The Use of Technology to Engage Persons with Dementia
WEBINAR TRANSCRIPT

Jenny Inker: Good afternoon and welcome to today's live event. We're so pleased you could join us today. I am Jenny Inker, Gerontologist and joint program director of the assisted living administration specialty area at Virginia Commonwealth University department of gerontology, and also your host and moderator for today's webinar.

Today, Lora Epperly, Charles de Vilmorin and Dr Scott Sautter will present the use of technology to engage persons with dementia. This series was created by the Virginia Geriatric Mental Health Partnership. This is the third and final webinar in our six series hosted by the Virginia Geriatric Mental Health Partnership. If you missed the first and second webinars they are recorded and are now posted on the website. We would like to thank the Virginia Center on Aging for the geriatric training and education grant that funds this series.

The Geriatric Mental Health Planning Partnership in collaboration with the VCU department of gerontology and the Riverside Center for Excellence in Aging and Lifelong Health is organizing this series of webinars dedicated to mental health and aging training. Today we will have three presenters. Lora Epperly is the director of business development and care innovations at Commonwealth Care of Roanoke Inc. she has significant experience in the long term care, acute care and home care settings, corporate health and benefits arena as a staff nurse, nurse manager, senior management team member and consultant.

Charles de Vilmorin is the CEO of Linked Senior, which he will showcase later for us this hour. Linked Senior builds engagement software for the older adult. Finally, Dr Scott Sautter is a licensed clinical psychologist and board certified neuropsychologist. Dr Sautter currently serves as the clinical director and principal at the Hampton Road neuropsychology practice.

Once again these webinars are funded in part by a Virginia Center on Aging GTE grant. It is part of our grant agreement to collect demographic data. We therefore kindly ask that you help us out in continuing this free offering by taking five minutes to complete the demographic survey which we will send tomorrow by email. Certificates of attendance will be made available one week after the event. To receive your certificate, you will need to complete the exit survey which should pop up following your exit from the webinar, and which will also repeat by email tomorrow.

Today's webinar will begin with three presentations. The slides are available for download from the handout tab of your webinar's control panel. Today's presentations will be followed by a question and answer period. To submit your questions, please use the questions tab on the control panel on your screen. Please feel free to submit your questions throughout the presentation. Following the presentation, I will be delighted to share your questions with the panelists and we will address as many as possible in the time remaining.

To get things started, I will kindly ask that we now take a quick poll which we will display on the screen. Please go ahead and vote by selecting the answer that applies to you. The question is, are you a professional caregiver for a person with dementia? Or are you not a caregiver. We'll just have you go ahead and vote which option applies to you, and then we'll calculate those results and we'll make a start from there. Are you a professional caregiver, a personal caregiver, or not currently a caregiver for someone with dementia.

Nico: Okay, we have about 78% for the audience who voted, and the results are on.

Jenny Inker: All right, wonderful. We've got results here that 72% say that they are a professional caregiver, 24% say they are not a caregiver, and 4% say they are a personal caregiver. Without further ado, I will now ask Lora to begin her presentation. Lora, take it away for us please.

Lora Epperly: Okay. Hello everyone, and good afternoon from the East Coast. Hope everyone is excited about this topic. Today we're going to be talking about the use of technology to engage persons with dementia. It was interesting seeing the poll results that most of our audience today are professional care givers and not as many personal or family, friend caregiver. Hopefully you'll be able to learn some things today during our presentation that will help in your practice every day. For our agenda, we are going to be spending just a little bit of time on the demographics, the aging process, and then the challenges of dementia. The second part of the presentation will focus on using technology and innovation to engage people who are living with dementia. At the end of this presentation you should be able to have an understanding of the available technology, and how it can improve quality of life. You should be able to understanD how to integrate technology into care of people living with dementia, and we should be able to measure the impact and the outcomes of the technology.

The first question, why are we really focusing so much on dementia care right now? There's several reasons. The first is the demographics of our society. We'll go into that in just a little more depth here in just a minute. As well as the prevalence of dementia that we are seeing now. There have been some reports that have come out of the office of the inspector general, looking at medication use, practices in nursing homes, and from then there has been a greater focus on dementia care. As the OIG reports, congress holds hearings. There have been hearings that have followed some of those reports. We are fortunate to have consumer advocates, very active in wanting to make a positive difference in the care of people who are suffering with dementia. All of these lead to an increased focus on the quality of life for folks who are living with dementia, as well as being able to provide care that increases that quality of live in a cost effective manner.

As far as the demographics, on the left side of your slide this shows the projected growth of the number of residents in the United States aged 65 and older from 2015 to 2060. As you can see, with this graph there's an anticipated increase in the population for that group of folks of 105.2%. Yes, we are going to be getting older and in much greater numbers. Then according to the Alzheimer's Association, in 2017 there is approximately 5 million Americans who have been diagnosed and are living with Alzheimer's disease, which is the most prevalent type of dementia. The Alzheimer's Association predicts that by 2050 there is going to be more than 16 million folks with the disease of Alzheimer's.

Another pretty sobering statistic is that as of 2012, greater than 48% of residents living in nursing homes had a diagnosis of Alzheimer's or another type of dementia. The projection of the care that's going to be needed as we go forward is, like I said, pretty sobering. In 2014, the Center for Medicare and Medicaid services, or CMS started looking very closely at dementia care, and in that year, in 2014, they set goals for 2015 and 2016 for decreasing the use of anti-psychotic medications in residents who were going to be living in a nursing home. The long stay residents. The goal for 2016 was decrease that, the number of those medications by 30%. We were able to do that. As we talk about the technologies and the knowledge that we have gained over the last few years, that points to some of the reasons why we've been successful in meeting that goal.

Some of the other initiatives that CMS has initiated include very focused surveys looking at the care that is given in nursing homes. These are all nursing homes, not just the centers that have specialized memory care units or units that, maybe a secure unit. These are looking at the care that's provided to all dementia residents across a nursing home population. Also the CMS had added to the calculation of the five star measurement for nursing homes. They have added the usage of anti-psychotic medications in those nursing homes. That becomes a publicly reported quality measure.

Another initiative that CMS has been active in is the National Partnership to Improve Dementia Care in Nursing Homes. This is a partnership that brings together stakeholders to look at best practices, and to also incorporate what we call in the industry QAPI, which is quality assurance and performance improvement standards to that care that's being provided. To look at what's working, what we can improve on, and provide information our of this partnership.

Three goals from the partnership include providing the best care and that quality of life for residents with dementia, to be able to reduce those unnecessary anti-psychotic drugs, and to really emphasize the use of non-pharmacologic alternatives. In other words, being able to provide that care and enhance the quality of life for the residents without using medications. Another phrase that has come out of the work of the partnership is something that's called behavioral and psychological symptoms of dementia. Or BPSD. When we talk about these symptoms, the behavioral symptoms that we think about more often include physical aggression, screaming, restlessness, agitation, wandering, hoarding, inappropriate behaviors that may include sexual dis inhibition. Another symptom may be shadowing. In the psychological realm, we look at things like anxiety, hallucinations and delusions, depression. Those are the more common psychological symptoms that you will see.

With the behavioral and the psychological symptoms there's two states that we want to really point out. One is agitation, and this is something that just effects primarily the person with dementia. With the agitation and as that agitation may escalate, you may have some negative effects on other folks in their immediate environment. The other is aggression, and with aggression you've got at least one other person that involved. Unfortunately with aggression, this can lead to harm of one or both parties that are involved in the incident.

Alzheimer's is one of the types of dementia, and is thought to be the most common type. One of the hallmarks of Alzheimer's is the ability to pretty accurately predict how a person is going to progress through the disease as they go down through the journey of Alzheimer's disease. What the slide does is it compares the many mental state exam scores, which is a screening tool used, it's one of the tools used to look at dementia, and it's comparing those scores and looking at those over time, and the types of situations or looking at the stages that a person with Alzheimer's will go through. Starting with cognitive symptoms, your loss of your ability to perform your activities of daily living such as feeding, walking, bathing, toileting, those types of things. Behavioral symptoms that we talked about, and then looking at the frequency of nursing home placement, and then Alzheimer's is a terminal disease, unfortunately at this time. Then looking at the comparison of your [inaudible 00:16:14] score with the incident of death.

Over the course of the progression of dementia, you can look at the symptoms and how they progress. They will progress as the disease progresses. Some of this is because of the parts of the brain that are being affected at any particular point in the disease process, and some is related to the type of dementia that the person is suffering from. Then there are the environmental issues also. The different symptoms or the different things that you will see during the course of the dementia disease process, you're going to see different things

depending on what stage or state that person is in their disorder. Out of all of this, the wandering and the agitation seem to be the ones that you see pretty much throughout the course of the disease until the very end stages.

This is just quickly some of the concerns with untreated or poorly treated behavioral and psychological symptoms in folks with dementia. I'll start with the staff turnover, burnout. One of the main interventions or care delivery models that we really emphasize in nursing homes as well as in assisted living is because change is so hard for folks with dementia to process, being able to have a consistent staffing model, the same people working with the residents every day, is so crucial to a successful program. But with that, there also is the danger of burnout and staff needing a break from that type of care. With folks that have these symptoms, you can have a worsening prognosis and you may see a more rapid decline in their function if you're not able to take care of those symptoms.

In folks that are having the symptoms, the wandering, the aggression, those types of things, because of the interventions that are needed, it's going to add to the overall cost of care. Both the direct care and the indirect care cost for the nursing home or the assisted living center. The behaviors also tend to increase the need for hospitalizations, for emergency room visits. So being able to find appropriate and effective interventions for these symptoms is very important. Also folks who don't have their symptoms treated effectively, are at a higher risk for premature institutional care.

The approach when you're working with residents or patients that have these symptoms with their dementia, the most important thing is, in my opinion, figuring out what is causing the symptom. There's a fair amount of research out now that speculates that greater than 90% of the behaviors that are exhibited in folks that have dementia are related to that person's inability to figure out what their body is communicating to them, what their environment is communicating to them. Their inability to communicate a need back to their caregivers. For example, if you have someone in the mid to later stages of dementia that is having problems being able to determine that the discomfort or the anxiety that they feel is directly related to the fact that they need to be toileted, if they're not able to communicate that to their caregivers, then you're going to see increased behavioral and psychological symptoms.

Being able to do that assessment and figure out what's causing those symptoms, and trying to moving into the next part of the slide into the treatment phase, try to figure out what you can do to alleviate their anxiety, their pain, their fear, whatever it is that is contributing to their BPSD. Being able to do that is very necessary. Depending on the cause of the dementia, or the ability to find appropriate and effective non-medication types of interventions may lead to a necessary intervention of using medications. Then the next, and a really important piece of your approach to working with folks that have dementia is being able to determine if the interventions that you are trying, if they're effective. If they're not, being able to adjust the intervention, the care plan, and being able to have very good communication among your care givers to be able to determine if your approaches are effective.

This is just a quick little slide that tells you or shows us where we have been successful in decreasing the number of anti-psychotic medications in nursing homes. This is second quarter of 2011 to fourth quarter 2016. You can see here we are at 23 and 24% of the residents in nursing homes. We see the antipsychotics at the time that the national partnership for dementia care started. Then the last quarter of 2016, we were down to about 17%. That's a pretty good decrease, is it where we want it to be? No. But at least we have made some pretty good progress up to this point.

This is just a quick slide, and what it does is just points out some of the symptoms that may be responsive to medications. Delusions and hallucinations, your manic-like symptoms, some of your anxieties that you're not able to provide the non-pharmacological interventions, some of those may be responsive. Depression is a fairly common symptom that we see with some of the dementias. The persistent physical aggression, again, your fronto-temporal dementia patients have some real challenges with this. Some of the others may, and medication may help with that. Some of your sleep disturbances also.

One of the things that has been identified as being central to really moving from the pharmacological intervention mindset to a more non-pharmacological treatment pattern centers around a resident or person centered care. This is something that in the dementia-focused surveys that are going on now throughout the country that the state and federal surveyors are really looking at, and really evaluating a nursing home and the ability of that nursing center to treat, to assess, understand and treat folks with dementia on a personal basis. What is relevant to that person. One of the main ways of being able to do that is getting to know the person. Accepting them as a person, not just somebody with dementia, but a real person. Knowing that person, knowing their history, knowing the things that make them happy, the things that make them sad. Knowing the things that are important to them. Really getting to know that person. By also allowing that person to have as much choice in their care and their daily life as possible, and allow them autonomy to be able to make decisions and to control to their ability the way care is given to them and how.

Quality of care is huge. Getting to know the person and giving them choice, letting them be autonomous, but also making sure that the care that we're providing is based on evidence, is based on that person and that we are getting quality care, quality outcomes from what we're doing to help this person. Relationships are huge, I mentioned earlier consistent staffing, but being able to form relationships either with their fellow residents, with staff, with families. Volunteers, whatever. Being able to have a relationship where there's some familiarity, there's some feeling of safety, trust. That type of thing is huge. Then making sure that you've got a physical environment as well as your organization is passionate about making sure that each resident is treated in a very respectful and individualized manner.

For CMS, the next steps include, and we're well along this path, is really enhancing, really encouraging, really providing support and education around non-pharmacologic approaches and this patient centered care, those concepts. Then to look at the reduction of those anti-psychotics, and looking at the consequences of doing the reductions or not doing reductions. We also talked about that the anti-psychotic measure, quality measure has been added to the five star rating for nursing home residents. Enhancing and expanding the dementia care surveys, this is happening just in the area where I am now in South West Virginia. We've had several of these focused surveys.

Then the last thing formally that CMS has done is they have reviewed and have made recommendations for revision of the regulations or the requirements of participation for residents in long-term care. Looking at the requirements for participation for those nursing homes to participate in the Medicare and Medicaid programs. Just a quick overview of some of those requirements. We have gone from looking at just anti-psychotic medications to looking at psychotropic, which is a much broader category. CMS has chosen to use the 2000 definition of psychoactive drugs. Essentially what they're doing now is they're looking at just about every drug that can affect the brain. Anti-anxiety medications, the sleeping medications, anything that's going to affect the brain function.

Another revision is that for orders that are not written on a continuous basis, but are written as needed, the PRN or as-needed orders, that those be limited to 48 hours, and then the primary provider for that patient or that resident has to review that order and document if they need to have that order continue after that 48 hours. This is really important to prevent a person from being prescribed an anti-psychotic or a psychotropic medication, and it doesn't get reviewed in a couple of days and it just continues on. Now the primary provider is by regulation has to look at those PRN orders.

Also the drug regimen reviews are done in nursing homes periodically by a pharmacist, and during that medication review the pharmacist can make recommendations regarding appropriate use, potential need to do drug reductions, trials, those types of things. In these requirements of participation, there is very specific documentation that has to be entered into that medical record regarding why you're not going to do a dosage reduction or the reasons why you are. Really more important in this process is if the physician or the provider determines that they don't think the person is at a point where it would be beneficial for them to have a drug reduction, that they have to make sure that the documentation is there.

With these rules of participation, there is a three phase roll out. We are now in phase one, that started in November of 2016. In that part of the implementation, there is a specific change that talks about education of CNAs, the certified nursing assistants who care for patients or residents with dementia. They're added training requirements. There's also during the other phases, there are parts of these rules of participation that deal with the quality assurance and the process improvement programs in each of the nursing centers. One of those deals specifically with behavioral health. Within the next three years, there are different pieces of these rules of participation that will be rolled out. We've already talked about the physician having to review and do good documentation if they choose not to start a drug reduction program. Another piece of these rules states that the medical director who may or may not be the primary provider for that patient when they're in the nursing home, that they have to get the physical report from the pharmacist for these drug regimen reviews. They have to respond to some of those.

The competency based staffing, this goes back to the training revisions that I've talked about a little bit earlier for the CNA specifically. That there has to be dementia care and abuse prevention specific education within those required yearly hours of education for some of the staff. The drug regimen reviews do require in some situations to show that the trial reviews have been done, and then the big thing is really focusing on patients in our care. All the things we've talked about as well as making sure care plans are specific to the patient or the resident, and that they show the inclusion of the patient's wishes within those care plans.

With that I am going to turn the presentation over to Charles, and thank you.

Charles de V.: Thank you very much Lora. I also want to thank everyone for attending, and thank you for the opportunity to present today. As Jenny was saying, my name is Charles Vilmorin, I am the CEO and founder of a company called Linked Senior. My passion for aging and [inaudible 00:37:43] dementia started with my grandmother who was diagnosed with dementia Alzheimer's. I am a certified dementia petitioner, and I'm also on the board of the validation training institute, the promoter of the validation method from [inaudible 00:37:59].

As Jenny was saying, I'm also the founder of Linked Senior. At Linked Senior we build technology to help those in a care setting engage people living with dementia. In other

words, we enable [inaudible 00:38:13]`technology we enable revision, which is person centered care. Thank you for Lora for explaining the importance of addressing the needs of the residents. When they live with dementia, to increase their quality of life by responding to the needs. I'll just start the presentation with a quote, [inaudible 00:38:32] quote from somebody, Doctor Bill Thomas, who is the founder of the [inaudible 00:38:35] as you might know. He is one of the greatest promoters of person-centered care. I think that what that quote reminds us of is the fact that most of the needs of the residents in a senior care setting are not met. As you now, there's a high amount of dementia, depression, there's a high amount of dementia [inaudible 00:38:56] more than 80% of the residents live with some kind of mild cognitive impairment or dementia.

As a technology company that has its services in hundreds of centers in the States and Canada, what we have to look at is why is the process not working in the first place. Basically, if you look at the way someone should engage someone living with dementia, the process itself is pretty simple. My wife as a teacher does the same with it with her student, and Lora reminded us, is that we need to understand the residents and assess their needs. Based on that, plan something based on these needs. For example, if I was to live in a nursing home being French, and it has some level of dementia content or interaction related to my historical aspect of being French will be useful. Then obviously we would need to match the cognitive ability. I would have the program, and I would evaluate the results of that program. The main reason why this process doesn't work today in most centers in most of [inaudible 00:40:05] is that it's mostly done by paper.

As we know, all of these organizations are driven by business imperative, and driving these processes by paper does not enable us to make a link between person sensitive care and business. Whether it is in the assisted living where I want to drive a better product [inaudible 00:40:24] marketing enhancements or in the nursing home having [inaudible 00:40:30] with the five star rating system or the referral mechanism.

Now, as always, technology is only an enabler of vision. There are operators in the market using technologies like Linked Senior or Linked Senior that have really enabled deep clinical results for people living with dementia. A nursing home in Virginia is able to reduce by 60% the behaviors of people living with dementia. An organization in Pennsylvania that is very forward thinking was able to reduce [inaudible 00:41:08] to zero the use of anti-psychotic medication. Again, a vision enabled by technology.

Let's look at quickly how that technology can potentially work. The idea is you want to enable, as Lora mentioned, the front line person. The person who's touching the resident through activities, through activities of daily living or [inaudible 00:41:34] therapy and so on. You want to create a situation where that person has the right engagement for any resident any given time. You're moving, again, paper processes to an electronic solution. Your operation [inaudible 00:41:48] person centered care. This can be done by enabling use cases which already exist. So the idea that residents on the left hands side today can [inaudible 00:42:00] using technology they have access to different types of application to [inaudible 00:42:08] manage them. For example they can play games together, they can learn a new language. Some of these applications make it much easier for them to access the content whether individually or as a group. To stay connected and to build and maintain a cognitive reserve. Even if there is some slight mild cognitive impairment. As the disease is diagnosed or as a decline occurs, this data [inaudible 00:42:37] becomes really important.

So here, for example, the staff using technology application can [inaudible 00:42:43] different games and enable the group to participate in jeopardy or visiting a museum, for

example, with site trips. As we have the more advanced degree of dementia, the use of technology to enable music for music therapy or reminiscing therapy becomes very, very important. Again, remember the staff ratio that we discussed. A staff member sometimes serves up to 60 or 100 residents, having technology to find content that is person sensitive is very important. Again, that content [inaudible 00:43:21] quickly, as long as it's evidence-based and uses what is in research to engage the residents from a cognitive aspect can really trigger a lot of very positive aspects. For example, as you can see here there are games like jeopardy, again matching the needs of the residents through different types of content. So again, being French I would be very interested, even at the very late stages of dementia to talk about different things such as the Louvre museum in Paris.

All of that, as I said before, is important to be able to link to things that matter to the clinical aspect and the business. In order to do that, I would need to know what is being done by who. For some of the technologies, including ours, helps you understand what stuff, what staff does what kind of engagement for which resident. Right? How is the content with my resident used, and what kind of topic or what kind of intervention [inaudible 00:44:21] are being done. Our solution, and some others do too as well, integrates with the electronic health record. Helps you understand how efficient your staff is. How efficient your staff is at doing group activities, [inaudible 00:44:37] interventions, the one on one. It helps you drill down and optimize at the resident level how, for example in this case, Lena is [inaudible 00:44:47]. Lena, for example, has been active in groups. We're seeing different [inaudible 00:44:53] interventions. She could be wandering at the end of the afternoon.

Understanding which staff does these engagement with Lena helps us maybe plan ahead, and instead of mitigating behaviors we can probably start thinking about preventing them. Again, once we have the data we can analyze and operationalize person-centered care. Again, it is only about responding to the needs of the residents. Again, with that data, we can then include some of these processes in what Lora [inaudible 00:45:29] process improvement, and enable person-centered care not by one or two or five residents, but at the building level. Make sure that we are advancing the quality of life for these people by engaging them in a person-centered way. Again, Linked Senior is one of these technologies to enable that at the building level with resident by resident score card. Ultimately the goal is to help us understand who the resident is, and enable the right engagement for all residents all the time.

With that, I want to thank you again for your time, and I'll leave it to Scott to draw on some more deeper results related to that kind of technology.

Jenny Inker: Thank you so much Charles, that was really interesting. And Dr Sautter, let me just remind you to leave some time for questions. We're looking forward to your presentation and also want to hear from our audience, who are currently sending in some wonderful questions.

Dr Scott Sautter: Thank you very much. I'd like to thank Jenny for being the moderator, my two co-presenters Lora and Charles. Just to reiterate, I think the main point here is the critical aspect of continued care, reducing caregiver burden and to engage people and to try and minimize the use of anti-psychotics. Also to Charles, who really expands upon engaged computer technology. Really goes beyond that of the individual, but really coordinating that with the entire staffed operationalized person-centered care across the entire facility, which is quite amazing.

Before I get into my talk, just a little bit of a background about what I have done, is that in my graduate work I had a chance to work at a residential program for individuals with

severe traumatic brain injury, essentially they had a dementia. I also worked at a VA hospital in Tennessee, working with individuals with significant all cause dementia. When I did my post-doctoral fellowship at the University of Virginia, I worked at Western State Hospital with those individuals [inaudible 00:47:49] geriatric center. When I moved to Virginia Beach I helped start a 34 bed long term care severe brain injury unit for individuals who were young adults. One of the things that I've found that I think is relevant to this discussion is that the non-pharmacological approaches to managing behavior in this unit was to redirect the individual and occupy their time based on information that we knew that they were interested in. For example, if the person had behavioral problems and they liked the Red Sox, for example, I would simply try to engage the person who's having a behavior problem with a discussion about the Red Sox and their league play.

Basically to redirect the person, and then occupy their time. This was extremely time consuming, and problematic. I think that the technology that we're talking about is that you can individualize these different technologies and save a lot of time of the individual care giver and reduce caregiver stress. What I'm going to be talking about, essentially, is a study that we have done, two studies as a matter of fact, that provides a randomized controlled evaluation of a particular program called IN2L, which stands for it's never too late.

Very quickly disclosures. I'm an independent private practice in neuropsychology, but as a neuropsychologist I'm very much interested in research. So I have a community faculty position at Eastern Virginia Medical School, I'm in the departments of psychiatry, family medicine, as well as in the [inaudible 00:49:33] center geriatrics. I also have an appointment at Regent University in their clinical psychology program, where I mentor doctoral students to research and I teach classes there as well. Again, I have about 30 years experience working with patients with dementia. I do not have any financial interest in the technology I will be discussing, but I am interested in the research demonstrating its efficacy.

The learning objectives very quickly is the strengths and limitations of technology use with persons with dementia, unique contribution from research demonstrating efficacy, varying cost of technology and equipment, and future projects we'll be working on. Here's our team, and it took a great deal of people. We had Virginia Wesleyan therapeutic recreation undergraduates, we had Eastern Virginia Medical students involved. We had Regent University doctoral students providing statistical help, we had doctoral students from Regent also providing training and psychometrics. The gentleman with the pink shirt and the blue blazer, that's Doctor [Erovich 00:50:38], professor at [inaudible 00:50:38] investigator. I'm in the center, just to my left is Ben Unkle who is the CEO of Westminster-Canterbury where the research was taking place. This is Amy Powell Chichester, who was the original clinical research coordinator who was then later replaced by [inaudible 00:50:57].

Other acknowledgements again, Ben Unkle, he had the vision to basically have this study take place, that he wanted to have a randomized controlled study or a particular technology I'll talk about. Laura Mock, who is the Westminster-Canterbury therapeutic recreation coordinator. The entire therapeutic recreation team, Dr Wayne Pollock of the Virginia Wesleyan College and his students. Jacob Philips was the doctoral student with Rebekah Kintzing on the psychometric training. We also had a second review of our statistics by Dr Ali from Norfolk State University. The Birdsong Foundation funded this project, it was Mr and Mrs George Birdsong. Mrs Birdsong's mother had dementia, she was on Westminster-Canterbury's dementia unit and did not have the opportunity to participate with the community. Understanding that a technology such as IN2L would have allowed her mother to participate more so may have been able to improve the quality of her life. Based

on that, and Ben Unkle's vision that he'd like to have this studied in a randomized controlled trial, allowed the Birdsongs to generously give nearly a quarter of a million dollars for this study.

This was an IRB approval from Eastern Virginia Medical School, which was very difficult to do because of the vulnerable population and getting informed consent. But after four or five months we were successful in doing that, in getting approval to get started on the study. This is a quick slide of why a person with dementia who may have memory loss still be able to participate in these kinds of technologies. Doctor Erovich, who is a professor of neuroanatomy and a neuroscientist, he says that this is the music and salience network of the brain that is relatively spared. This is the important part in most dementias. Most dementias have problems with the frontal lobe in terms of reasoning and problem solving, they have problems in the temporal lobe in terms of short term memory, but the amygdala, the insula and the anterior cingulate areas of the brain remain relatively intact so the person could be engaged with emotion, and that allows for the participation with these different technologies in all cause severe dementia.

Again, as Lora talked about, there's a partnership to improve dementia care in nursing homes, and the partnership's larger mission is to enhance the use of non-pharmacological approaches, and person-centered dementia care practices. That's what's driving this research. There has been a number of studies using non-pharmacological controls, person centered care, communications, skills training, behavioral mapping, music therapy, group therapies and activities all have had large effect sizes. Effect size just simply refers to the practical significance rather than just statistical significance in the size of the effect. That's how we're going to be reporting that. These were enlarged meta-analysis randomized controlled studies.

There was an amazing study that was done by Professor Raia, it's down here, R-A-I-A, 30 nursing homes looking at habilitation therapy, which is person-centered, positive behavioral relationships, does not focus on loss but what remains and evaluated quality measures. Reliable reduction in anti-psychotic use was their main finding. Habilitation is different from rehabilitation, trying to get back something that somebody lost. This is trying to build something that they don't have, working with that.

The literature on computer engagement is many, there's tablets for persons with dementia care, a computer platform for dementia and caregivers, touch screen games for dementia, virtual reality desktop computers for dementia. Music helps reduce challenging behaviors. Computer interventions, technology aided verbal reminiscence, computer creativity promoting touch pads. Computer engagement with mild cognitive impairment. Then I was involved in the smart phone use to capture continuous pictures during the day of an individual who had dementia, wearing a lanyard with the smartphone at its chest, taking pictures through the day which was then reviewed by the caregiver and the person with dementia at the end of the day for reminiscence therapy. Which was an interesting study. This was published in applied neuropsychology back in 2011. I've had an interest in technology and these different things for quite a while.

As a disclaimer, the Birdsong initiative that was previously reported to the Virginia Geriatric Mental Health Partnership was flawed and prematurely released on two issues. One was that the study did not reliably reduce anti-psychotic use, and the did not reliably reduce challenging behaviors. I'll talk a little bit about that later. It had to do with some compounds and a reduction, essentially, in the sample size. The purpose of the study essentially is to look at the effect of this particular technology It's Never Too Late, a computer platform

from Denver Colorado, to look at it in a naturalistic setting, in an assisted living secured memory care unit and also in a long term care unit.

It's Never Too Late, IN2L, is an individualized, customized touch screen computer, and various applications include but are not limited to music, games, puzzles, classic TV comedies, travel, Skype and internet access. The interesting thing about It's Never Too Late is that you can individualize the content to the person with dementia, unlike what I had to have done previously without having this technology working with individuals with dementia was to be very creative, time consuming, trying to redirect the person and occupy their time knowing something about them. This is where they had to plan ahead, essentially, and manage that.

Our methods essentially is we had a control treatment program, and we had an experimental condition. The experimental condition was guided computer engagement, and we had 10 specific apps that we used to be more uniform. Following the guided use of the computer, the individuals in the experimental group had free access after that all day long. The control group did have access to exposure to IN2L, but only through a group activity. So both groups had a standard of care provided in both conditions, essentially was this access to group activity. The difference was in the two separate experiments, and the first one was with severe dementia, all cause dementia, there was one hour a day five days a week for twelve weeks of this guided computer engagement. Then in the second study with mild cognitive impairment there was one hour of guided engagement per day five days a week for six weeks.

This is what the two studies looked like. Severe dementia, the experimental group had four individuals, control had six, and the MCI group there was five in the experimental group and five in the control group. Just to give you an idea, we started off with 62 people randomized into two groups in this particular first study, but because of attrition unfortunately people passed away from natural causes. Because of confounds in the methodology, we had to reduce this down to this small amount of individuals. The inclusion was having dementia of some type, 12 weeks long, five weeks duration of treatment. The average age was 93. Their MoCa score, interestingly, this tells you they're severe demented, was a 10, and there were far more women than there were men. In the MCI group, there was a six week's worth of [inaudible 00:59:12], the same methodology, the average age was 87, and in the MCI group there was an average MoCa score of 21, clearly a mild concern.

Our statistical analysis was a mixed design experimental control, and pre and post. We used the general cognitive test as a co-variant, basically to mediate the effect of variable cognition on the different variables that we're interested in. This allowed us to have a better understanding of the effect. Here are the results for both the severe and the MCI group. We showed an increase in the affect balance scale, which is a 10 item yes or no scale regarding quality of life, and we also showed a decrease in perceived stress by CNA caregivers. In the MCI group only, in the MCI study only, we had a reliable increase in their cognition, and a reliable decrease in general depression scale, or geriatric depression scale, excuse me. There were no reliable differences in anti-psychotic use, documented challenging behavior, systolic blood pressure, and we're still, pending the analysis of the biomarkers which we used salivary cortisol and alpha-amylase.

Here are some of the graphs that show the differences here. Here's severe dementia, we increase in affect balance scale with a very large effect size. This is 49% can be determined that this was due to the treatment. Black is experimental and white is control. We had an increase in the control group, 49% of that can be accounted for. In the severe

dementia group there was a decrease in CNA perceived stress, we had a statistical finding but we had a large effect size. 32% could be accounted for by the treatment, you can see that decline across 12 weeks. In the MCI study, there was an increase in the affect balance scale again. A nice statistical significance below .05, and a very large effect size which accounted for 37% of the treatment. We were able to improve from time one to time two in the experimental group.

In the MCI study, the CNA perceived stress scale, a reliable reduction across time from time one to time two. Less that .05< good statistical finding there. Then a very large effect size, half, 50% can be accounted for by the treatment. In the MCI group, geriatric [inaudible 01:01:56] scale was reliably decreased across time from time one to time two, a nice statistical finding, less than .05, and a large effect size 34% can be accounted for by treatment. In the MCI group we had an increase in the general cognition, a nice statistical finding, less than .05. A large effect size, 33% can be accounted for by the treatment.

Overall the summary of these results, essentially, show that there is a reliable increase in general quality of life, and a decrease in perceived stress by the CNA caregivers. Increase in cognition and decrease in depression. The conclusion is that overall there was an improved sense of wellbeing, improved cognition and depression. Neither study showed a change in challenging behaviors, medications or blood pressure, more than likely due to such a small sample size. CNA overall participation decreased perceived stress, and this could show a benefit of cooperating with research but also helping burnout and turnover, which as Lora talked about is a big concern. If you have consistency across time, this is a way to be able to show that. Then this effort that we have done shows that there is efficacy and research in using real world environments, and there was a productive relationship between the continued care rehabilitation retirement community and academic collaborative research.

Then there was this engagement of student learners, which was really quite remarkable. The students had some very positive things at working with cross disciplines, and also generations. The study shows the benefits of engagement in dementia, severe all cause dementia and MCI. The weaknesses that we had a small and size, exposure to computers in both the experimental and the control so we had more or less not a true control. We don't really know whether or not it was the guided computer engagement, specific computer system or a combination of both. Our planned future studies are to replicate what we've done in three longer term care facilities, so we get greater power to detect changes in medication, increased sample size, and to make sure that everybody that is in the study is on an anti-psychotic to see whether we can have a reduction of that. Then to use some other measures as well.

Very quickly, at the very end here, technology does not cure dementia. Technology varies in expense, but research shows that there's significant effects. Many promising applications as Charles has talked about, a fantastic program to not only engage people individually, but to look at them across the facility. There's a need for due diligence necessary to balance the various benefits and costs. There's no one shoe fits all. Thank you very much for your time, and hopefully we'll have some questions.

Jenny Inker: Thank you so much Dr Sautter, that was fascinating. Very interesting to get a look into the research angle, and certainly this afternoon we've had a very rich overview of a number of different perspectives here on dementia and how it changes the brain, best practices for managing behavioral and psychological symptoms of dementia without medication. We've heard about some innovative ways to engage with persons living with dementia using technology, and of course these really intriguing research findings. What I'd like to do now

is to go to the questions that have been coming in from our audience and present these to our expert speakers. Before I do that, if I may I just wanted to get in here with a quick question of my own. Here's the thought. What are your thoughts about whether we might need a hierarchy or some kind of way of triaging the way that we respond to a person living with dementia who might be experiencing challenging behaviors? In other words, if we go first to redirection or engagement, is it possible we might miss an opportunity to respond to other more basic needs? Lora has mentioned things like pain, maybe hunger, thirst, this kind of thing. I'd be curious to hear the panel's thoughts about that.

Dr Scott Sautter: It's a very good question. Another issue could be sleep disturbance, it could be hunger, it could be frustration. A lot of times in my work we would see the challenging behaviors related to confusion, and by trying to settle that confusion down by redirection or occupying their time was important. But that confusion led to threatening behavior, so one of the things that just immediately strikes me is that this calm, relaxing modeled behavior that decreasing your arousal as the other individual with dementia is increasing their arousal. In a very calm way trying to redirect them and trying to find out what is going on. The last issue there would be to make sure what Lora talked about, is really knowing the person extremely well about their needs and their wants and their interests, is extremely important.

Lora Epperly: If I might add, I'm a Alzheimer's disease and dementia care trainer. One of the things that I do, a section on communication to prevent behaviors. The central piece of that is knowing your resident, but also when you start seeing that anxiety there are four or five things that you start with. Are you hot, are you cold, are you thirsty, are you hungry? Do you need to go to the restroom? Is there something that's going on in your environment that is contributing to that anxiety. Yesterday I spent almost eight hours in one of our memory care units, and there was an old lady that I noticed during the day had gotten very anxious and was starting to pace. I went over to her and I touched her arm and it was cold. We got her a sweater, and she calmed right down. She looked at me and smiled and said, "I love you." So had I tried to redirect her I would have totally missed a very easy way to calm her and relieve that anxiety.

Jenny Inker: Thank you, those are great and very helpful examples. All right, let me direct a question here to Dr Sautter, and the question from the audience is, have you considered doing any studies in outpatient environments such as adult day services?

Dr Scott Sautter: No we have not. The amount of time that has taken to do this project has been immense. The team has been immense, and I also have a private practice, I'm not on a salary. I have not, but as we move forward thinking about the next study we're certainly open to engaging various population groups and different settings. I welcome the opportunity to do so.

Jenny Inker: Very good, thank you. And Charles, here's a question I think for you. The audience member would like to know could these programs be used for individuals with both dementia and an intellectual disability?

Charles de V.: Absolutely. That kind of technology [inaudible 01:09:57] others have great results with people living with dementia even at the very late stages of dementia. In essence, it's only an enabler to help the frontline caregiver respond to the need of the residents. We have clients using us, actually, for people living with mental health and [inaudible 01:10:17]. So the answer is yes.

Dr Scott Sautter: Think I lost contact.

Jenny Inker: I'm so sorry. I was on mute. I'm back. I think the next audience question is probably best directed to Lora. It seems to ask about topics that she's spoke to. Lora, you mentioned the, I believe you called it the OIG 2000s. Was there a ruling or a definition of psychoactive drugs, excuse me. The audience member would like to know whether substances like melatonin used during the day or other drugs not classified as anti-psychotic medications might still be counted for information gathering purposes.

Lora Epperly: I hesitate to give a definitive answer. The CMS's state operations manual, which is the document that is used in surveying nursing homes, has a section in it specifically talking about which anti-psychotic medications that they will be looking at. I apologize, I don't have the most current version in front of me. My experience of 14 years in long term care has been that surveyors especially are looking at outcomes. They're looking at what is going on with that resident, and then they also [inaudible 01:12:21] the official list of medications that they're going to be looking at. I'm not a pharmacist by any stretch of the imagination, but I believe melatonin is an over the counter medication. As such, the surveyors would look at if there is first an FDA indication for the use of the medication, whether it's over the counter or whether it is a prescribed medication. I'm not sure I answered the question, but without having that state operations manual in front of me I can't definitively say if melatonin was included in that or not.

Jenny Inker: All right, thank you. Perhaps one final question here. The audience member would like to know are there any websites that would be a good place to start out to find out more about these types of technology.

Charles de V.: This is Charles with Linked Senior. We've been engaged with an organization that has actually global reach called Aging 2.0. They're headquartered in San Francisco, but they have chapters worldwide. Their goal is to enable, accelerate innovation and technology to increase the quality of life with the old adults. That would be the number one resource I would recommend for that. [crosstalk 01:14:06] it's aging2.0.com. [crosstalk 01:14:12]

Dr Scott Sautter: I'd also like to add a website, sharpbrains.com. It's a group of neuroscientists who report on the applications of neuroscience to daily life. Not just to individuals with dementia per se, but with brain health and brain fitness as their overall theme. That's sharpbrains.com.

Jenny Inker: Okay, sharpbrains.com. Thank you Dr Sautter and Charles, those are two great recommendations. I think we will wrap it up now, we're just at our time. Once again I would like to thank Lora, Charles and Dr Sautter for a fascinating and informative presentation and for joining us today with their knowledge and their expertise. Thanks also to you, our audience, for participating in today's webinar. This webinar has been recorded. If you missed any portion of our presentation today, or you would like to share it with a colleague, please do visit the webinar page on our website. As a reminder, information alongside the survey links will be emailed to all registrants by Monday. The webinar also concludes our six series of live events and is available at the website, which will be shared on Monday. Please remember that all of our webinars have been archived, and all resources and materials are available for your review and download for free. Until our next live webinar, whenever we may reconvene, we thank you again for joining us. We wish you the best for your continued success. Thank you for all you do to make a difference in the lives of older people. Have a wonderful afternoon.