

SATURDAY, JULY 23, 2016
TECHNOLOGY AND DEMENTIA PRECONFERENCE
TD-O4
TECHNOLOGY DEVELOPING TOPICS ORAL SESSION

TD-O4-01 THE PERSONAL AND SOCIETAL IMPACT OF THE DEMENTIA AMBIENT CARE (DEM@CARE) MULTI-SENSOR REMOTE-MONITORING DEMENTIA CARE SYSTEM

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Background: The relation of behavioural and cognitive monitoring parameters to dementia-specific patterns can provide a promising and objective approach to dementia assessment given the long-term nature of the measurements. Furthermore, technologies that monitor daily living can enable a person with dementia to remain independent for longer by supporting their health, well-being and safety, while reducing the burden on family/friends and decreasing healthcare costs. **Methods:** The EU FP7-funded research project “Dementia Ambient Care” (Dem@Care), developed an integrated solution for the remote monitoring, diagnosis and support of people with mild cognitive impairment and mild dementia. It investigated the use of multiple wearable (accelerometers, 2D/3D cameras, microphones) and ambient sensors (visual and infrared cameras, sleep sensors) for the recording of daily activities, lifestyle patterns, emotions, and speech, as well as the use of intelligent mechanisms for the assessment of an individual’s condition at diagnosis, and over time in multiple care settings. Feedback was provided to clinicians, and directly to people with dementia and their caregivers. **Results:** Dem@Care had a positive impact for people with dementia regarding increased independence. They reported a sense of improvement in their subjective quality of life and in the five key domains addressed by the solution; sleep, physical activity, social interaction, activities of daily living and mood. Improvements for the person with dementia translated into improvements for their informal caregivers and in some cases increased independence (related to dementia severity). Clinicians and formal care staff benefited from improved assessment and diagnostic procedures, enhanced ability to make differential diagnoses, and more timely identification of functional, behavioural, and emotional pattern changes. **Conclusions:** Although difficult to evaluate the longer-term economic and societal outcomes, we suggest that successful attainment of stakeholder’s personal outcomes will, over time, lead to a reduction in healthcare costs and less social isolation for those living with dementia. Dem@Care is shown to have contributed to the advancement of the technical, clinical, and ethical management of dementia care through the innovative use of ICT solutions.

TD-O4-02 ALZHEIMER’S CARE VIA TELEMEDICINE FOR OREGON (ACT-ON): PHASE I — ESTABLISHING THE FEASIBILITY AND RELIABILITY OF STANDARD MEASURES USED WITH TELEMEDICINE

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Background: Innovative models of care are needed to meet the increasing demand for high-quality, patient-centered, dementia care. *Direct-to-home* telemedicine care for persons with Alzheimer’s disease (AD), and their caregivers, can help remove access barriers. However, the reliability of commonly-used dementia measures, when used with telemedicine, has not been established. ACT-ON, Phase I addresses this gap by assessing the reliability of these measures when used with telemedicine, as well as the feasibility of using telemedicine with persons with AD and their caregivers. **Methods:** Participants (persons with AD and their caregivers) completed an identical battery of tests in both the clinic setting and with direct-to-home telemedicine approximately two weeks apart. Test-retest reliability was measured by the intraclass correlation coefficient for continuous variables and the Kappa statistic for categorical variables. Persons with dementia were assessed with the Montreal Cognitive Assessment (MoCA), a modified Clinical Dementia Rating scale (CDR), the Revised Memory and Behavior Problem Checklist (RMBPC) and the Geriatric Depression Scale (GDS). Caregivers were assessed with the Zarit Burden Interview (ZBI) and the Marwit Meuser Caregiver Grief Index (MMCGI). Raters provided feedback on ease-of-use and feasibility of using telemedicine with persons with dementia. **Results:** Of the 22 dyads who attempted visits in both settings, 20 completed both test sets, indicating good feasibility. Persons with AD ranged in age from 51-93 (Table 1); MoCA ranged 0-21. Test-retest reliability for the MoCA,

Table 1
Demographics

ACT-ON Phase I (n=20 Dyads)	
Caregivers (% female)	55%
Persons with AD (% female)	65%
Age, Caregiver (mean, range)	66.4 (50-79)
Age, Person with AD (mean, range)	71.8 (51-93)
Hours/week caregiving (mean, range)	83.4 (0-168)
Years living with AD (mean, range)	3.5 (0-12)
Distance from clinic	80% >10 miles

Table 2
Results

ACT-ON Phase 1 (n = 20 Dyads)			
Measures of Dementia Status			
Scale	Face to Face Score	Telemedicine Score	ICC/Kappa
MoCA (mean, range)	11.2;0-21	11.2;0-21	0.89 (Excellent)
CDR (range)	0.5-3	0.5-3	0.71 (Good)
RMBPC (mean, range)* (Frequency of behaviors)	11.1:7-18	10.9:3-16	0.67 (Good)
GDS (mean, range)**	1.4;0-3	2.5;0-7	0.24 (Marginal)
Measures of Caregiver Stress			
MMCGI (mean, range)	46.1;22-66	44.7;23-61	0.88 (Excellent)
ZBI (mean, range)	6.5,3-11	6.6,2-15	0.81 (Excellent)
RMBPC (mean, range)* (Reaction to behaviors)	14.2 (2-36)	13.1 (1-43)	0.83 (Excellent)

* = 13 dyads

** = 11 dyads

RMBPC (caregiver reactions to behaviors), ZBI, and MMCGI was excellent (0.89, 0.83, 0.81, 0.88 respectively), and good for the CDR (0.71) and RMBPC (number of care-recipient behaviors) (0.67). The reliability for the GDS was marginal (0.24) (Table 2). Raters were, for the most part, satisfied with the visits. **Conclusions:** Preliminary findings indicate that within-dyad scores on most of these measures have good/excellent consistency between telemedicine and clinic visits and thus, clinicians can use telemedicine versions with confidence. To our knowledge, this is one of the first studies that provides reliability data on these scales when used with telemedicine. This work provides valuable information which can facilitate increased access to dementia care across multiple boundaries.

TD-04-03 A COMMUNITY-BASED, TECHNOLOGY-SUPPORTED EVALUATION OF ACUTELY-ILL DEMENTED PATIENTS IN NURSING HOMES

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Background: With the demographic aging of the world population, an increase in the number of persons diagnosed with Alzheimer’s dementia (AD) is expected. The annual incidence of dementia (including AD and other dementias) is projected to double by 2050. Patients with AD, especially those residing in Nursing homes (NH), are most vulnerable to adverse health outcomes that are disruptive, cost prohibitive and challenging.

Emergency department (ED) visits and hospitalizations are well documented burdens of diseases associated with cognitive impairment (including AD). Increase use of technology such as telemedicine in psychiatry has shown potential improvement in certain aspects of health outcomes and prompt care delivery. We believe that such technology can be helpful in reducing the aforementioned burdens in this population. **Aim:** To assess the impact of TeleMedicine intervention for acutely ill patients with dementia including AD in nursing home setting. **Methods:** Design: Pilot study Duration: 12months. Start date: April 2014. End date: March 2015. Setting: Two Nursing homes in Michigan. Participants: Staff members from NHs and attending physician. Subjects: NH residents with dementia (including AD) who are acutely ill. Intervention: Using a mobile device with video-conference capability, NH staff presented cases with dementia (including AD) in acute setting to the on call physician. Review of patient’s medical record, vital signs, medications, and physical examination were performed remotely prior to the disposition of each patient seen. **Results:** Seventy-seven patients, with a mean age of 76.7 years, were presented during this pilot study period. Forty-eight percent of residents had history of dementia. The most common reasons for presentation were agitation, respiratory symptoms and falls. Hospitalization was common among patients with advanced AD. **Conclusions:** Our results suggest that Telemedicine can be useful in helping care providers in remotely evaluating patients with cognitive deficits, including those with AD during acute change in condition and/or unusual incidents. Further research is needed to investigate the role of Telemedicine use, its cost, effectiveness and potential benefits in Nursing home residents, particularly those with dementia.