VA Telemedicine Consultation Falls & Movement Project

Background

Accidents are a leading cause of death among older persons and falls account for approximately half of accident-related deaths among this population. Total annual costs for acute care, associated with fall-related fractures, are estimated to exceed $10 billion. As a result, the ability to identify older persons at high risk for falling and intervening is of significant clinical, social, and economic importance. Primary areas of health care involved in this study would be neurology, geriatrics, and physical therapy, and the target population consists primarily of aging WWII, Korean War, and Vietnam veterans. Assessing the specific areas of gait and balance potentially encompasses the entire DOD population.

The Honolulu VAMROC and The Center for Aging (CFA) are responsible for the care of the aging population of veterans throughout the Pacific, including Hawaii, Guam, and American Samoa. On the islands of Maui, Kauai, and Hawaii, the VAMROC operates four Community-Based Outpatient Clinics (CBOCs). Primary care at these clinics is provided by Nurse Practitioners (NPs) with specialists traveling to these sites periodically to perform consultations. Approximately one half of the costs associated with off-island specialist visits are associated with patients who are referred for a variety of movement-related symptoms; e.g., gait and balance abnormalities, range-of-motion limitations, neurological disorders, and other symptoms resulting from falls.

This proposal would involve the development of standardized protocols for use by CBOC NPs to conduct and videotape balance and gait evaluations; to conduct structured interviews for the collection of patient history data and symptom description and transmit data to tertiary facilities for consultation via store-and-forward, web-based technology. If the pilot of this project is successful, the procedures could immediately be implemented for use in provision of DOD health care throughout the Pacific

Principal Investigator

- Dr. Carol Joseph, M.D., P.I. VA administration, Associate Chief of Staff
- Dr. G. Webster Ross, M.D., Coordinator, Research and Development

Hypothesis

It is proposed that the use of Tele-medical technologies, permitting Nurse Practitioners (NPs) to videotape and transmit standardized gait and balance protocols via web-based technologies, would increase VAMROC response time to remote patients, reducing the costs and inefficiency of specialists' travel to remote facilities.

Research Questions

A. Is it possible to convey adequate information via a combination of video imagery and standardized history and symptom descriptions to allow an interdisciplinary team to make accurate assessments and clinically relevant decisions concerning gait and balance-related problems?

B. Can non-specialists be trained to conduct and videotape standardized protocols at levels of quality and reliability sufficient to enable interdisciplinary teams to make accurate assessments?

C. Is web-based store-forward technology an appropriate medium for transmission of text and imagery from remote sites for storage and local accession via desktop computers?

D. Is telemedicine a cost-effective means of providing service to patients with gait and balance-related problems who reside in remote locations or long-term care facilities?

E. Is provision of telemedicine services to this population consistent with patient and provider satisfaction?

Project Description

The purpose of this project is to address the following critical areas:

A. Test Feasibility of Telemedicine for Gait and Balance Assessment Investigate unique uses for telemedicine technology, utilizing store-forward techniques for remote assessment of gait and balance symptomology.

B. Improve Quality of Service Increase the timeliness and quality of services provided to Community-Base Outpatient Clinics (CBOCs) without increasing specialist staffing levels and decreasing travel costs associated with providing these services.

C. Targeted Medical Conditions Gait and balance-related problems represent an increasing proportion of referrals for specialist services in neurology, gerontology, and physical therapy. Some of these referrals involve assessment and diagnosis of discrete neurological disorders, such as Parkinson's disease, peripheral neuropathy, strokes, and spinal stenosis.

D. Store-Forward vs. Real-Time Technology Several recent studies have been published concerning the use of interactive video conferencing (IVC) for assessment, diagnosis, and rehabilitation of Parkinson's Disease patients. These studies, all of which used synchronous (real-time) teleconferencing technology, concluded that valid motor assessment of Parkinson's Disease symptomatology could be made in an IVC setting. However, factors which make the use of synchronous IVC technology problematic, and would be addressed, are that IVC requires:

- The simultaneous presence of patient, on-site technician, remote-site technician, and remote-site specialists to conduct the assessment
- Complete and continuous operation of voice and image acquisition and transmission capability throughout the entire assessment

Deliverables and Timeline (All Dates Are Based On A Start Date Of 1May 99)

04 May 1999	Begin development of imagery acquisition protocols
15 June 1999	Interrater reliability for face-to-face assessment established
31 July 1999	Prototype imagery assessment protocol completed
30 Aug 1999	Interrater reliability for imagery assessment established
31 Sept 1999	Completion of image acquisition training for CBOC Nurse Practitioner
15 Oct 1999	Equivalency established for face-to-face and imagery assessment
31 Nov 1999	Successful test of local transmission and accession of web-based storage site
15 Dec 1999	Successful test of remote transmission and local accession of web-based storage site
15 Jan 2000	Manualization of image acquisition procedures and imagery assessment protocols completed
15 Feb 2000	Implement 2-month test of procedures at CBOC test site, including assessment of patient and provider satisfaction
15 Mar 2000	Completion of business-case analysis for VAMROC-wide implementation
Post Mar 2000	Handover of system to VAMROC for sustainment. Implementation of program at remaining CBOCs. Submission of proposal for VA-wide dissemination of program

Summary

If the feasibility of this proposal is demonstrated on a pilot basis, the procedures could immediately be implemented for use in provision of DOD health care throughout the Pacific. The success of the pilot program and procedures could directly impact DOD mission readiness by reducing the need for patient transport and the reduction of provider transport within DVA, thereby reducing wait time associated with receiving specialist consultation.