

Validation of Home Telehealth for Assessment of Transfer Mobility: A Study in Patients with Spinal Cord Injury

Ruth C. Cronkite, PhD
Max A. Halvorson, MA

Center for Innovation to Implementation
VA Palo Alto Health Care System
APHA Annual Meeting
New Orleans, LA
November 18, 2014



Presenter Disclosures

Ruth Cronkite, PhD
Max Halvorson, MA

The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose

Acknowledgements

Collaborators:

Douglas T. Ota, MD (Co-PI)¹
Michelle L. Hill, RN, MS (Co-PI)¹
B. Jenny Kiratli, PhD¹

¹ Spinal Cord Injury Center, VA Palo Alto Health Care System

Participants & Evaluators

Acknowledgements (Contd.)

Supported by:

Department of Veterans Affairs
Rehabilitation Research and
Development Grant #26821

Department of Veterans Affairs Health
Services Research and Development
Service

Background

- Home telehealth is the application of telemedicine into the patient's home
- Most applications utilize ordinary telephone lines
- Another appealing modality is videoconferencing: opportunity to see as well as hear the patient

Background (Contd.)

- Telehealth has potential for:
 - Improving access to care
 - Facilitating frequent monitoring
 - Implementing proactive corrective interventions as needed

Background (Contd.)

- Lack of studies examining:
 - Validity of assessments related to secondary conditions associated with spinal cord injury or disorder (SCI/D):
 - pressure ulcers
 - transfer mobility
 - spasticity

Objectives

- Evaluate the reliability of home telehealth for assessing wheelchair to bed transfer
- Evaluate home telehealth care via:
 - Telephone
 - Videoconferencing



© 2008 injektips.se

<http://www.naric.com/?q=en/content/transferring-wheelchair-bed-and-bed-mobility>

Methods

- 54 participants with a diagnosis of SCI/D
 - at a level of independence for transfers
- 3 research evaluators
 - trained according to assessment guidelines

Methods (Contd.)

- Transfer mobility assessed in each of 3 modalities:
 - Telephone
 - Videoconferencing
 - In-person - “Gold Standard”

Methods (Contd.)

- All assessments conducted at the research site
- Participant setting was designed to simulate a room at home
- Separate room used by evaluators in the telehealth modalities

Methods (Contd.)

- Evaluators (physical therapists trained in assessments) were randomly assigned to a modality for each participant
- Order of modality was randomized

Methods (Contd.)

- Participants were instructed to:
 - perform a wheelchair to bed transfer
 - respond to a structured interview
- Evaluators answered questions about their clinical confidence in their assessments

Measures

- Unit of Measure:
 - Participant's Transfer from Wheelchair to Bed
- Overall assessment:
 - Transfer Performed Safely

Measures (Contd.)

- Elements of Transfer
 - Wheelchair Position:
 - Manual: 30° to Bed
 - Power: Parallel to Bed
 - Brakes:
 - Manual: Brakes Locked
 - Power: Off

Measures (Contd.)

- Elements of Transfer
 - Feet on Ground
 - Knees Anterior to Ankle
 - Head over Toe -
Shoulder over Knees

Measures (Contd.)

- Elements of Transfer
 - Transfer Position:
 - Manual: Sacrum on Anterior
50% of Cushion
 - Power: Moved Forward on
Cushion

Measures (Contd.)

- Elements of Transfer
 - Elbows Locked
 - Gluteal Clearance
 - Trunk Stable & Upright after
Transfer

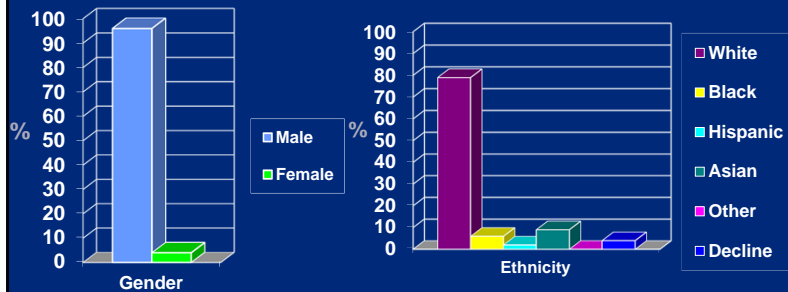
Measures (Contd.)

- Clinical Confidence: “very” to “not at all”
- Anything that Would Help with Confidence
 - Seeing patient in-person
 - Touching patient
 - More light for seeing
 - Better video quality
 - Better audio quality
 - Better angle or view of patient

Participant Characteristics

N=54

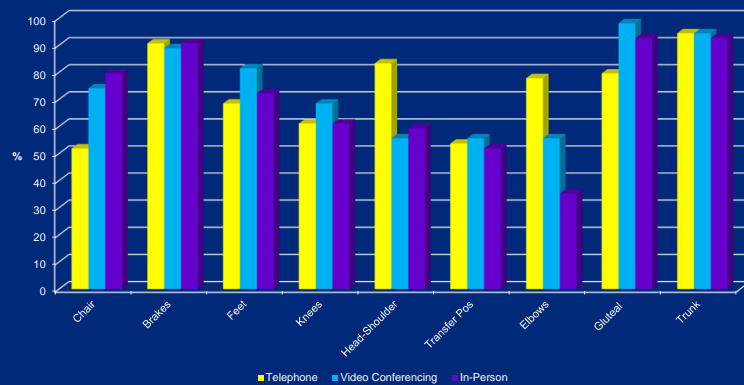
Mean age: 54.4 years (s.d.) (13.7)



Participant Characteristics

- Reading left to right horizontally across columns:
- Gender: 96% male, 4% female
- Ethnicity: 79% white, 6% black, 9% Asian, 0% Other, 4% Decline

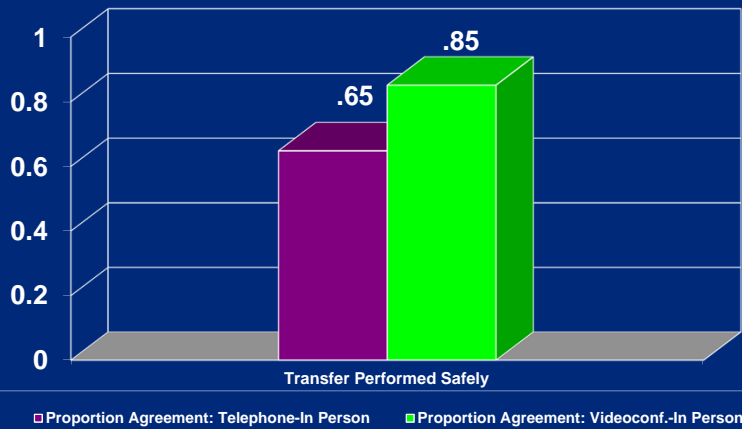
Characteristics of Assessed Transfer



Transfer Mobility Elements: % Performed Correctly by Modality

- Overall pattern across 9 pairs of columns:
- Rates of correct performance ranged from approximately 50%-90% and were similar overall across each assessment modality

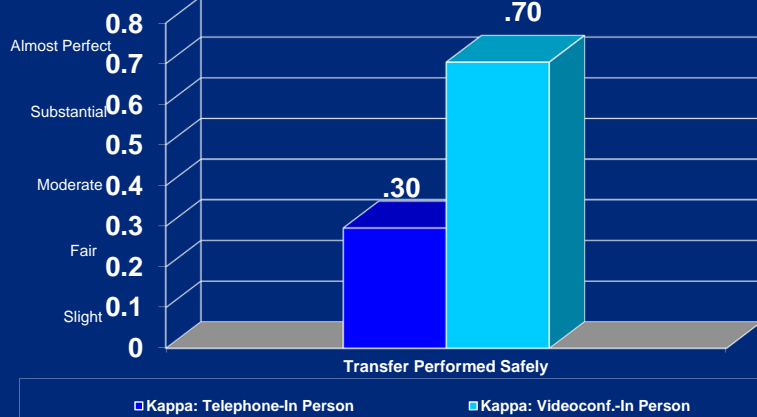
**Proportion Agreement Between Telephone – In Person and Videoconferencing – In Person
Primary Assessment: Performed Safely**



Proportion Agreement Between Telephone – In Person and Videoconference – In Person Performed Transfer Safely

- Reading horizontally, left to right:
- .65 Telephone – In-person
- .85 Videoconf. – In-person

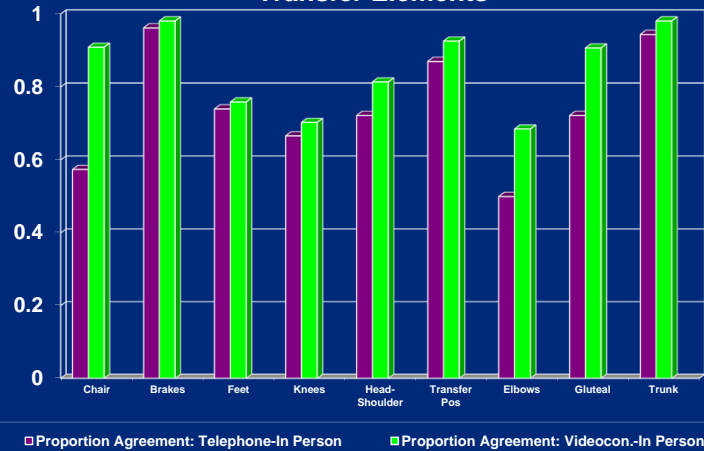
Agreement Between Telephone – In Person and Videoconference – In Person Performed Transfer Safely



Agreement Between Telephone – In Person and Videoconferencing – In Person Primary Assessment of Safety

- Reading Kappas horizontally, left to right:
- Kappa = .30: Telephone – In-person
- Kappa = .70: Videoconference – In-person

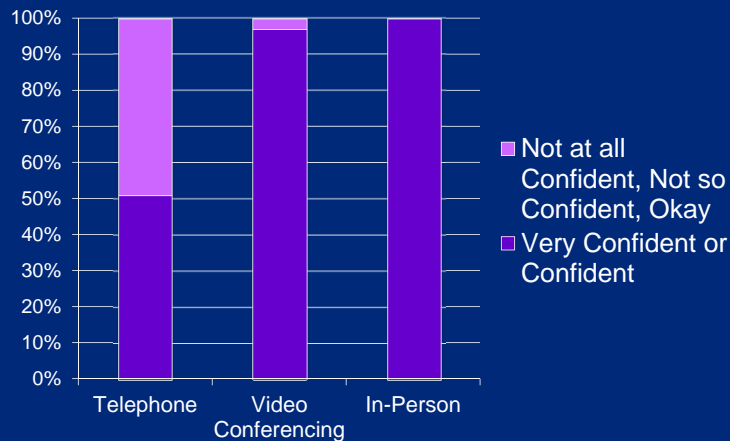
Proportion Agreement Between Telephone and In-Person Videoconferencing and In-Person Assessments – Transfer Elements



Agreement Between Telephone – In Person and Videoconferencing – In Person Elements of Transfer

- Overall pattern across 9 pairs of columns:
- For each of the 9 elements, the proportion agreement with the in-person condition was consistently higher in the videoconference condition than the telephone condition

Clinical Confidence



Clinical Confidence

- Reading %ages in columns horizontally, right to left:
- 100% in-person condition felt confident with their assessments
- 97% videoconference condition felt confident or very confident
- 50% telephone condition felt confident or very confident



Clinical Confidence

- Reading left to right:
- 90% telephone modality felt seeing patient in person would help confidence
- 50% videoconference modality felt seeing patient in person would help confidence

Clinical Confidence (Contd.)

- Reading remaining columns left to right for videoconference modality:
- 7% more light for seeing patient would help
- 41% better video quality would help
- 6% better audio would help
- 4% better angle or view would help

Summary of Findings

- Videoconferencing assessments were closer to in-person assessments (more reliable) than were telephone assessments of:
 - Transfer from wheelchair to bed overall
 - Elements of transfer from wheelchair to bed

Summary of Findings (Contd.)

- Clinical confidence excellent in videoconference condition
- Clinical confidence substantially lower in the telephone condition

Conclusions

- Videoconferencing is reliable enough to be used to:
 - Increase access to more frequent monitoring of transfer mobility

Conclusions (Contd.)

- Facilitate rehabilitation efforts to proactively prevent serious secondary conditions, especially pressure ulcers
- Ultimately enhance quality of care and quality of life for SCI/D patients

Questions?

Ruth.cronkite@va.gov

Max.halvorson@va.gov