

Rural Promising Practice: Using Clinical Video Telehealth to Provide Comprehensive Care to Rural Veterans with Multiple Sclerosis (MS)

Executive Summary

Multiple Sclerosis (MS) is the most common disease of the central nervous system.^{1,2} This chronic, progressive disease damages sheaths of nerve cells in the brain and spinal cord. It robs patients of their ability to move and has no cure, though many medicines and courses of treatment exist to minimize symptoms. Most MS diagnoses occur around age 30 and are followed by intermittent relapses or “attacks.” Symptoms include numbness, speech impairments, blurred vision and muscle coordination problems. Fatigue is one of the most common symptoms and is present in more than 80 percent of individuals with MS.¹ Nearly half of people with MS require a cane, walker, scooter or wheelchair within 15 years of diagnosis.³ Losses in mobility and the ability to transfer (e.g., move from the bed to a chair, get in and out of a car) can lead to periods of inactivity that contribute to more rapid decline and progression toward wheelchair dependence. Additionally, MS patients may require other forms of rehabilitation and treatment related to vision, sensory, speech and bladder impairments. In 2010, the U.S. Department of Veterans Affairs found that Veterans with MS were the second-highest users of VA appointments. The needs of patients with MS are multi-disciplinary, and many clinics are often utilized, including rehabilitation, speech, urology, mental health, and social work.

MS patients, 80 percent of whom develop progressive disability, can benefit from continuous rehabilitation to restore independent living and maintain quality of life. Maintaining walking ability requires balance, coordination, and muscular strength, endurance, and power – all which can be improved through physical rehabilitation. Literature reviews provided evidence that exercise is both safe and effective at delaying disease progression.⁴ Reducing the frequency of attacks and providing rehabilitation therapy remain the most promising aspects of comprehensive MS care. Together they can prevent decline, maintain quality of life, and improve the ability to groom, walk, and move.

Who Can Use This Rural Promising Practice?

VA physical and occupational therapists who serve rural Veterans or Veterans with mobility limitations should consider implementing this telerehabilitation program. The program allows Veterans who have difficulty travelling or who face long geographic distances to receive primary and specialty care at facilities nearer to their homes, such as Community Based Outpatient Clinics (CBOC), or even from their own homes. This telehealth model helps MS patients in two ways that are relevant to various members of a Veteran’s care team. CBOC-to-hub Clinical Video Telehealth (CVT) can be useful for follow-up visits where presentation of the patient’s neurological and physical exam requires a telepartner to guide the examination. Meanwhile, home-to-hub CVT can be useful for the delivery of telerehabilitation for acute and chronic disorders requiring physical therapy of Veterans with limited access in rural and remote areas. In fact, the presence of a telerehabilitation device in the home allows for care coordination with social workers, mental health care providers, dietitians, primary care providers and specialty clinicians – all of whom may benefit from the implementation of this Rural Promising Practice.

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Need Addressed

MS affects 400,000 Americans, nearly 2 million people worldwide, and roughly 30,000-40,000 Veterans within the Veterans Health Administration (VHA) system.⁵ In all types of MS, inflammation around the brain and spinal cord causes plaque to form, which interferes with the patient's central nervous system. These interferences manifest as flare-ups in symptoms. Although there's a huge variation in how different patients experience MS, symptoms may include fatigue, loss of vision, pain, tingling, numbness, tremors, bladder problems, and difficulty speaking or concentrating. Attacks may last days or weeks. Many patients diagnosed with Relapsing-remitting MS eventually progress to Secondary-progressive MS, when there is a steady increase in symptoms and less clearly defined relapses between them.

“Telerehabilitation is making life better for Veterans with MS, especially those living in rural communities. Not only does it make it easier to access the specialists they need, but it removes the strain of travel that can worsen neurological symptoms.”

-Dr. Mitchell Wallin, Rural Promising Practice lead

Rural and remote areas have limited community physical therapy options. To confirm this, project leads examined geospatial data generated from the VA MS Centers of Excellence database. They used the data to map MS Veterans' approximate travel distance in relationship to existing MS treatment hub sites. This study found that more than 33 percent of MS Veterans lived in rural zip codes and traveled more than 90 minutes to receive care. These data were the basis for collaboration with the VA MS Centers of Excellence to explore providing neurology follow-up care to rural Veterans with MS.

Prior to the expansion of MS CVT, many patients across Veteran Integrated Service Networks (VISN) experienced long travel times. The following VISNs were selected to participate in implementation because of their large rural populations: VISN 2 (78 percent experienced travel times of 60 minutes or more); VISN 5 (14 percent); VISN 7 (64 percent); VISN 8 (50 percent); and VISN 20 (62 percent). These areas demonstrate the often-long travel times necessary for Veterans to see an MS care provider.⁵ In addition to the inconvenience of time spent traveling, VA clinicians noticed a marked increase in fatigue and other symptoms as a result of the strain of patients' travel. Increase training of MS care providers and increased adoption of telehealth technology will continue to reduce access limitations, thus improving quality of care and life for Veterans.

Implementation

In 2010, neurologists Dr. Paul Hoffman and Dr. David Burks established the VA MS Comprehensive Care Clinic at the Lake City VAMC in Lake City, Florida, one of the first recognized by the National Multiple Sclerosis Society (NMSS). They routinely saw Veterans with MS who traveled two hours or more to attend the MS clinic. In discussions with Veterans with MS and other neurologic disorders, it was apparent that the hot, humid environment and long travel times impacted Veterans' levels of fatigue, muscular strength, and presentation of other clinical symptoms. This caused problems in evaluating their true functional status and had the potential to cause errors in adjusting medication dosages. At that time, the only solution for Veterans who had to travel long distances was a VA Hoptel ("hospital hotel") stay the night before a follow-up visit.

In 2012, the rural Lake City VAMC launched a CVT-Neurology follow-up program for Veterans with MS. The program trained providers at 16 CBOCs to present patients to distant neurologists via CVT, and about coordinate MS care closer to home. During the first year, CBOC staff was trained to present the patient and be the physician's "hands" during the neurologic exam. A program assessment expert routinely monitored the implementation progression and provided feedback to field providers. Through the project, VA care providers gave comprehensive care services to more than 30 unique, rural Veterans with MS at the CBOC closest to their primary residence.

The anecdotal evidence of burdensome travel and the success of the project spurred a needs assessment. The assessment, which used VA inpatient and outpatient databases and GIS analytical methods, helped to determine the prevalence of the MS medical diagnosis among rural Veterans and the locations of VA facilities that provide primary and specialty care. Literature reports and project findings not only provided evidence about the CVT intervention's potential efficacy, but also helped to determine future evaluation measurements.

The need was established and a promising feasibility study suggested that the CBOC-to-hub program should be expanded in 2013 to include hub sites at Albany, New York; Baltimore, Maryland; Buffalo, New York; Denver, Colorado; Seattle, Washington; St. Louis, Missouri; and Washington, District of Columbia. The expansion was possible through interest generated during presentations at the Paralyzed Veterans of America (PVA) Summit, Consortium of Multiple Sclerosis Centers Conference and VA MS Centers of Excellence meetings.

Even with CBOC-to-hub programs in place, project leads found that journeys to local CBOCs were taxing for some rural Veterans with motor and mobility deficits. During 2014, the program expanded from facilitating telehealth follow-up appointments in local clinics. Now, Veterans were offered the opportunity to complete regular physical therapy sessions *at home*, without even going to the local clinic.

The staff physical therapist, Dr. Toni Chiara, conducted a physical exam and the Veteran was given the option to attend the Lake City VAMC MS clinic in person, or participate in a CVT telerehabilitation program at their own homes.

In 2014, more than 70 Veterans with MS and mobility deficits—52 percent of whom reside in rural zip codes—used home-based CVT for telerehabilitation. In total, Veterans completed nearly 400 home CVT visits, which saved Veterans and caregivers more than 46,000 travel miles.¹

At the conclusion of the CVT telerehabilitation project, the program expanded to five cities: Baltimore; Buffalo, New York; East Orange, New Jersey; Seattle; and Washington. In preparation to disseminate the promising tele-rehabilitation model beyond the Lake City VAMC, program organizers scheduled monthly coordination teleconferences with local program implementers. They discussed memoranda of understanding, briefed the facility telehealth coordinator and VISN rural consultants, trained providers on the technology, installed and tested the devices, completed demonstrations, collected data, and developed plans to enroll Veterans in the telehealth program.

Discussions with Human Resources staff were necessary to onboard new hires. Staffing required a part-time project coordinator and physical therapist with the participation of the staff neurologist and support staff. Additional roles and responsibilities were assigned:

- **Neurologist:** Evaluates patients, performs follow-up evaluations via CVT and refers Veterans with mobility issues to a physical therapist
- **Physical Therapist:** Evaluates Veteran mobility issues, creates a prescribed program, explains the delivery of telerehabilitation via CVT, obtains Veteran consent to participate in telerehabilitation, reminds the Veteran to come to the clinic for issues or to discontinue tele-rehabilitation, maintains treatment plan, performs functional/satisfaction assessments, and maintains training on telehealth procedures and equipment
- **Support Staff:** Establishes the CVT telerehabilitation clinic with support of service line and facility telehealth coordinator, schedules Veteran appointments, orders equipment, troubleshoots connectivity issues, collects telehealth equipment at therapy conclusion, sends equipment for refurbishment, and maintains local inventory listing

In 2015, 80 Veterans enrolled in the program, including Veterans participating in rehab from homes near Buffalo, Baltimore and Seattle. With support from VA's Office of Rural Health (ORH), more than 200 Veterans with MS used telehealth for a remote specialist CBOC visit or for home-based rehabilitation.

¹Veterans who participate in rehab remotely visit a VAMC at least once per year for a live evaluation and to check for eligibility for current and new medication. Veterans also made in-person visits to a CBOC or VAMC if their condition changed during the course of the telerehabilitation program.

Promising Results

This Rural Promising Practice implemented telerehabilitation strategies for MS, one of the leading causes of non-traumatic disability in Veterans. Extensive research literature and evidence shows the value of rehabilitation to improve physical functioning among patients with MS.⁴ The presentations about this program are well-received at national conferences and VA MS Centers of Excellence meetings, and led to the participation of four additional VA MS Centers of Excellence hub sites. Additionally, this model of care meets the following requirements for being selected as an ORH Rural Promising Practice:

Increased Access: The greatest impact of providing comprehensive care, including tele-rehabilitation services, to rural Veterans with a mobility limitation is improved access. Veterans in rural communities generally have little or no access to comprehensive MS care from VA or community providers. Veterans who used this pilot program typically lived greater than 2.5 hours of round-trip travel from the nearest source of MS care and rehabilitation services, which prevented them from regularly attending therapy sessions at a VAMC. Indeed, the project team learned that estimation of mileage using primary highways was an underestimation of the time and distance traveled by each Veteran with MS. Due to age and/or disability, Veterans with MS typically traveled on secondary roads to appointments, which perhaps doubled or tripled travel time and distance. Using telerehabilitation allows Veterans to attend an adequate amount of sessions to improve function (as prescribed by the evidence-based Frequency, Intensity, Type, and Time principle). Another advantage of the home telerehabilitation program is that it offers the patient and caregiver the ability to see other providers (e.g., social work, speech, nutrition) who are part of the MS comprehensive care team, without leaving their home.

In 2012, Veterans saved approximately 10,000 miles of travel, more than 200 miles on average *per session*, and had an additional 34 specialty care consults. Veterans saved an average of 2,124 miles and 39 hours of travel time during the CVT rehabilitation pilot intervention in 2013. No-show and missed appointments rates for home tele-rehabilitation sessions were less than 10 percent in 2014.

Evidence of Clinical Impact: Veterans in the MS tele-rehabilitation project made significant improvement in walking speed and walking distance, upper limb function and quality of life.⁶ A subset of MS Veterans (N=25) were tracked during a functional outcomes project and improved in: 2-minute walk distance by an average of 66 feet (21 percent improvement), walking speed of 10m/minute, quick dash assessment of upper limb function (31 percent), and the Veteran RAND Corporation 12-item quality of life measure (12 percent). CBOC-to-hub CVT can adequately assess changes in the course of a patient's MS.

Customer Satisfaction: Patient and provider satisfaction averaged more than 95 percent during the course of both the neurology follow-up and tele-rehabilitation projects. Growth of the program, including future addition of robust televideo devices with additional remote monitoring capabilities, are expected to further enhance satisfaction and clinical interpretation of televideo findings.

Return on Investment: Home CVT for neurology follow-ups and rehabilitation results in fewer missed appointments, while maintaining the quality of the provider-patient relationship. Fewer missed appointments have been shown to increase the benefit of rehabilitation for both short-term and long-term recovery and stabilization. Stabilizing

Office of Rural Health Rural Promising Practice Criteria

Increased Access: Measurable improvements in access to care and/or services. Examples include reduction in distance traveled to care, reduction in wait times, improved care coordination, and reduction in missed appointments.

Evidence of Clinical Impact: Positive results on outcomes of importance to rural Veterans based on evaluations conducted during the implementation of the program and at the end of the pilot period.

Customer Satisfaction: Increased patient, provider, partner, and/or caregiver satisfaction.

Return on Investment: Improvement in health system performance by 1) reducing the per capita costs of health care, and 2) improving or at least maintaining health outcomes, and/or 3) positively impact the health care delivery system.

Operational Feasibility: Implementation is feasible and known barriers and facilitators of success could easily be shared across implementation sites.

Strong Partnerships and/or Working Relationships: Inclusion of VA and/or non-VA partners to maximize the efficacy of the intervention.

the function of MS patients especially in the progressive phase can reduce the number of avoidable hospitalizations and ultimately reduced cost of care to VHA. The opportunity to engage Veterans and providers is ubiquitous throughout the VHA system, given the necessary equipment is already on station and is supported by the VA's video infrastructure. Veterans' choosing to be seen by CVT at a more proximate location reduces the reimbursement for travel mileage. By eliminating travel, it also allows rural Veterans who previously relied on community care providers to rely on VA.

Operational Feasibility: CVT for neurology follow-up care and telerehabilitation both successfully expanded to multiple medical centers in rural and urban areas, CBOCs who care for MS Veterans with limited mobility, and limited access to care sites. The CVT neurology follow-up project expanded to include eight VA MS Centers of Excellence hub sites, while the CVT rehabilitation project expanded to five VA MS Centers of Excellence hub sites. The equipment to conduct a CVT visit is available at every VA facility. Further collaboration with the MS Centers of Excellence to leverage CVT into all participating sites will provide an opportunity to assess increased operational feasibility.

Strong Partnerships and/or Working Relationships: Both CVT clinical projects (CBOC-to-hub and home-to-hub) were built through partnerships with the VA MS Centers of Excellence and their VAMC hub sites. The National Multiple Sclerosis Society (NMSS), the North Florida Chapter of NMSS, and the Paralyzed Veterans of America

(PVA) were supportive of the project. Dr. Hoffman, Dr. McCoy, and other ambassadors of the initiative presented to these groups at annual national and regional meetings on the progress of the program. PVA continues to advocate and raise awareness of the program among their members. On a micro scale, these two models of care (CBOC-to-hub and home-to-hub) also reinforced and built stronger working relationships between primary and specialty care providers across facilities to communicate more regularly via telehealth to best serve Veteran patients.

Adoption Considerations

The expansion of CVT to improve access has a few limitations, such as the willingness of providers to adopt a telehealth model, space at rural CBOCs to accommodate follow-up visits, and connectivity at remote sites. Additionally, in initial adoption, ordering equipment and hiring new staff tend to be the most significant challenges to implementation.

- The participation of a dedicated local clinical champion is necessary.
- In instances of CBOC-to-hub dissemination, the CBOC Director must be involved and complete necessary telehealth service agreements and memoranda of understanding.
- The facility telehealth coordinator must engage in the clinic rollout planning.
- Support staff is necessary for project management and local dissemination.
- Involved staff must be motivated to complete the necessary telehealth trainings.

Finally, patients in the CVT model of care must have some computer literacy and the mental and motor function to push computer buttons. As a result, some Veterans with severe disabilities (either related or unrelated to MS) can't use this model.

Available Resources

The project leads of this Rural Promising Practice created several resources to aid in its implementation at other sites of care. The resources, which are available upon request, are:

- Neurology Toolkit for Clinical Video Telehealth (CVT)
- Presentation to New Horizons in Rehabilitation Care, Atlanta, GA June 20-21, 2102: Tele-rehabilitation for Veterans with Multiple Sclerosis with a Follow-up Wellness Program
- Presentation to Southeast College of Sports Medicine, Jacksonville, FL, February 9-11, 2012: Exercise and Tele-rehabilitation in Rural Populations
- Presentation to American College of Sports Medicine, San Francisco, CA, May 1, 2013: Rural Veterans Tele-rehabilitation Initiative for Rural Veterans with Multiple Sclerosis
- Presentation to American Telemedicine Association, Austin, TX, May 4-8, 2013: Tele-rehabilitation for Rural Veterans with Multiple Sclerosis
- Presentation to USSOCOM Care Coalition, Tampa, FL December 10, 2013: Expanding Access to Rural Veterans
- Presentation to Multiple Sclerosis Centers of Excellence-Operations Meeting, Baltimore, MD April 6, 2014: Outcome Measures-MS CVT Rehabilitation 2014

Access these resources from <http://www.ruralhealth.va.gov/providers/promisingpractices>

Conclusion and Next Steps

Project leads are exploring opportunities for group rehabilitation sessions via CVT, in which the physical therapist directs multiple Veterans on his/her screen at once. This approach could increase reach and cost effectiveness of the program.

Ongoing discussions with the MS Centers of Excellence could allow for VA-wide expansion of telehealth for treating MS. These large scale demonstrations of CVT's utility in a neurodegenerative and progressive disease could also assist in the adoption of CVT into the practices of community providers to improve care coordination for rural Veterans with MS, and other complex and progressive neurological disorders including Parkinson's disease, ALS, spinal cord injury, and polytrauma. This technology can and has been adapted to orthopedic rehabilitation for back and shoulder injuries, and rehabilitation following knee and hip replacement. The next step is to engage stakeholders in other neurologic and neurodegenerative conditions, or those that require rehabilitation, and create collaborative partnerships with ORH and Physical Medicine and Rehabilitative Services, while expanding existing relationships with the VA MS Centers of Excellence.

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This paper is dedicated to the tireless work of Dr. Toni Chiara, who passed away in 2016.

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To Learn More

The U.S. Department of Veterans Affairs' (VA) Office of Rural Health (ORH) implements a targeted, solution-driven approach to increase access to care for the 3 million Veterans living in rural communities who rely on VA for health care. As VA's lead advocate for rural Veterans, ORH works to see that America's Veterans thrive in rural communities. To accomplish this, ORH leverages its resources to study, innovate and spread enterprise-wide initiatives through partnerships. To discuss implementing a Rural Promising Practice at your facility or to learn more, visit www.ruralhealth.va.gov or email rural.health.inquiry@va.gov.

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References

1. Multiple Sclerosis: Social and Economic Implications. <http://www.ncbi.nlm.nih.gov/pubmed/20687991>
2. Multiple Sclerosis. <http://www.ncbi.nlm.nih.gov/pubmed/11006371>
3. Gait and Walking Problems the Basic Facts: Multiple Sclerosis. <http://www.nationalmssociety.org/NationalMSSociety/media/MSNationalFiles/Brochures/Brochure-Gait-or-Walking-Problems.pdf>
4. Exercise in the Management of Persons with Multiple Sclerosis. <http://www.ncbi.nlm.nih.gov/pubmed/25941539>
5. Using Geographic Information System Tools to Improve Access to MS Specialty Care in Veterans Health Administration. <http://www.biomedcentral.com/1472-6963/13/498>
6. Clinical Management of Multiple Sclerosis through Home Telehealth Monitoring: Results of a Pilot Project. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3883035/>