

## VHA Telehealth and Movement Disorders

PADRECC/EES Movement Disorders Series

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## Objectives

- Overview of VHA Telehealth
  - Definitions, modalities, growth
- Program Setup
  - Clinical, business, technical aspects
- TeleNeurology
- Telehealth and Movement Disorders



## Definitions

- **Telehealth:** the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration
- **Telemedicine:** the use of medical information exchanged from one site to another via electronic information and telecommunications technologies to improve patients' health status, to diagnose and treat medical conditions, to support clinical care, and to provide health services or aid health care personnel at distant sites

## Goals of Telehealth

- **Improve access to care:**
  - Rural and remote areas
  - Specialty care
  - Reducing inconvenience of travel
- **Enhance quality of care:**
  - Reduces the delay in the usual consultation process
  - Incorporates patient self-management
- **Reduce costs:**
  - Lower travel costs
  - Decrease hospital admissions/readmissions
  - Lower overall costs by improving quality

## VHA Telehealth Modalities

- **Home Telehealth (HT)**
  - Monitor chronic diseases such as diabetes, congestive heart failure and COPD; promotes patient self-management and prevents or delays utilization of emergency care, hospitalization or long-term institutional care resources
- **Clinical Video Telehealth (CVT)**
  - the use of interactive videoconferencing and peripheral devices to provide care and support care delivery between clinics and hospitals, clinics-to-clinics, and hospitals to other hospitals

## VHA Telehealth Modalities

- **Store-and-Forward (SFT)**
  - Acquisition, storage, and forwarding of clinical images to experts for review (teleretinal imaging, teledermatology, teleradiology)
- **Secure Messaging (SM)**
  - Enables secure text-based communication with patients via mobile phones

### VHA Telehealth Modalities

- **Mobile Health (MH)**
  - Smart phone applications for self management of health conditions 24/7
- **Scan ECHO (SE)**
  - Connects subspecialists with groups of primary care or other physicians virtually
- **E-Consults (EC)**
  - Provides specialty consultation via patients' charts without direct contact by the Veteran with the specialist

### Phases of Telehealth Development

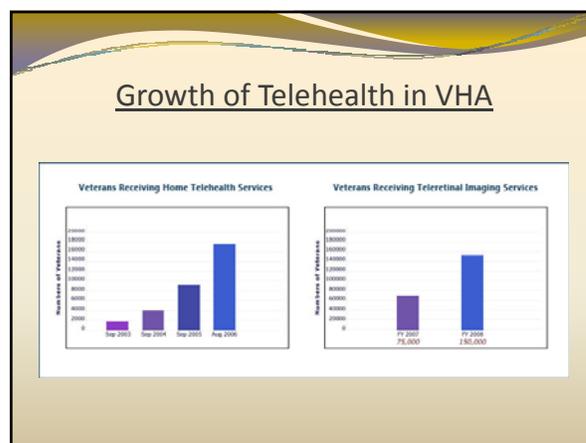
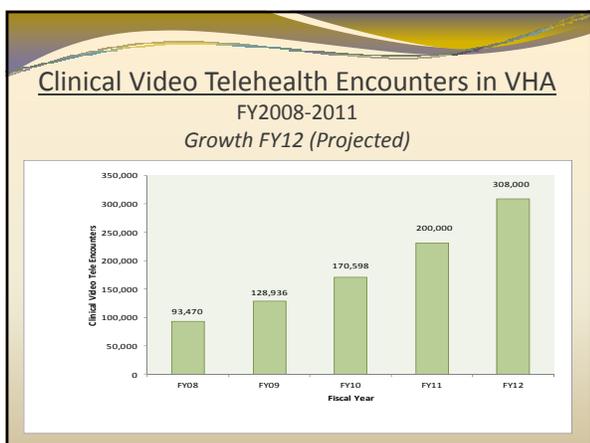
First phase	1966–1995 CVT, SFT
Second phase	1995-2003 CVT, SFT, HT
Third phase	2003-2010 CVT, SFT, HT, SM
Fourth phase	2011-2016 CVT, SFT, HT, SM, MH, SE, EC

### VHA Telehealth Transformation (T-21 Initiative)

- **FY2010:**
  - Interactive Voice Response, TeleMove
  - Tele-SCI
- **FY2011:**
  - Interactive Voice Response, TeleMove
  - Tele-SCI, Teleaudiology, Telepathology
  - CVT, SFT, HT (growth by 50%, 30% and 50% respectively)
  - Tele-ICU
  - Home CVT

### VHA Telehealth Transformation (T-21 Initiative)

- **FY2012:** (15% of all Veterans will be “touched” by telehealth)
  - Interactive Voice Response, TeleMove
  - Tele-SCI, Teleaudiology, CLCs, Telepathology
  - CVT, SFT, HT
  - Tele-ICU
  - Home CVT



### Telehealth Programs in VHA

- TeleMental health
- Polytrauma Telehealth Network
- TeleRehabilitation
- TeleDermatology
- TelePrimary care
- TeleWound
- TeleCardiology
- TelePodiatry
- TelePharmacy
- TeleAudiology
- TeleTBI/SCI
- TeleOEF/OIF
- TeleC&P
- Telepatient education and wellness
- TeleMOVE
- TeleENT
- TeleGI
- TelePulmonology
- TeleWoman's health
- TeleRenal
- TeleNutrition
- TeleID
- TeleEndocrinology
- TeleSurgery

### Steps to Start-up & Sustainability

- Identify a Development Team
  - Clinical Champion
  - Facility Telehealth Coordinator
  - VISN Telehealth Lead
  - Supporting Member of the Executive Leadership Team
  - IT Representative
  - Business Office Representative

### Steps to Start-up & Sustainability

- Complete a Clinical/Patient Needs Assessment
  - Clinical need not being met
  - Patients the program will serve – volume, scope, complexity
  - Clinical resources needed to meet the need with current clinical practices
- Identify telehealth solutions
- Develop business/implementation plan
- Identify methods to monitor and evaluate the program

### Program Setup

- Business aspects
  - Memorandum of Understanding
  - Telehealth Service Agreements
  - Scheduling process
  - Clinic set-up
  - Coding
  - Consult templates
  - Note titles and templates
  - Back-up plan
  - Emergency Procedures



### Program Setup

- Technology and Environment
  - Identify location, space and furniture needs
  - Determine bandwidth availability
  - Determine needed equipment and peripherals
- Clinical
  - Develop plan for education and training of staff
  - Establish and document core competencies of all involved staff
  - Complete Credentialing and Privileging
  - Establish process for informed consent
  - Develop patient orientation process

### Program Setup

- Evaluation and Maintenance
  - Workload
  - Travel costs saved
  - Quality of audio/video
  - Patient/provider satisfaction
  - Clinical Outcomes



### Telehealth Oversight Committee

- Facility Telehealth Coordinator and others involved with clinical, technology and business aspects of telehealth
- Consult with and provide support to the TeleNeurology program
- Build connections with the clinical staff to assure a high quality of connectivity, technical reliability and appropriate clinical applications
- Insure that service agreements and other documents are completed between the clinical services, VISN leadership, FTC, Biomedical Engineering and the Office of Information & Technology (OI&T)

### Needs Assessment/ Business Plan

In conducting the needs assessment the following factors should be evaluated to determine what types of neurologic care will be offered

- Patient population being served
- Neurology conditions best adapted to Telehealth
- Teleconsultation versus Telemedicine
- Integration into the VISN Infrastructure
  - Resources, space, technology, staffing, etc.

### Formalizing the Agreements: The MOU

Memorandum of Understanding (MOU): confirmation of agreed upon terms that set forth the basic guidelines under which the two facilities will work together. The content and purpose of MOU depends on the complexity of neurological services being considered, and includes guidance for the completion of credentialing and privileging.

### Formalizing the Agreements: The TSA

Telehealth Service Agreement (TSA): agreement between two or more clinical sites defining the specific services that binds all parties and should include details regarding specific support required from the patient site, i.e., space, equipment, telepresenter.

### Telehealth Clinical Protocol

- A process that identifies the variations in clinical practice (if any) when providing patient care with the use of telehealth technologies
- Assists in identifying variables between telehealth and traditional face-to-face healthcare.

### Telehealth Clinical Protocol

- |                                    |   |
|------------------------------------|---|
| • Visit and examination            | • Lab and imaging                             |
| • Space and environment            | • Clinical reminders, screenings, vital signs |
| • Telepresenter and technology     | • Medication reconciliation                   |
| • Discharge and admission criteria | • Emergency procedures                        |
| • Clinical history                 |   |

### Clinical Pathway: Scheduling

The scheduling of Tele-Neurology visits are more complicated than traditional in-person medical visits. Scheduling real-time CVT visits requires coordination of the following:

- the patient side
- the provider side
- rooms on both sides
- technology on both sides
- appropriate bandwidth
- telepresenter or telehealth clinical technician

### Teleconsultation vs. Telemedicine

- **Teleconsultation:** the provider does not assume responsibility for patient care, does not write any orders or prescriptions. The consult is aimed at providing guidance and advice to a referring clinician, and can be effectively used across VISNs
- **Telemedicine:** the provider is responsible for writing orders, prescriptions and other aspects of the treatment. The provider will need to go through credentialing and privileging at the patient site

### Appointment Types

- **Follow-up Care** – ongoing care of patients already seen by this Neurology Service
- **New Patient Consult** – first time evaluation by a neurologist for diagnostic and management services
- **Tele-triage or screening** – evaluate whether it is necessary for Veteran to travel to the provider site and/or to coordinate care for a face-to-face visit; can recommend imaging or laboratory studies to optimize the face-to-face visit
- **Sub-specialty Evaluation** – referral by a general neurologist to a Center of Excellence or other sub-specialist for further evaluation

### Exclusion Criteria

- Patient is not willing to be seen using the CVT modality
- Patient who is severely debilitated and requires stretcher transport may not be suitable candidate
- Emergencies

### Risk Management: Emergency Procedures

- Identification, evaluation and treatment of real and potential hazards. In the area of Clinic Based Telehealth, potential risks for the program are few, but there are areas of concern that may lead to a potential patient safety risk.
- These areas of concern include:
  - Medical emergency
  - Mental health emergency
  - Technical emergency



### Challenges

- Provider acceptance
  - Technology phobia
  - Overcoming the "hands-on approach"
- Credentialing and privileging
- Space/bandwidth availability
- Clinic set up
- Accurate and appropriate coding for workload
- Collateral duties – no dedicated staff

### Telehealth Programs in VHA

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TeleNeurology

### TeleNeurology

- TeleNeurology clinical applications includes the delivery of specialized neurological care for diseases such as:
  - Parkinson's disease
  - Epilepsy
  - Multiple sclerosis
  - Cerebrovascular disease
  - Traumatic brain injury
  - Spinal cord injury

### Clinical Pathway: Workload

- The Primary Stop Codes are identical to those used for face-to-face encounters:
  - 315-Neurology
  - **335-PADRECC**
  - 345-Epilepsy Center Of Excellence
  - 349- Sleep Medicine
  - 420-Pain Clinic
  - 406-Neurosurgery

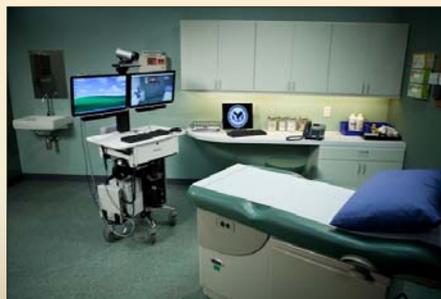
### Workload

- Secondary stop codes will be used according to the telehealth requirements. In situations where another stop code is currently used in the secondary position for workload credit purposes, work with your facility DSS staff to map the clinic to the appropriate location in the DSS system to accomplish this function.

Diagnostic Group	Local (VAMC to CBOC)	VISN – Clinician & Patient in different VAMC Systems	National/Center of Excellence Sub-specialists
Movement Disorders (Essential Tremor, Dystonia, Ataxia, Parkinson's Disease)	X	X	X
Cognitive and other neurodegenerative disorders (Alzheimers & other Dementias, ALS, TBI)	X	X	X
Multiple Sclerosis	X	X	X
General Neurology	X	X	
Headache	X	X	
Pain	X	X	

### Specific Requirements

- sufficient space to perform a complete neurological evaluation
- exam table
- must be able to observe a patient from head to toe, near and far
- pan/tilt/zoom camera with mobile cart
- cognitive & physical impairments (dementia, fall risk)
- telepresenter or telehealth clinical technician



### Telehealth Equipment

#### Patient side:

- Codec
- Digital camera
- Camera with pan, tilt, zoom
- Document camera
- Peripherals: digital stethoscope, otoscope



### Telehealth Equipment

#### Provider side:

- Camera, monitor and codec
- Digital stethoscope receiving unit



### Other items

- 128 hertz tuning fork
- Reflex hammer
- Disposable safety pins
- Cotton applicators
- Pen light or small flashlight
- Near vision testing card
- Smell test kit (optional)



- Almost all components of the neurological examination can be reliably assessed including:

- Mental status
- Coordination and gait
- Cranial nerves
- Strength
- Sensation
- Deep tendon reflexes
- Other specialized testing as required



### Telepresenter vs. TCT

- Telepresenter or Telehealth Clinical Technician (TCT) assists with the encounter, i.e., scheduling, vital signs, introduces patient, and....
- can also conduct part of the neurological exam
- TCTs do not interpret data, but assist with the objective examination process
- If a higher level skill set is required, or interpretation of an exam finding is necessary, then a more highly-trained individual such as an RN, NP or physician may serve as the Telepresenter

### TeleNeurological Exam

- Ensure the provider has an adequate view



### TeleNeurological Exam



### TeleNeurological Exam

Total Exam Camera 




### TeleNeurological Exam

- The Primary Care cart can be utilized for an entire head-to-toe neurological exam, including many specialized neurological tests



### TeleNeurological Exam

Additional neurological tests may be added (e.g. near-visual acuity shown below)



Utilize tools on the cart or traditional tools to complete the exam



### Quality Management Outcomes and Evaluation

- TeleNeurology programs incorporate continuous performance improvement based on the VA-TAMMCS model (Team, Aim, Map, Measure, Change, Sustain)
  - measurement and evaluation of the current state via process and outcomes assessment
  - evaluation planning should be performed in tandem with program development and deployment
  - perspectives of all key stakeholders including the VHA, staff at both VAMC and CBOC sites (e.g. health technicians, nurses, physicians), patient, caregiver
  - Process and outcome measurement can be divided into clinical, business, and technical domains

### Quality Management Outcomes and Evaluation

Domains	Process Measures	Outcome Measures
Clinical domain	<ul style="list-style-type: none"> <li>• # of unique patients with telehealth stop code vs. total for Neurology Service</li> <li>• # of telehealth encounters (Clinical Video, Store and Forward, and Care Coordination) vs. total for Neurology Service</li> </ul>	<ul style="list-style-type: none"> <li>• Patient satisfaction</li> <li>• Provider satisfaction</li> <li>• Clinical quality indicator achievement accomplished via telehealth visit (e.g. patient education)</li> </ul>
Business domain	<ul style="list-style-type: none"> <li>• # of no shows</li> <li>• # visits per FTE or per unit of time</li> </ul>	<ul style="list-style-type: none"> <li>• Travel cost avoided</li> <li>• Travel time avoided</li> <li>• Access to care</li> </ul>
Technical domain	<ul style="list-style-type: none"> <li>• % of dropped calls</li> </ul>	<ul style="list-style-type: none"> <li>• % visits completed successfully</li> </ul>

### Benefits Associated with Telehealth in VHA

- **Reductions in Utilization\*:**
  - Home Telehealth - Reduces bed days of care – 53%
  - Clinical Video Telehealth – Reduces bed days of care 28% for mental health care
- **Patient Satisfaction:**
  - Home Telehealth - 86% mean score
  - Store-and-Forward Telehealth - 92% mean score
  - Clinical Video Telehealth - (results pending)

\*FY2010 Data

### Benefits Associated with Telehealth in VHA

- **Travel Reduction Savings\*\*:**
  - Clinical Video Telehealth - \$34.45 per consultation
  - Store and Forward Telehealth - \$38.81 per consultation
- **Home Telehealth Savings\*\*:**
  - Between \$1,238 and \$1,999 per annum per patient

\*\*FY2008-FY2011 VA Allocation Resource Center Data

### Telehealth and Movement Disorders

### Telehealth and Movement Disorders

Pubmed search:

“telehealth”	14,931	1974-2012
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Pubmed search:

"telehealth"	14,931	1974-2012
"telemedicine and movement disorders"	74	1992-2011
"telehealth and Parkinson's disease"	52	1992-2012

## Telehealth and Parkinson's Disease

Interactive video conferencing: a means of providing interim care to Parkinson's disease patients

*Hubble et al., Mov Disord. 8: 380-82, 1993*

- 9 patients were independently examined and scored (UPDRS) by two movement disorder specialists
- Individual patient scores did not differ based on examiner
- Favorable patient responses
- Valid motor assessments of PD patients can be made via IVC

## Telehealth and Parkinson's Disease

Telemedicine for delivery of health care in Parkinson's disease

*Samii et al., J Telemed Telecare 12: 16-1, 2006*

- Follow-up care to patients through Seattle VA
- 8 facilities 67-2400 km from the medical center
- 100 visits for 34 patients over 3 years
- High patient and provider satisfaction
- Satisfactory for motor UPDRS measurements, except for components that required physical contact with the patient (rigidity and retropulsion testing)
- Savings: 1500 attendant travel hours, 100,000 travel kilometers, and US \$37,000 dollars in travel and lodging costs

## Telehealth and Parkinson's Disease

Increasing access to specialty care: a pilot, randomized controlled trial of telemedicine for Parkinson's disease

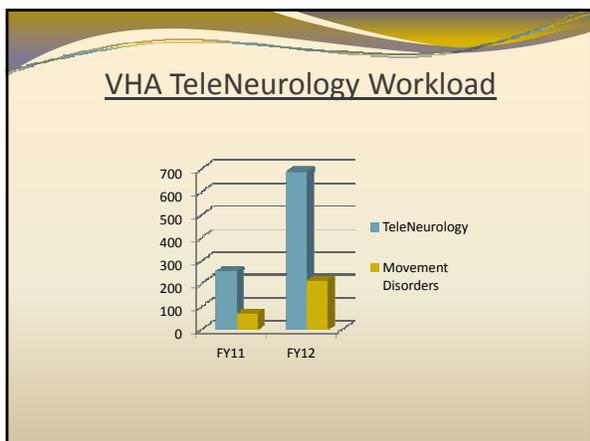
*Dorsey et al., Mov Disord. 25: 1652-1659, 2010*

- Randomized, controlled trial of feasibility of telemedicine care
- 3 TM visits over 6 months
- 10 subjects (6 TM care, 4 usual care)

Increasing access to specialty care: a pilot, randomized controlled trial of telemedicine for Parkinson's disease

*Dorsey et al., Mov Disord. 25: 1652-1659, 2010*

- **Outcomes:**
  - TM group completed 97% of visits
  - 13/14 subjects chose TM for care
  - TM group had significant improvement in QOL (PDQ-39) and motor performance (UPDRS)
- High satisfaction with TM
  - reduced travel time
  - access
  - less stress
- **Pitfalls:**
  - occasional technical problems
  - physician acceptance



### Telehealth and Movement Disorders

Philadelphia, PA	V4	102
Beckley, WV	V6	7
Richmond, VA	V6	46
Salisbury, NC	V6	2
Huntington, WV	V9	13
Battle Creek, MI	V11	1
San Francisco, CA	V21	12
Long Beach, CA	V22	<u>30</u>
		<u>213</u>

### Other Telehealth Applications

Treating disordered speech and voice in Parkinson's disease online: a randomized controlled non-inferiority trial, [Constantinescu et al, Int J Lang Commun Disord.](#) 2011;46:1-16.

Home monitoring of patients with Parkinson's disease via wearable technology and a web-based application, [Patel S et al, Conf Proc IEEE Eng Med Biol Soc.](#) 2010;2010:4411-4.

Using the Internet to assess activities of daily living and hand function in people with Parkinson's disease, [Hoffmann et al, NeuroRehabilitation.](#) 2008;23:253-61.

### Other Telehealth Applications

Telemonitoring and telerehabilitation of patients with Parkinson's disease: health technology assessment of a novel wearable step counter, [Giansanti et al, Telemed J E Health.](#) 2008; 14:76-83.

A telemedicine instrument for remote evaluation of tremor: design and initial applications in fatigue and patients with Parkinson's disease, [Barroso Júnior et al, Biomed Eng Online.](#) 2011;10:14



### Web-based evaluation of Parkinson's disease subjects: objective performance capacity measurements and subjective characterization profiles

- Evaluation of three representative, self-administered, objective, web-based performance capacity tests (simple visual-hand response speed, rapid alternating movement quality, and upper extremity neuromotor channel capacity).
- Generally good agreement was obtained with lab-based tests executed with an experienced test administrator
- Objective performance capacity testing is a feasible component of a web-based evaluation for PD

Twenty-one subjects (13 with PD, 8 without neurologic disease)

[Kondraske GV, Stewart RM. Conf Proc IEEE Eng Med Biol Soc.](#) 2008:799-802



### Future Applications/Benefits of Telehealth

- Advances in technology:
  - remote sensors
  - wireless technology
  - mobile devices
- Improved quality of care, quality of life
- Opportunities for education and training
- Clinical trials:
  - recruitment
  - study visits
  - home monitoring

## Resources

For more information on Telehealth within the VA go to:

- VHA Office of Telehealth Services Intranet - <http://vaww.telehealth.va.gov/>
- VHA Office of Telehealth Services Share Point - <http://vaww.infoshare.va.gov/sites/telehealth/default.aspx>