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The LeadingAge Center for Aging Services Technologies (CAST) is focused on accelerating the development, evaluation and adoption of emerging technologies that will transform the aging experience. As an international coalition of more than 400 technology companies, aging-services organizations, businesses, research universities and government representatives, CAST works under the auspices of LeadingAge, an association of 6,000 not-for-profit organizations dedicated to expanding the world of possibilities for aging.

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The Effects of Computer Technology Use on Increasing Socialization and Improving Mental Health

Category:

- Quality of Life/Satisfaction with Care
- Reduction in Antipsychotic Medication Use
- Functional/Behaviors/Health Outcomes
- Partnerships with universities and vendors
- Innovation in care of those with Dementia

Organization Name

Westminster-Canterbury on Chesapeake Bay

Organization Types

Continuing Care Retirement Community

Other Partners

- It's Never 2 Late (iN2L)
- Eastern Virginia Medical School (EVMS)
- Virginia Wesleyan College

Organization Description

Westminster-Canterbury on Chesapeake Bay was founded in 1982. Located right on the Chesapeake Bay in Virginia Beach, Virginia, we are a non-profit Life Care community sponsored by the Episcopal Diocese of Southern Virginia and The Presbytery of Eastern Virginia of the Presbyterian Church. We provide a vibrant lifestyle for seniors 62 years of age and older who worked hard their entire lives and deserve not just beautiful homes, but peaceful, lively and pleasant experiences. We also view our purpose to be of service to the families of our residents, as well as the broader community.

Our Mission is *Creating community to foster joy and well-being* and our values are Respect, Passion and Professionalism.

As a Life Care community, Westminster-Canterbury offers all levels of care to include, independent living, assisted living, long term care, skilled nursing care, home health and hospice care. On our campus we provide transportation services, a retail pharmacy within our country store, multiple dining venues, a full service bank, an urgent care clinic as well as emergency on-call nursing services.

Project Description

The Birdsong Initiative is an active partnership with multiple entities to provide a 24-week research study on the effects of computer technology use on increasing socialization and improving mental health in nursing home and memory support patients.

The initiative was made possible by a generous donation from WC Foundation Board Member, Sue Birdsong and her husband George. Their gift of \$228,000 will fund the entire project for multiple years. The continued success beyond the project will be supported by a partnership with the Therapeutic Recreation department at Virginia Wesleyan College. Therapeutic Recreation students will intern at our community and work with these innovative new tools to prepare them for their future roles in nursing homes and assisted living communities.

The partnership with It's Never 2 Late was formed by discussions around increasing quality of life for our residents, while utilizing touch screen computer technology and engaging the residents in something that they could learn to initiate themselves and routinely utilize at their leisure.

Eastern Virginia Medical School's (EVMS) partnership grew out of the shared commitment to improving quality of life for those with Dementia. The Principal Investigator, an adjunct professor at EVMS, Dr. Scott Sautter, FACPN, a Neuropsychologist with Hampton Roads Neuropsychology, Inc., leads the study along with Co-Principal Investigator, Dr. Paul Aravich. Dr. Aravich is a professor in the Departments of Pathology & Anatomy, Internal Medicine, Division of Geriatrics and Physical Medicine and Rehabilitation at EVMS.

Research Study Design

62 residents of Westminster-Canterbury were selected for the study due to their diagnosis of Dementia or Dementia related disorders along with the fact that they resided in our long-term care or secured memory support community. The 62 participants were divided

into 2 groups (high and low cognition) using the MoCA (Montreal Cognitive Assessment) scores and then randomized into either the test or control group.

The research study is a total of 24-weeks, with two 12-week sessions. Each 12-week session has a control group and a test group. The test group receives one of 31 touch-screen computers placed in their room and is available to be used 24/7. The content is standardized with 10 core applications and customized for more content based on their individual interests, such as sports, videos, music or brain games to name just a few. Each participant in the test group is also partnered with a Therapeutic Recreation Intern from Virginia Wesleyan College that introduces and engages the resident in use with of the 10 core applications 5 hours per week. The control group participants also receive individualized therapeutic recreation in a group setting, but do not have touch-screen computers available in their rooms nor utilize the computer for one on one activity.

At the beginning, middle and end of the study, all participants (control group and test group) will be assessed using specific research instruments that will be used to evaluate and analyze the effects of the computer use statistically.

Assessments include:

- Blood Pressure readings from medical records.
- Saliva tests to determine levels of stress hormone present.
- Frequency and dosage of anti-psychotic medication use.
- Frequency and Intensity of behavioral episodes as observed and documented by staff.
- Cognitive function as determined by scoring on the Montreal Cognitive Assessment (MoCA).
- Mood indicators as determined by the Affect Balance Scale.
- Depression indicators as determined by the Geriatric Depression Scale.
- Demographics to include diagnosis, origin, age, highest level of education and previous occupations.

All of the assessments (except the Perceived Stress Scales for caregivers and the behaviors) will be provided before and after each 12 week session to total 4 time periods for each assessment.

In addition to the participant assessments, caregivers (Certified Nursing Assistants (CNAs)) who work directly with the participants are asked to complete a Perceived Stress Scale before, at the beginning and at the end of the study timeframe. This will assist us in analyzing the alleviation of stress with this type of intervention for those with Dementia or Dementia related disorders.

The study began on June 30, 2015 with a total of 53 total participants (lower than original 62 due to multiple deaths and a few power of attorneys who did not provide consent for their loved ones to participate in the study). 31 participants are in the test group and received the computers, while the remaining 22 are in the control group. The first twelve-week session will end September 18, 2015 and the second twelve-week session will begin September 28, 2015.

System Type and Description

The touch-screen computer provided by It's Never 2 Late (iN2L), a company based in Colorado, is a 23 inch Dell all in-one computer system with speakers. The custom cart was designed through partnership with Westminster-Canterbury and iN2L to provide maximum utilization within the participants' rooms. The cart is on wheels, with an adjustable height tray top to replace the over the bed table. The computer swings away easily for maximized use of the table surface for eating or other use.

Due to regulations that require weekly generator tests, each cart is equipped with a battery backup power strip, which allows for a smooth transition of electricity that will not cause any malfunction to the computer's operating system or interrupt utilization. An aquarium screensaver application automatically launches after 20 minutes of idle time to attract the resident's attention and re-engage the resident if and when they stop using the computer.

iN2L and Westminster-Canterbury also collaborated to customize a home screen for residents that allows them to easily manipulate the activity content with fewer clicks. Inside the customized home screen, iN2L created a custom button that has the community's audio files of the Chaplain sermons, town hall meeting videos, weekly menus, activity calendars, and campus news to keep the participants engaged in the local happenings around the community.

Business Model

The donation received provided for purchase of the equipment and subscription fees for three years. The gift also covered IT staff and Therapeutic Recreation staff support during the 24 week study, as well as a wireless network upgrade. The initial reactions to the computers have been that they are more appropriate for some individuals than others; therefore we feel that at the end of the study, we will show that not all residents with Dementia would benefit from a personal computer. As the industry adopts more and more of the innovative technology throughout the next three years, we hope that it will result in a decrease of pricing for the subscriptions. During this time we also plan to continue partnerships and studies with the computers, therefore creating a huge return on the investment and continued use of this gift to our campus.

Implementation Approach

Once partnerships were established, the study had to be designed, finalized and submitted to the Institutional Review Board (IRB) at EVMS for approval. This process took approximately 4 months after submission to the IRB. Once approved, the communication of the plan began around campus and beyond to ensure excitement and engagement of families, residents and staff. Family meetings were held to show the iN2L computers to family members and explain the paperwork required to sign (consent forms) in order to begin in the study.

Interns and staff were trained and informed electronically, by video, in staff meetings and one on one as needed. Staff booklets were also prepared for troubleshooting and provide answers for frequently asked questions were placed on each nursing work station within The Hoy Center and The Chesapeake, where the study is conducted. We created a help button on the iN2L home screen that directed all questions and concerns to one Therapeutic Recreation staff member and instructions were provided to all families, residents and staff. The help button and the instructions were key to the study, because it was important that nursing staff were not summoned to work on technical issues with the computers during routine nursing care times.

We determined that weekly conference calls between the Principal Investigators, staff from the Therapeutic Recreation Department, Project Manager and the Foundation Executive Director were necessary to ensure that the study progresses according to our proposed

timeline, identify any arising issues, and collaborate on addressing such issues or concerns.

Staff Engagement

Communicating information about the study early to staff was essential in communicating to create excitement about participating in the study. We did have to add a few additional meetings and staff educational tools after the initial start of the study in order to dispel any misconceptions staff may have about their involvement. After such tools were offered staff embraced the study and learned how the iN2L computers could be used as a caregiver tool for them to enhance the care they provide for those with challenging behaviors.

The most integral position in keeping the study on track has been our health care Therapeutic Recreational Coordinator, Laura Mock. Her role involves scheduling, monitoring and assisting the interns with the interventions involved in the study. In this role, Laura ensures that the study stays on track and within the parameters of the design. She also is the point of contact for the interns training, interacting with residents/families, and the partnership with Virginia Wesleyan College professors to report on the students' progress.

Advantages to the Approach

The partnerships were integral in being able to perform this type and scale of study within a functioning nursing home and Dementia community. The EVMS team was strong in experience with research, research models and tools to show statistical analysis of research data. The partnership with VWC was also integral to the support of the Therapeutic Recreational professors understanding the importance of real life training and involvement to teach students the power of recreational opportunities.

The training of the interns and staff prior to the study provided for the uniformity of the interventions to be able to study across the research design. It not only gave the study stability, but it also empowered the students to be confident in their assessments and intervention times with the residents creating less fear and anxiety in the residents.

We found that the some of the residents with the individual touch-screen computers learned to use them on their own outside of the intervention times and it gave them a sense of control and purpose.

The routine meetings and discussions during the study have also proven to be an integral part of keeping the study on track. Due to the fact the population continues to change with deaths, moves and medical conditions changing, the decisions of how to handle each situation were reviewed and discussed by a team of researchers to support the staff and students.

Outcomes (so far)

We are a little over halfway through the first 12 weeks of the study and so far we have seen an overwhelming response and acceptance of the computers. One resident has been spotted multiple times engaging the computer on her own and playing the solitaire card game. This resident has multiple health and cognitive ailments that that had been thought to prevent her from actively using the technology on her own.

In another situation, a resident from Germany was able to explore her hometown through the travel application and share stories about those locations with staff while navigating the system. The exploration of history even brought out some different languages that this resident had not used in years.

The amount of time that residents spend engaging and utilizing the computer on their own is also higher than we had expected. By tracking the usage through reports from the iN2L systems, we can track how often, for how long, and in what applications the residents are engaging.

Even more powerful, we had a resident who was mostly nonverbal say the words "fish" and "water" to staff when referring to her computer's aquarium screensaver. Families are also connecting during visits and sharing stories about topics sparked by the use of the iN2L computer-based engagement system.

The donation has also allowed us to retain a team from Regent University and Eastern Virginia Medical School that will provide statistical analysis. While we have had such amazing results already, in our final Case Study, we look forward to sharing the statistical findings regarding the full 24-week study.

Challenges and Pitfalls to Avoid

Internet connection speeds when computers located near each other on same receptors.

Software installed in both iN2L systems sometimes conflicted along with Westminster-Canterbury systems, requiring some IT support and troubleshooting.

Storage space and logistics can be an issue, as some residents did not want to keep the large computers within their rooms, but still wanted the use of it at their convenience. We had to brainstorm how staff and students could move the computer in and out of their rooms and store them when not in use.

Some residents with low cognition thought of the unit as a medical device and not a computer. We had to provide ongoing reassurance until a trust level was built with those residents.

Deaths, moves and change medical conditions of residents during the study affect enrollment.

Unplanned software updates can also add challenges to use and study schedule.

Resident rooms had so much furniture that the unit did not fit in some cases, therefore we had to work with the residents and the families in order to determine the best place for it, which meant sometimes moving or removing furniture.

Lessons Learned

At this stage of the study, there are already a few lessons learned.

- Understanding how the Institutional Review Board (IRB) work at your Partner College or university is important. We underestimated the time it took to write a full proposal and then for the approval of the IRB after submission. It changed our timeline by over 6 months, creating challenges with having enough students, participants, and subscription costs. Thankfully, our partners at iN2L supported us in the timeline change; otherwise we would have had an unexpected rise in costs.
- There was more IT involvement in the first 12 weeks than we budgeted for originally. We do not anticipate this to be the case in the second half of the study, but it was an unexpected cost.
- The semester changes affected the availability our medical students and college interns to assist our staff with the study. We learned that we had to position our timeline around the availability of their schedules to have the labor to continue to the study.
- When we first started discussing the study with partners, we announced our plans to our staff and affiliates. This we found was an important step in communicating well. Looking back to the beginning,

it could have hurt the initial start of the study if we had not communicated so early in the process. Once we were approved by the IRB, we started so quickly as the IRB has an expiration for the study to be completed by. Starting that quickly was only possible due to the fact we had plans and people ready to begin at a short notice.

Advice to Share with Others

The best advice is as one of our fellow researchers; Dr. Paul Aravich states “do not marry your hypothesis in research”. During the study you are collecting data as specified by the study, but in addition some of the qualitative observations in our resident and families’ responses have been amazing discoveries. Surprising things can happen when you plan on something else to happen, so be vigilant and flexible.