in addition to managing our indigent medication payment program. Physical Therapy is located within the Barger Medical Building and the therapists have been involved in establishing protocols for gait/balance evaluation and training, a home P.T. evaluation protocol, and treatment of common geriatric musculoskeletal conditions. They are actively involved in our weekly interdisciplinary meetings sometimes providing extremely valuable information on our patients.

**Current Challenges** - The following challenges represent the major issues facing the PHOR Center for Senior Health during the implementation of the senior health center interdisciplinary team approach:

1. The primary challenge facing the Barger SHWC, even as its doors first opened, was the need to develop enough capacity to meet a growing demand for services. The plans/processes currently under development to help meet this challenge include creative scheduling practices, having a nurse call patients prior to the first visit, use of the interdisciplinary team to help increase capacity, and planned proactive care (patient see nurse practitioner, pharmacist or others before seeing the physician). The SHWC is also implementing a system for understanding the patient demand (tracking number of new patient visits, number of acute care visits, etc.) so that patient's needs can be planned for ahead of time.

2. A major challenge for managing transitions of care for elderly patients is the need to improve communications within and outside the Senior Center environment. It is especially critical to maintain ongoing communications among primary care physicians, physician specialists, hospitals, nursing homes, families, and caregivers. Current plans for meeting this challenge include the use of team meetings (home health and other outside programs), using email, making the electronic health records available in all settings, and using a geriatric nurse practitioner to move patients from the hospital to a nursing home.

3. Another important challenge in providing senior care at SHWC is the affordability of medications and transportation for patients with chronic illnesses. These challenges will be partially met through the implementation of program activities such as having the pharmacist establish medication assistance program with pharmacy corporations, and counsel patients about prescription and over-the-counter drug use. The center will also provide information about transportation and work with the Senior Companion program to help provide transportation.

4. The financial viability of the SHWC operations is a serious challenge for the PeaceHealth Oregon Region in terms of maintaining and expanding the senior health center concept and continuing the use of an interdisciplinary team approach for serving the high risk senior population. The current PeaceHealth strategy for meeting this challenge involves an effort to obtain prospective payment under the ambulatory payment classification reimbursement system for services provided at the SHWC. In order to achieve this objective, the PHOR will need to establish the Senior Health & Wellness Center as a provider based outpatient entity of the hospital. In addition, PHOR has the option of discussing the possibility of contracting for services with a managed care organization.

**Organizational Readiness** - PHOR has made a long-term commitment to the development and testing of innovative models for serving the growing population of older patients. During the past several years, the Center for Senior Health has conducted Senior Risk Screening at several PHMG clinics. The Center recently participated in an Institute for Healthcare Improvement project to implement a new model of care for the chronically ill frail elderly. The model tested changes in practices, health outcomes and costs within four essential elements of the health system at the practice level.

The practice elements available at PHMG include: 1) Self-Management Support, focusing on availability of educational resources, skills training and psychosocial support. Successful self-management programs rely on a collaborative process between patients and providers to define problems, set priorities, establish goals, create treatment plans and solve problems along the way,<sup>6</sup> 2) Delivery System Design, recognizing that effective chronic illness management requires more than simply adding additional interventions to a current acute care system, but rather necessitates attention to delivery system design; 3) Decision Support, in which practice teams benefit from appropriate input from medical specialties,<sup>7</sup> and 4) Clinical Information Systems, with the understanding that timely and useful information about individual patients and populations of patients with chronic conditions is a critical feature of effective chronic care programs, especially those that employ population-based approaches.<sup>8</sup> At the PHMG clinics, 15% of the patient population are MCO capitated, 15% are PPO managed care fee-for-service, and about 70% are Medicare Part B.

This study will benefit from a sophisticated information management system that contains patient medical records from the majority of PHMG practices. Utilizing provider software tools, patient data is instantly available to PeaceHealth and non-PeaceHealth physicians who have access to the system. PeaceHealth was the first in this region to implement such an outpatient medical record. A software tool called "Senior Findings" has been developed to help support the availability of geriatric-specific information in the electronic medical record as well as a tool to perform population-based clinical management. Population-based data is available through the Enterprise View (EV) database, which blinds patient and provider identification. A Senior Risk Screening (Access database containing the HART data) registry provides risk-specific data on individual patients will be utilized for this study.

Other readiness factors include the availability of geriatric expertise, primary care, and consultative services within the SHWC. The center currently allows extra time for scheduling, and has a receptionist and nurse located together in the front office to facilitate communication with patients. Additionally, on-site pharmacist, social work, dietary and audiology services are provided at the clinic. Another important feature of the SHWC is its use of a care team nursing model in which roles are based on function. This allows the primary care physician access to several nurses during an office visit, with each nurse performing a specific function.

## **Description of Interventions**

The overarching intervention at the Barger Senior Health & Wellness Center (SHWC) will be to integrate the interdisciplinary team into all aspects of the senior health service delivery model, particularly those portions of the model that pertain to chronic illness. Model components of the Barger Senior Health & Wellness Center include:

- new patient orientation
- screening of all SHWC patients for risk and health status,
- assessment of psychosocial as well as medical health,
- health maintenance/preventive care instruction,
- patient/family/caregiver-centered education,
- use of geriatric syndrome/chronic disease protocols
- care coordination services
- community services on site, e.g., Alzheimer's Association, Senior Companions
- patient/caregiver-centered care planning services for all senior frail registry patients
- weekly interdisciplinary team reviews
- proactive monitoring of frail registry patients
- planned visits
- group visits
- electronic patient record documentation of assessment and plan
- establishment of a senior frail registry
- caregiver support services
- collaborative hospitalist/emergency room reporting system
- collaborative subacute/nursing home practice with GNP's.

The core team includes the geriatrician, Geriatric Nurse Practitioner (GNP), clinic resource nurse (RN), medical social worker, pharmacist, physical therapist, dietician and chaplain. Others who will be involved in team activities include office nursing support staff, audiologists, receptionists, home health staff, and a geriatric psychiatrist. All team members and clinic staff will have received senior sensitivity, team building, and self-management skills training. Geriatric syndrome protocol training as developed by the AGS/Hartford Practicing Physician Education Project will be provided to team members. Team members will develop their own work process and care protocols to support the team approach to the geriatric syndrome. Protocols will include dementia, urinary incontinence, falls/gait disturbance, diabetes, congestive heart failure, and care of the knee/hip osteoarthritis.

In order for the interdisciplinary team to function properly in a busy primary care environment, quality improvement tools will be used to determine the optimum work processes. Individual team member roles and scope of responsibilities will be defined, tested, and redesigned. Prior to initiation of this study, team members will participate in a three day Quality Improvement exercise known in PHOR as Rapid Process Improvement (RPI). The focus of this exercise will be to evaluate our current work processes and redesign those processes that would lead to more efficient, effective care of the patient.

The model will address all aspects of patients' lives that are affected by their health status. The model will aim to enhance coordination and continuity along the continuum of care, including outpatient primary care, inpatient acute care, skilled nursing facility care, and skilled home care. Patients in the intervention group will have their hospital care managed by hospitalists in collaboration with SHWC Geriatricians. Other team members may be involved with their respective hospital colleagues, i.e., physical therapy, medical social work, in order to assure a smooth transition to outpatient care. Subacute/nursing home patients will be followed by the SHWC providers in

collaboration with our GNP Collaborative Nursing Home Practice. Home visits for both acute and routine needs will be provided by the Geriatrician or GNP.

The HART (Health Assessment and Risk Test) screen will be used to identify two groups of elderly patients - well or low-risk elderly and frail or high-risk elderly. Moderate or high risk patients will be reviewed by the team during weekly interdisciplinary team meetings. Such at-risk patients and their caregivers will be invited to participate with the team in developing care plans. These plans will include specific self-management and behavioral goals. Weekly multidisciplinary care conferences will be arranged for the interdisciplinary team to meet and review the HART survey, medical record, and any anecdotal information known for each high-risk patient/family/ caregiver. Planned visits, self-management techniques, clinical protocols, and an overall care plan with suggested interventions will be discussed. The team will negotiate responsibility for addressing each intervention. It's also at these meetings where referrals may be made for geriatric psychiatry, pharmacy, physical therapy, or care coordination consults. Arrangements will then be made to share the proposed care plan with the patient and caregivers to fully develop the care plan based on patient/caregivers needs and personal health goals. The following interventions will be applied to the two patient groups:

	<u>Low-Risk</u>	<u>High-Risk</u>
Screening and Assessment	X	X
Patient Education Series	X	X
Protocols (standard)	X	X
Health Maintenance Review	X	X
Care Coordination Services	X	X
Referral to IT for Specific Issues (Pharmacy, dietary, etc)	X	N/A
Care Planning/Comprehensive GEM		X
Interdisciplinary Team Review		X
Systematic Monitoring		X
Planned Visits		X
Group Visits		X
Registry (frail elderly)		X
Protocols (dementia, incontinence, falls, diabetes, CHF, osteoarthritis)		X
Caregiver Support		X
Emergency/Hospital Reports		X

The team will also develop an interdisciplinary approach to patient education using individual and group approaches. Some group sessions will include a visit with the primary care provider. Patients will have access to an on site health education library shared by the other practices in the Barger Medical Building. There they will find both printed and internet access to health information. A “free” membership to Senior Class offering health related classes and programs on site will be offered to all participants. All SHWC patients receive the “Healthwise for Life” patient education handbook upon enrollment in the SHWC practice. Evidence-based methods of patient education will be applied, particularly methods shown to be effective in motivating behavior changes. Patients will be given standardized handbooks that will include their individualized care plan, self-management information, key health system resources information, tools to help track health status and health provider communication tools.

The team will be trained to use electronic medical record tools for interdisciplinary documentation and monitoring. Software application tools will also be used for visit planning, i.e., knowing when patients should be seen and what issues need to be addressed. A registry of patients known to be frail and at “high risk” (known as the Senior GEM registry) will be developed in order to assist team members in providing planned, proactive care. An electronic case management tool (called Senior Findings; see Appendix 5) has been developed as part of the patients’ electronic record. The tool documents geriatric assessment domains that have been addressed and is available in the electronic medical

record in both the outpatient and inpatient record. This tool may also be used to perform population-based clinical management and monitoring for clinical quality improvement.

In addition to the process changes that will occur for the intervention group, there are specific interventions that will be made in the clinical care of the chronically ill patient. We have divided these interventions into three general categories: 1) self-management interventions; 2) planned, proactive care interventions; and 3) geriatric-specific clinical interventions.

Self-Management – The care plan will be shared with the patient and caregiver. The patient's personal health goals will be incorporated into the care plan. A personalized patient "guidebook" will be developed to keep relevant personal health information, including medication lists, problem lists, lab work, and disease-specific management recommendations. Patients will also be referred to existing community health information classes and resources, such as Senior Class, OASIS, Alzheimer's Association, and Peer Counseling for Seniors. "Group visits" will be provided to low and moderate risk individuals. Patients and caregivers will also have access to an online practice website which will contain geriatric-specific information and e-mail.

Planned, Proactive Care – "High risk" intervention group patients will have an established routine schedule of appointments recommended by the interdisciplinary team and agreed upon by the patient and caregiver. A process will be created to monitor and follow-up on non-compliance with the appointment routine. Through the care planning process, identified patient healthcare issues that require further assessment/intervention will be organized prior to the office visit. Care plans will be reviewed biannually. Timely access to care needs for this population will be facilitated by establishing a telephone "hotline" directly to the practice RN. Finally, an electronic monitoring system for knowing when the patient accesses the ER or is admitted to the hospital will be established.

Geriatric Clinical Interventions – Protocols for geriatric depression, dementia, urinary incontinence, falls/gait disturbance, heart failure, diabetes, and immunizations have been established, and standardized tools for assessment and patient health information for geriatric syndromes are available in each exam room. Nursing protocols, including standing physician orders, will be established for immunizations and other agreed upon team functions. Specialty consultations will be provided at the practice site using geriatricians, geriatric psychiatrists, dietitians, physical therapists and pharmacists. Care coordination follow-up and monitoring will be provided by practice site-based RN and/or SW case managers. A chaplain will be available to team members and patients/caregivers to facilitate advanced directive and spiritual support.

A diabetes registry will be established and monitored by the SHWC Geriatric Nurse Practitioner. The GNP's responsibility will be to ensure the integrity of the registry and organize planned care for individual patients based on established protocols for this population. Other team members such as dietary and social work will be involved as coordinated by the GNP. Pharmacy consultation will be requested on all patients taking five or more prescribed medications. The pharmacists' role will be to evaluate appropriateness of medications, review for drug interactions, evaluate compliance, offer generic equivalent medication choices, facilitate indigent drug payment programs, and monitor drug efficacy in collaboration with the provider. All patients on anticoagulation will be encouraged to use our on-site Anticoagulation Clinic for monthly monitoring by the Clinical Nurse Specialist. Mental health services support will be available through our MSW Care Coordinator, on site Senior Peer Counseling for both individuals and groups, Home Health Psychiatric Nurse, and a Geriatric Psychiatrist who will support the team.

## **Description of Evaluation**

**Overview** -This project will test the impact of an interdisciplinary team model of care employed at the Senior Health & Wellness Center to both a physician-care manager model and a traditional physician practice model for geriatric care.

**Hypotheses** - We expect that the interventions will significantly improve patients' clinical and functional outcomes and their satisfaction with care, while reducing their use of acute services (e.g., emergency and acute hospitalizations). Finally, we expect that the interventions will be cost-effective in the long run relative to usual care. By this, we mean that the rate of decline for elders in the SHWC will be slower than in other care modalities. Each hypothesis is outlined below.

**Primary Study Question** - Does the interdisciplinary team model of a specialized senior primary care center (Barger Senior Health & Wellness Center) improve outcomes for older adults in an integrated health care system?

### **Secondary Study Questions**

1. Does the close proximity of the interdisciplinary senior primary care center to traditional internal medicine and family practice clinics improve practitioner knowledge and geriatric practice?
2. What difference does it make when the interdisciplinary team involves consumers in the care plan and self-management strategies?
3. Does redesigned office workflow processes and redefined team roles in the Senior Health & Wellness Center improve the outcomes of wait times, open access scheduling, and increase capacity to manage senior patients?

**Conceptual Framework** - The Andersen-Newman model of care provides the conceptual framework for the analytic portion of this study (see Appendix 6). The SHWC model impacts two areas of the model: Enabling and Service Utilization. Through better care management and the use of geriatric expertise, the patterns of service utilization will shift to focus more on proactive, preventive care and less on costly acute care.

We also expect that the enabling area is impacted as social services are used more often and/or appropriately, caregiver burden will be reduced, etc. This model should also increase the self-efficacy of patients. By impacting these two areas, we expect that the functional outcomes will improve and quality of life will be improved. We believe there is a dose/response nature to this impact. The more "exposure" one has to the model, the greater impact it will have.

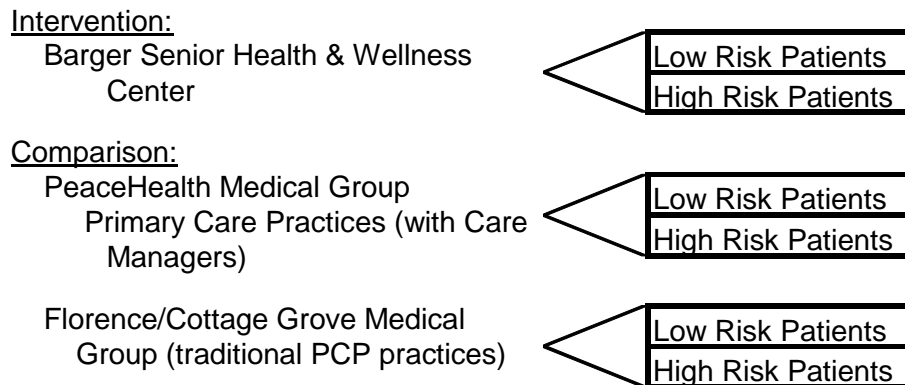
**Study Design** - A quasi-experimental, intention to treat design will be used. The "gold standard" case/control design cannot be used because patients must have freedom to select their primary care physician and to change physicians at any time.

**Patient Population** - Patient screening criteria will include: 1) 66+ years at baseline and 2) Medicare FFS as payer. Because one full year of pre-baseline service use data is needed to control for case-mix differences among populations prior to enrollment in the study, only patients who are 66 years of age or older will be eligible. The second criteria is that each participant in the study have Medicare FFS coverage. This will ensure that all of the service utilization data are available for analysis.

Although PeaceHealth will have the vast majority of service utilization data from internal data sources, nursing home data are not available. It is also possible that additional services were delivered outside of the PeaceHealth system. The only way to capture these costs is via the Medicare data.

**Study Groups** - There are a total of six study groups. There are three different models of care: Senior Health & Wellness Center, Physician-Care Manager Model, and traditional Physician Practice. Within each of these practice types, the patients will be sorted into two groups “Low Risk” and “High Risk” as determined by the HART screen. This yields a total of six study groups with a goal of obtaining enrollment of 250 patients in each cell (see Table 1).

**Table 1**



**Health Assessment and Risk Tool (HART)** - This tool was developed by Providence Health System Center for Outcomes Research & Education (CORE), and tested in collaboration with the PeaceHealth Center for Senior Health, and used by Providence Medicare Choice Healthplan (see Appendix 4). This screen will identify study and control group participants ages 66 and over, and categorize them as either “low” or “high” risk patients on the HART scale.

Utilizing a Health Risk Assessment (HRA) tool<sup>9</sup> like the HART survey, the selected study group patients will be clinically assessed to determine their specific health-related needs. The HART is a valid proactive risk identification tool that is a strong identifier for hospitalization, nursing home placement, high cost of care, and death. In a recent validation evaluation of a Medicare managed care plan population (n=3953), people identified as high risk on the HART had:

- Three times as many hospital admissions per 1000 (469/1000 compared to 154/1000 for other respondents),
- Over three times as many nursing home placements (93/1000 compared to 19/1000),
- Five times the rate of death (10% compared to 2%),
- Health care costs of 2.6 times the other respondents (average of \$11,429 compared to an average of \$4,365 for other respondents).

Additionally, high risk respondents were more likely to have functional limitations, which could lead to one or more of the adverse outcomes noted above.<sup>10</sup>

**Recruitment of Study Participants.** The intervention study group will be recruited from the Barger Senior Health & Wellness Center practice. All patients enrolled in this practice are required to complete the HART screen. Patients who receive care at the SHWC will receive a letter from the practice requesting their participation. Other patients may be recruited at the time of an office appointment. Patients who agree to participate will be stratified into “low” and “high” risk study groups based on the HART screen risk score.

There will then be a random selection of patients who agree to participate for enrollment in the study group. It is anticipated that the Barger SHWC will have a total senior population of 1200 at the start of the study. We believe that a conservative estimate of 50% of that population will agree to participate therefore leaving 600 patients eligible for enrollment in the study. At the present time 50% of the patients in this practice have screened “high risk”, therefore we would expect 300 seniors would be available for that cohort.

Comparison group participants will be recruited from PeaceHealth Medical Group-Eugene, Florence Health Associates Medical Group, and Cottage Grove South Lane Medical Group Internal Medicine and Family Practice clinics. Initially, the primary care clinics will be educated regarding the study and the need to recruit senior patients from their practices. Providers who agree to participate will be asked to send a letter encouraging participation that will accompany a mailed HART screen sent to all known 66+ year old seniors in their practice. Accompanying the HART screen will be a request for the patient to participate that the patient returns with the completed HART screen. Only those patients who return the HART screen and acknowledge their interest in participating in the study will be followed up by telephone to confirm their eligibility. Those who agree to participate will be randomly selected to enroll in the study comparison group.

Before the study begins, we will evaluate the potential differences between those who choose to participate and those who decline. Once enrolled in the comparison study group patients will be stratified into the “low” and “high” risk cohorts and telephone study survey data will be obtained. In the event that telephone interviews are not obtainable, all efforts will be made to obtain survey data in a face-to-face interview. Potential sample size calculations are based on the following rationale. The PeaceHealth Medical Group Physicians-Eugene (Physician-Care Manager Model) eligible for this study (19 physicians) provide care for approximately 10,240 seniors. Based on previous experience with the HART screen in our primary care practices, we have found that 60% return a mailed survey, and that of those approximately 20% are screened as “high risk.” This would provide us with a total sample of 6144 of which 1228 are “high risk.” We believe that a conservative estimate of 50% of those individuals would agree to participation in the study (total=3072; high risk=614).

For the Florence Health Associates Medical Group (Traditional Physician Model) practices eligible for this study (11 physicians), we expect a total population of 4700 seniors that they provide care for. We would expect 2820 patients to return the HART screen and that 1410 would agree to participate in the study (282 “high risk”). The Cottage Grove South Lane Medical Group (Traditional Physician Model) is of similar size to the Florence group (10 practices) and would therefore expect a similar population of seniors. Medicare Part B participation in the Florence and Cottage Grove practices are approximately 85%. Medicare Part B participation in the PHMG and SHWC is expected to be 70%.

**Data Sources and Data Collection Plan** - To address our specific aims, we will make use of data from five main sources: 1) patient-level demographic and clinical data derived from the PeaceHealth Community Health Record (electronic) and Enterprise View (EV) database; 2) a patient survey conducted at baseline, 6 months, 18 months, and 30 months; 3) Medicare service utilization data using the Medicare Part A, Part B, and Part A of Part B institutional databases; 5) PeaceHealth cost data. Key outcomes of interest are summarized in Table 2.

Standard demographic data will be gathered to test for differences among the study groups and to control for case-mix differences. The Short Portable Mental Status Questionnaire (SPMSQ) will also be collected to provide information on cognitive status that may be needed to control for case-mix differences.

This study will enjoy the benefit of a sophisticated information management system that contains patient medical records from the five PeaceHealth regions in Oregon, Washington, and Alaska. The Community Health Record (CHR) is a single community-wide longitudinal electronic medical record available (with appropriate security) to all providers. This record has been built on a single platform, and provides for input of patient data and access to that information from across the community—hospital, clinic, physician's offices, etc.

Population-based data is available through the Enterprise View (EV) database, which blinds patient and provider identification. EV is a clinical analytical data warehouse that allows providers the ability to study population based healthcare outcomes. Its features include: 1) a SQL database that will capture data from a wide variety of sources; 2) ability to integrate clinical and cost data in a logical fashion; 3) a data model that effectively supports end-users; 4) minimum of five views (patient, provider, visit/encounter, episode, and diagnoses).

**Patient Survey -** A patient survey will be conducted by phone or in person by a trained interviewer at baseline, 6 months, 18 months, and 30 months. This will yield a total of 4 surveys. Interviewers will be blinded to the study. We will use a mixture of readily available, validated tools to gather information and specialized tools built at PeaceHealth. The following are proposed patient survey measures (see Appendix 7):

SOS-10 (General Mental Health)<sup>11</sup>

Geriatric Depression Scale, short form (study subset that screen positive for depression)

Health Related Quality of Life

Health Locus of Control

Self-efficacy measure

PeaceHealth Self-Report Physical Function Inventory

Caregiver Burden Inventory (study subset of caregivers)<sup>12</sup>

SPMSQ – case-mix only

Patient Satisfaction

Caregiver Satisfaction

Table 2

Outcome	Measure	Data Source
<b>Functional Outcomes</b>		
ADL/IADLs	PeaceHealth Functional Status Measure - OARS (Oakley)	HART screen baseline and follow-up surveys
Depression	Geriatric Depression Scale, short form	Baseline and Follow-up Surveys
Caregiver Burden	Caregiver Burden Inventory	Baseline and Follow-up Surveys
Falls	Fear of Falling. "Do you limit going outside due to fear of falling?" Yes/Sometimes/No	Baseline and Follow-up Surveys Hart Screen
General Mental Health	SOS -10	Baseline and Follow-up Surveys
Physical Function	PeaceHealth self-report PF	Baseline and Follow-up Surveys
Risk Score	HART Screen	Baseline and Follow-up Surveys
<b>Satisfaction Outcomes</b>		
Patient Satisfaction	PeaceHealth Patient Satisfaction Survey	Baseline and Follow-up Surveys
Caregiver Satisfaction	TBD	Surveys
Provider Satisfaction (MD, NP)	TBD	Surveys
Staff (Nursing RN, LPN, MOA, NT, SW, Pharmacy, Rehab (Medical Office Assistant), Reception,	TBD	Surveys
<b>Clinical Outcomes</b>		
Urinary incontinence		HART screen
HgA1C		LastWord (LW)lab database
Number of Medications		HART screen
Pain (0-10)		HART screen
Mortality		LW database
Pneumovax		LW database
Flu vaccine		LW database
% Dying in SNF		National Death Index
% Dying in Home		
% Dying in Hospital		
<b>Service Utilization</b>		
Inpatient Hospitalization Days	Total number of hospital days	Medicare OMPRO
Inpatient Hospitalization Costs		Medicare OMPRO
Emergency Department Visits	Total number of ED visits	Community Health Record: & Medicare OMPRO
Emergency Dept. Costs		
Clinic Physician/NP/Urgent Visits		Medicare OMPRO
Lab/Xray/Procedure Costs		Medicare OMPRO
Outpatient Clinic Total Costs		Medicare OMPRO
Home Health Care Episodes		Delta & Medicare OMPRO
Home Health costs		OMPRO
Skilled Nursing Facility Days		Medicare OMPRO
Skilled Nursing Facility Cost		Medicare OMPRO
Total Cost of Care		Medicare OMPRO

**Data Analysis Plan** - The analysis will begin by describing both the sample of physicians and the sample of patients; summary statistics appropriate to the distributional characteristics of the variables of interest will be used. In addition to general descriptive information, physicians and patients in the three main comparison groups – physician practice model, physician-care manager model, and SHWC model will be compared with respect to all outcomes of interest using a General Linear Model (GLM) using ANOVA design with covariates as appropriate. Parametric and non-parametric statistical tests will be used for univariate comparisons.

Prior to the main analysis, univariate statistics among the various study groups will be examined, in addition to the relationships among the main covariates. These exploratory and univariate analyses will assist in the development of appropriate multivariate regression models that will be used to estimate the impact of the SHWC model of care on the outcomes and costs of care. A frequent concern of studies with longitudinal follow-up is the potential biasing effects of sample attrition. Two conditions are necessary for our impact estimates to be biased: (1) attrition is correlated with the outcome measure being examined and (2) the pattern of attrition differs by treatment and control groups. We do not believe that loss to follow-up will be correlated with the patient's study group. At the start of the analysis, any systematic differences among study group attrition will be examined. If differences are found, statistical methods (regression models, weighting, bootstrapping, etc.) will be used as needed to statistically control for these differences.

In view of such concerns, our general approach to the analysis will involve several strategies. First, patients lost to follow-up will be characterized and compared with those for whom complete data were obtained, using the baseline data from the initial evaluation and other electronic medical record and service utilization data available for all enrollees. Second, if needed, statistical models will be used to control for these differences (i.e., standard single-stage models, two-stage models, and/or standard regressions estimated from matched sub-samples of patients).

Rasch measurement methodology<sup>13</sup> will be used to analyze survey data in this study. Rasch measurement is the application of a mathematical model to raw score observations that, when the data fit the stringent requirements of the model, results in the transformation of nominal or ordinal data into time interval measurement. Rasch measurement is particularly important in the analysis of change for two reasons: 1) the mathematical sophistication of the measurement model provides for the ability to discriminate between apparent change and real change by controlling for measurement "noise" typically present in survey-type data; 2) raw scores such as those used in traditional Likert scale measurement methods are curvilinear, and the effect of this non-linearity is that beyond the mid-range of scores, change is increasingly difficult to detect. Therefore, when assessing change in a patient population such as the frail elderly it is extremely important that the measurement have the sensitivity and precision to be able to detect the magnitude of change across the full range of the scores. In fact, on measures such as physical functional ability, a significant proportion of the patients will enter the study in the bottom third of the functional ability score range and being able to detect how much change occurs for these patients is essential. Without true interval measurement in the evaluation of the Senior Health Center Model when applied to the frail elderly, one significantly decreases the probability of observing an effect (or increases the probability of concluding no effect).

**Sample Size Estimation and Statistical Power** - The goal is to detect small-to-moderate clinically and procedurally meaningful differences at 80 percent power when using two-tailed tests at the 0.05 significance level. Based on the experience of investigators in building models for similar analyses, we believe that the models needed for this evaluation will require approximately 25 covariates to control for case-mix differences and allow for appropriate comparisons. To ensure that the models have the appropriate power to detect differences and for a large enough sample to avoid a Type I error, a total of 250 patients will be required in each cell for the intervention and comparison groups.

**Secondary Study Question Evaluation** - We propose to measure the process outcomes of our secondary questions in the following manner:

1. Does the close proximity of the interdisciplinary senior primary care center to traditional internal medicine and family practice clinics improve practitioner knowledge and geriatric practice?

We plan to measure provider satisfaction and knowledge of geriatric care principles among those PHMG providers in the same medical building as the SHWC as well as those across town and in the surrounding communities of Florence and Cottage Grove. We also plan to assess self-reported physician practice of evidence-based geriatric protocols, i.e., "How often do you recommend Tai Chi to seniors with balance problems?" We hypothesize that physicians having more direct contact with the SHWC will show better knowledge of geriatric principles of care, and are more likely to comply with accepted geriatric syndrome protocols.

2. What difference does it make when the interdisciplinary team involves consumers in the care plan and self-management strategies?

This question will be addressed through the patient survey using patient satisfaction, self-efficacy, and health locus of control survey data. We hypothesize that patients and caregivers that are more involved in the care planning process and self-management are more satisfied, have improved self-efficacy, and a more internal orientation to locus of control.

3. Does redesigned office workflow processes and redefined team roles in the SHWC improve wait times, open access scheduling, increase capacity to manage senior patients?

We will use time observations within the clinic workflow to monitor wait times for patients. Patient satisfaction questions are currently being used to monitor the patients perception of access to care and will be followed in this study. We will measure panel size for the providers and follow their capacity to manage high risk, frail patients. A descriptive evaluation of these process measures will be written in order to assess need for further study.

**Quality Control Procedures** - Once participants are assigned to either an intervention or comparison group, all efforts will be made to obtain follow-up data at the designated intervals. Non-responders will initially be contacted by mail, then phone. Incomplete data will be obtained in a similar way. The project team will meet on a regular basis to review procedures/processes and address any feedback from participants or providers that may be contradictory to the intent of the study. Procedures will be in place to ensure confidentiality of data, both paper and electronic, obtained for all participants. HCFA data on cost and utilization for Medicare Part B patients will be blinded and examined in aggregate in accordance with confidentiality policies. The PHOR Internal Review Board (IRB) will review this study. This well-established IRB is made up of community physicians and administrators from Sacred Heart Medical Center and the PHMG clinics. The hospital's Chief of Staff serves as the IRB chair. Their process is to review the study protocols, informed consent forms, and all promotional/educational materials prior to the presentation by the primary investigators and a physician member of the IRB. A majority vote of the quorum is needed to approve the project. Any changes in study protocols will need IRB approval.

**Summary and Final Considerations** - In summary, this study is designed to answer one primary and three secondary questions regarding an interdisciplinary team model of care for seniors. The results of this study will show the impact of an interdisciplinary care team on the health of seniors. Some of the strengths of the study include: 1) both high risk and low risk patients are included, allowing the effect to be quantified for all types of patients; 2) the experience and multidisciplinary background of the practitioners at the Senior Health & Wellness Center; 3) the analytic experience of the investigators; 4) a relatively large sample size; 5) the use of extensive data sources from both the electronic medical record and primary data collection to assess clinical outcomes, satisfaction, and health related quality of life measures.

This study does have several limitations and challenges. First, it is not possible to randomly assign patients to physicians for the study. During the analysis, differences among the study groups and the prior year of service utilization will be compared to determine if there are any differences among the groups due to possible self-selection of patients. If differences are found among the groups, case-mix adjusted models will be used to statistically control for any differences. Another challenge will be that patients may choose to change providers during the course of the study. Because we are hypothesizing a dose-response relationship between exposure to the intervention and outcomes, variables will be created that indicate the amount of exposure to the intervention. By using this variable in the model, it will be possible to determine the impact of the model even among patients who changed primary care physicians during the course of the study. Although these issues present challenges, the breadth of information that will be gathered on each patient should allow for these issues to be controlled for in the analysis, thereby allowing the effect of the SHWC model to be quantified appropriately.

## Plan for Internal Sustainability/Replication

PHOR plans to establish a “Geriatric Center of Excellence” by developing several distinct Senior Health & Wellness Centers (SHWC) that will be integrated with existing PHMG clinics (see SHWC Business Plan in Appendix 3). The Centers will provide a comprehensive, interdisciplinary model of care, specifically designed for seniors, based on “Voice of the Customer” input. The initial Center opened in February 2000 at the PeaceHealth Barger Medical Building. The second Center will be built within a new PHMG Clinic located in Northeast Eugene on Crescent Avenue.

**Business Rationale** - The integrated care model and services provided at the SHWCs will utilize an interdisciplinary team approach to improve the quality of care and the quality of life for seniors in the community. It is expected that PHOR will be positioned to be the preferred provider of health care among seniors throughout the region. The Senior Health & Wellness Centers at Barger and Crescent will serve a population that currently has limited access to care, particularly geriatric care. The care management and coordination process is expected to reduce waste, redundancy and costs in delivering care to seniors. The SHWC’s integrated care model and care management is expected to position PHOR to better deal with the drastic reductions in Medicare funding through the year 2002 and beyond. The SHWCs will increase the number of individuals choosing PHOR physicians for their care, hence these seniors will most likely use other PHOR services.

**Financial Implications** - The SHWC financial projections were prepared utilizing the APC reimbursement for five pro forma years. APC reimbursement is only available if the Senior Health & Wellness Centers can be established as provider-based entities under Sacred Heart Medical Center’s Medicare Provider number. Free-standing clinic reimbursement will occur if hospital provider-based entity status cannot be achieved. A five year summary of financial projections based on APC reimbursement projections is presented in the business plan (see Appendix 3) for the Crescent Senior Health & Wellness Center:

**Capital Investment** - The capital investment required to build and equip the proposed 10,435 square foot Crescent SHWC totals \$122/square foot, or about \$1.3 million (see Appendix 3 for detailed accounting). No capital expenditures are required for land purchases as the Crescent SHWC is targeted for an area where PHOR already owns real estate. Also, no interest expense has been included since it is assumed that the funds to finance the SHWC Network will be come from PHOR internal cash reserves through the Sacred Heart Medical Center Foundation.

**Business Plan Recommendations** - A second Senior Health & Wellness Center to be included in the PeaceHealth Medical Group is recommended, and initial planning for construction at the Crescent Avenue property are under development. The detailed planning and architectural design for the Crescent Clinic will begin in the fall/winter of 2000, with plans to open the clinic in 2004. The clinic will include family practice, internal medicine, pediatrics, laboratory and imaging services, as well as the Senior Health & Wellness Center. The Crescent SHWC will be new construction therefore requiring significant start-up capital and depreciation costs. Other organizations or regions within PeaceHealth could consider remodeling current facility space or leasing space and building to achieve the desired environment for a Senior Health & Wellness Center that could reduce capital costs. The annual operating expenses including staff salaries and all other operating expenses would be applicable to other organizations regardless of the facility costs. It is recommended that the Crescent SHWC be operated as a provider based entity of Sacred Heart Medical Center. The Health Care Financing Administration (HCFA) provider based entity criteria for approval is global for all organizations within the United States but can differ by state depending upon state hospital licensing requirements.

We have reviewed the criteria and believe HCFA would approve the Crescent Senior Health & Wellness Center as a provider based entity. A Senior Health & Wellness Center located at our Peace Harbor Hospital in Florence, Oregon would also meet the criteria. Reimbursement for a provider

based entity is based on Ambulatory Patient Classifications and results in Medicare Part A and Part B reimbursement. The total reimbursement exceeds that for a freestanding facility. An organization planning the implementation of a Senior Health & Wellness Center would need to carefully review the HCFA criteria and model reimbursement appropriately.

Organizations considering operating a Senior Health & Wellness Center as a provider based entity can bill for a number of ancillary services. HCFA requires all ancillary services be ordered by the treating physician. Facility charges can be billed for Audiology, Nutritional Counseling and Education, Pharmacy and Ambulatory Infusion Services. In addition, both professional and facility charges can be submitted for services provided by a licensed clinical social worker. The Senior Health & Wellness Center also has the potential to generate significant incremental volume to Sacred Heart Medical Center both for inpatient and outpatient services. Included in these services are home health, laboratory and imaging services. PeaceHealth Medical Group physician specialists should also realize this incremental volume. Currently at the Barger Senior Health & Wellness Center, more than sixty percent of new patients are coming from physicians outside of PeaceHealth Medical Group.

An implementation manual detailing the tasks and activities required to successfully plan, build, start-up and operate a Senior Health & Wellness Center will be developed during the duration of this project. The implementation manual could be published and marketed jointly by PeaceHealth and the John A. Hartford Foundation to allow other organizations to replicate the business and clinical model. This implementation manual would also be used to determine the feasibility of implementing Senior Health & Wellness Centers in the other PeaceHealth regions including Cottage Grove and Florence, Oregon, Longview and Bellingham, Washington and Ketchikan, Alaska. Differences in senior demographics, community resources and medical practices, state regulations regarding hospital licensure, Senior HMO insurance options and penetration and the availability of geriatric expertise would need to be evaluated for these other regions prior to implementation.

**Regulatory Considerations** - On June 5, 1997, Congress adopted H. Con. Res. 84, the Budget Resolution for FY 1998 reflecting the prior agreement between congressional leaders and the President of the United States. Based on projections by the Congressional Budget Office, this budget plan would produce a balanced budget in FY 2002. While the budget resolution sets aggregate spending ceilings for various functional categories, the committees with legislative responsibility over federal revenues and spending retain the discretion to specify the actual program policies that are necessary to achieve the outcomes required by the resolution. The Balanced Budget Act also provided authority for the Health Care Financing Administration to implement a prospective payment system (PPS) under Medicare for hospital outpatient services, certain Part B services furnished to hospital inpatients who have no Part A coverage, and partial hospitalization services furnished by community mental health centers. All services paid under the new PPS are classified into groups called Ambulatory Payment Classifications or APCs. Services in each APC are similar clinically and in terms of the resources they require. A payment rate is established for each APC. The new PPS and APC payment method was effective August 1, 2000.

Changes to the Provider Based Entity Criteria to determine if off-campus facilities or related operations such as hospital-owned physician practices are entitled to Medicare Part A reimbursement are planned to go into effect October 10, 2000. All new operations on the hospital's campus which furnish services of a different type than the hospital, as well as any hospital departments or satellites that are not on the hospital's campus, will have to receive a formal determination from HCFA that they are provider based before they bill Medicare.

### **Project Budget**

Annual budgets are presented following the budget narrative. A consolidated budget presents total costs over the four-year budget period. In addition, four individual line item budgets are presented for

each year of the funding period. The following budget narrative describes each budget line item over the four-year project period. A workplan/timeline is also included in Appendix 8.

**Personnel** - The Project Team includes the Principal Investigator, Project Coordinator, Project Assistant, and Team Physician. Dr. Ron Stock, PI, will devote 20 percent of his time to the project each year of the project period. Lorelei Cesario, Project Coordinator, will dedicate 60 percent of her time to the project, and Dr. John Roberts, Geriatrician, will spend five percent of his time as the Team Physician (10 percent during year 1). In addition, a half-time Project Assistant will be hired and will maintain a half-time commitment over the four-year period. The four-year costs for the Project Staff totals \$389,496.

The core Interdisciplinary Team members include a Geriatric Nurse Practitioner, Medical Social Worker, Clinic Registered Nurse, Pharmacist, Dietician, Chaplain, Home Care Coordinator (liaison to skilled Home Health, Hospice and Home Infusion services), Physical Therapist, and a Patient Access Specialist (responsible for patient registration, scheduling, medical billing assistance and back office work processes). Each team member will require project time for team training activities as well as participation in program planning, development and testing of how the team can best work together. Each team member will participate in development of care coordination, care planning, patient education, self-management monitoring strategies, as well as contributing to the development of an Implementation Manual during year 4. The manual will be designed to assist other healthcare organizations interested in implementing the geriatric team model. It will outline organizational requirements and benefits, as well as the role and keys to success for each discipline. Total costs for team member involvement is \$243,666. Individual time devoted to the project are as follows:

	<b>Percent Time During</b>			
	<b><u>Year 1</u></b>	<b><u>Year 2</u></b>	<b><u>Year 3</u></b>	<b><u>Year 4</u></b>
GNP	10	5	5	5
MSW	20	15	10	5
Nurse	20	15	10	5
Pharmacist	20	15	10	5
Dietician	20	15	10	5
Chaplain	20	15	10	5
Home Care Coordinator	5	5	5	5
Physical Therapist	20	15	10	5
Patient Access Specialist	20	15	10	5

**Fringe** - Benefits for three members of the Project Team are calculated at 22.5% of base salaries, and total \$87,403 over the four year study period. PeaceHealth will continue to cover fringe benefit expenses for the interdisciplinary team.

**Staff Travel** - The nine interdisciplinary team members are projected to travel at least 100 miles each per year (900 miles) to attend training sessions at a cost of \$300/year. Two Project Staff members will attend at least two geriatric (possibly Hartford-sponsored) conferences each year at a cost of \$3,300 per year. Team members will have an opportunity to attend one national conference for their discipline to present the findings from the project. In addition, the PI would attend the annual meeting of the American Geriatrics Society. Staff travel costs over the four year budget period total \$36,000.

**Equipment** - In year 1, a touch screen computer will be purchased (\$3,884) to conduct real-time health risk screening during patients' visits with their physicians. For many seniors, the touch screen technology will be easier to manage than using pencil and paper. A scanner (\$500) will be necessary for entering into the database hard copy risk screening results collected via bulk mailings. Team members will share two hand held computer devices (\$1,400) to collect data during face-to-face patient interviews. A desktop computer and office software will be needed for the Project Assistant at a cost of \$3,100. The Assistant will also need a telephone device at a cost of \$400. Finally, a \$400

contingency fund for unanticipated purchases brings the total year 1 equipment costs to \$9,684. A \$1,000 contingency fund is included under equipment costs during years 2 and 3. No equipment costs are anticipated for year 4. The equipment costs over the four year budget period total \$11,684.

**Supplies** - Office supplies, computer supplies, and printing/copying supplies are estimated to cost \$2,500 during year 1, \$2,100 during year 2, and \$2,200 during years 3 and 4. Total project period costs for supplies will be \$9,000. Postage for bulk survey mailings is included under supplies. Year 1 postage will be much greater as we contact as many as 10,000 patients to solicit our study groups. Subsequent surveys during year 2, year 3 and year 4 will include approximately 1500 patients at a cost of \$600 per year.

**Training & Education** - Staff training includes five components: 1) Team building instruction 2) Training on how to best educate senior patients about self-care. This training will need to consider a variety of impairments that many seniors have that might present barriers to learning. 3) Senior sensitivity and customer service training. 4) Provider-patient communication training. And 5) Training to use software applications for care planning and patient monitoring. Training will decrease during the first 3 years of the project from \$4,000 year 1, to \$3,000 year 2 and \$2,000 year 3. There will be no training expenses in year 4, although some instruction in preparing the implementation manual will be provided (see writing consultant).

The team building instruction will utilize learning methods derived from the GITT program as well as training developed within PeaceHealth. The Team will also be exposed to a two day C.A.R.E. (Connect, Appreciate, Respond, & Empower) curriculum developed by the Bayer Institute. The C.A.R. E. model includes specific techniques that can guide all staff to communicate in ways that will enhance relationships with patients and encourage partnership with patients. Quarterly team building group sessions will also be held.

**Subcontracts** - Bids for data collection activities were requested prior to initiation of the project. Current estimates from Applied Research Northwest are based on the completion of annual surveys that include 1,500 telephone interviews at \$30 per interview for a total of \$45,000 per year. In addition, the study set up costs will include survey programming and data preparation, interviewer training and pretest, professional and supervisor oversight during interviews, and trainer preparation time totaling \$1,000 in year 1. The survey research contractor will also train interviewers who will meet with patients during physician visits and, at times, in the patient's home. Interviewer training will be \$1,500 per year. The estimated subcontract cost over the four years of the project will be 187,189.

**Consultants** - This study will require the following consulting agreements:

1. A Practice Management and Quality Improvement team to assist with clinic work flow issues at a cost of \$12,000 during year 1; and \$5,000 during years 2 and 3. We anticipate 1-2 Rapid Process Improvement (RPI) projects will be completed year 1 and 1 project addressing work flow in each of the 2 subsequent years. The RPI's will be followed by a period of monitoring and problem resolution.
2. OMPRO assistance will provide pertinent HCFA data at a cost of \$7100 year one to set up the necessary reports (see Methods section), and \$1,000 the following years. The total cost over the entire project period will be \$10,100
3. Providence CORE to provide appropriate risk screening and assist with revisions to the screening/assessment instruments at a cost of \$1,000 year 1 and \$500 during subsequent years, for a total cost of \$2,500
4. The PeaceHealth Corporate Health Improvement Division, Outcome Measures and Statistical Services (OMSS), will assist with research design and methodology and provide data analyst

services to identify cost and health outcomes. The OMSS will use internal cost data and clinical data retrieved from the PeaceHealth Community Health Record (CHR) and Enterprise View (EV). This research and evaluation activity is projected to cost \$87,167 during year 1, \$42,167 during year 2 and year 3, and \$97,167 during year 4, for a total project cost of \$268,668.

5. Technical writing assistance will be used for development of an Implementation Manual to provide a template for replication of the model in other settings at a cost of \$15,000 during year 4.

**Other Direct Costs - Patient/Caregiver Incentives** for increasing participation in self-management and other educational sessions will be tested for effectiveness. Only those that produce positive results will be maintained. This process is also expected to identify access barriers for the elderly in managing their own care effectively. Some of the incentives we will test include covering the cost of respite care, providing transportation, and serving healthy food at educational meetings. The incentives are projected to cost \$1,500/year over the four year project period.

Physician Incentives will be offered to engage non-SHWC physicians in the study, which will be needed to identify and track the control patient groups. Again, the incentives will be tested for effectiveness. Planned incentives include providing lunches for physicians and office staff and providing tokens of appreciation for their participation (such as t-shirts, cups, posters, etc.). The estimated cost for these physician incentives is \$1,000 during year 1, \$500 during year 2, \$500 during year 3, and \$1,000 during year 4. Costs over the entire four year period total \$3,000.

Patient Education Materials will include the provision of the Healthwise for Life textbook for each new patient who participates in the patient education program at a cost of \$5,100 during year 1, and \$1,500/year for the remaining three year period. Total project cost will be \$9,600.

Interviewers: We expect to use face-to-face interviews to collect data each year on a small percentage of patients who we cannot engage through the telephone or mail. We expect the hourly salary costs for these interviews will be \$1,500 per year.

Contingency - A total of \$25,000 is budgeted for each year throughout the four year project period for unanticipated expenses. The total project cost for contingency will be \$100,000.

**Indirect Costs** – Calculated at 10 percent of the total budget, excluding subcontract and consultants costs.

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## Curriculum Vita

Curriculum Vita are attached for the following members of the Project Team, Evaluation Team, and Project Consultants:

Principal Investigator	Ron Stock, MD, Geriatrician	PHOR Center for Senior Health
Project Director	Lorelei Cesario	PHOR Senior Health Development
Evaluation Director	Sarah Donelson	Outcome Measures & Statistical Services
Evaluation Specialist	Bill Mahoney, PhD	Outcome Measures & Statistical Services
Consultant	Ruth Medak, MD	OMPRO

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## **Letters of Support from Clinical and Administrative Decision-Makers**

Letters are attached from the following decision-makers:

John Hayward	CEO, PeaceHealth
Alan Yordy	CEO, PeaceHealth Oregon Region
Ron Curillo, MD	Director, PeaceHealth Medical Group
David Memel, MD	Healthcare Improvement Division. VP, Information Management
Martha MacRitchie, MD	PHOR, Regional Director, Center for Healthcare Improvement
Ruth Medak, MD	Oregon Medical Professional Review Org. (OMPRO)
Marla London	Providence, Center for Outcomes Research & Education