An Innovative Approach: Integrating Technology to Enhance Dementia Care

*Aisha Azher, MHA, Special Projects Coordinator*
"Drugs are not the answer for improving the quality of life for people with dementia." – Larry Minnix, President of LeadingAge

The National Alzheimer’s Project Act of 2010 was the driving force that focused on the overuse of psychotropic drugs with Dementia patients and CMS now focuses on the utilization of psychotropics in nursing facilities.
No One Wants to be Drugged Unnecessarily ...

- Common side effects of ANTIPSYCHOTICS include:
  - Blurred vision
  - Dry mouth
  - Drowsiness
  - Muscle spasms or tremors
  - Higher Cholesterol
  - Diabetes
  - Weight gain
Challenge

• How can we better manage problematic behaviors of dementia patients without the use of psychotropic drugs?

• Are there non-pharmacological methods of improving the quality of life of seniors?

• Can we do this without creating a significant financial burden to the care provider?
Resident Engagement Technology

- Based on research done by the Greenhouse Project, residents utilizing computers reported higher energy levels, expressed more positive emotions and experienced greater quality of life.
  - Demonstrated by a 2009 study conducted by Mather LifeWays Institute on Aging in partnership with The Greenhouse Project (Hollinger-Smith, 2010)
Westminster–Canterbury’s Innovative Solution

- We conducted a pilot project to determine the efficacy of a personalized individual touch-screen computer system with cognitively impaired residents (MoCA score was less than 10 out of 30).

- Software Program: iN2L (It’s Never Too Late)

- Thirty-one iN2L’s were purchased for use by the skilled nursing and assisted living residents.
Collaborations

Westminster Canterbury’s President/CEO Ben Unkle
Eastern Virginia Medical School: Dr. Sautter (PhD) & Dr. Aravich (PhD)

Philanthropists – Mr. and Mrs. George and Sue Birdsong

- Westminster Canterbury’s Therapeutic Recreation Dept
- Virginia Wesleyan College - Dr Wayne Pollock (Rec Therapy students)
- EVMS medical students
Westminster Canterbury’s President/CEO: Ben Unkle
Collaborations with Eastern Virginia Medical School

Scott Sautter, Ph.D., FACPN, PI
Assistant Professor, EVMS
Licensed Clinical Psychologist
Board Certified Neuropsychologist
Owner, Hampton Roads Neuropsychology, Inc

Paul Aravich, Ph.D., CO-PI
Professor, EVMS
Dept. of Pathology & Anatomy
Dept. of Internal Medicine,
Division of Geriatrics &
Dept. of Physical Medicine & Rehabilitation
Mr. & Mrs. Sue and George Birdsong

- Philanthropists
- Donated $228,000 for the project
- Project name: The Birdsong Initiative
We recruited students from Eastern Virginia Medical School, Virginia Wesleyan College, and Bayside High School to train residents on how to use the new technology.

Our program had such a profound effect on some students that they came back and shared multiple stories involving special moments they shared with residents and staff.
• Over 3,000 interactive applications!

• Designed for various ranges of cognition and functioning.
Westminster Canterbury’s custom designed iN2L’s
Experimental Design

24 week study - Dementia Participants in Nursing Home and Memory Support Unit

1st 12 weeks
Experimental Group A
Control Group A

2nd 12 weeks
Experimental Group B
Control Group B

24/7 unlimited, free, individual computer use

Group computer use as standard of care
Each week, the Experimental Group received 5 hours per week of Guided Computer Engagement by the Therapeutic Recreation and Medical students.

Each session was restricted to 10 consistent applications.
Experimental Design

- Consent forms/photo release approval for participants and staff
- Training/Educating families, staff and students
- Encouraging residents to use IN2L at any time of day or night at their leisure
• Antipsychotic Medication Doses/Medication Administration Record (MAR) review
• Documented Behaviors (Frequency and Intensity)
• Perceived Stress Scale (PSS)
• Montreal Cognitive Assessment (MoCA)
• Geriatric Depression Scale (GDS)
• Affect Balance Scale (ABS)
• Cortisol Levels (Saliva Samples)
• Demographics
• Documented Diagnosis
Pre-/Post Assessments

- Residents were given assessments before the start of the project, at the half way point, and towards the end of the project.

- The results were analyzed by our research team.
### Resident Profiles

<table>
<thead>
<tr>
<th>PHASE 1</th>
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<tbody>
<tr>
<td>Inclusion Criteria:</td>
<td>Reside in Nursing Care Unit or Secured Memory Unit</td>
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<tr>
<td></td>
<td>Diagnosis of Dementia or Dementia related disorder</td>
</tr>
<tr>
<td>Average Age:</td>
<td>93</td>
</tr>
<tr>
<td>Average MoCA:</td>
<td>10</td>
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<tr>
<td>Gender compare:</td>
<td>F=83.6%, M=16.4%</td>
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Results

Quantitative  Qualitative
**Quantitative Results**

- **Challenges:**
  - Small sample size
  - Missing data
  - Control group continuing to use shared computers

- Statistically significant increase in the Affect Balance Scale for the experimental group as compared to the control group.
  - \( P\)-value: 0.036
  - Affect Balance Scale measures the quality of life & psychological well being
Affect Balance Sclae: Experimental vs Control Comparison

- P-value = 0.036
- 96.4% chance that the improvements in quality of life were due to the iN2L!

Estimated Marginal Means of ABS

Covariates appearing in the model are evaluated at the following values: MoCA Baseline = 31.3000
Affect Balance Scale

- Measures the quality of life & psychological well being
- 10 Question Survey
- Answers: Mostly Yes or Mostly No
- Higher scores indicate higher quality of life
A resident who had very little recollection of her previous experiences used the travel app to recall all of the places she had visited in Europe.

She started to retrieve lost memories and reconnect with her own identity. She even started to teach German to our staff.
A Resident who felt distant from his Greek Heritage used the iN2L computer to explore Greek history, music, news, and food.

By staying up to date with Greek culture, he found joy in reconnecting with his own identity. He also felt less isolated and lonely.
A non-verbal resident began speaking again after having the fish tank screensaver running in her room for some time.

One day when it was off, she asked for it, by simply saying “fish” and pointing.
An agitated resident, showing signs of frustration with the nursing staff was soothed and calmed by the computer’s sensory applications such as the beach waves, the crackling fireplace, the wheat blowing with the breeze in a field, etc.
A resident used the Skype feature to video call her niece in Australia. She hadn’t seen her for over 20 years.
Our CNA’s felt that the computer was so powerful in helping with problematic behaviors that they protested the removal of the computers and wanted usage of the machines written into the care plans.

Post program observations: CNAs can use them, prompt residents, and want the computers to stay.
“I think the computers have made an impact on their quality of life...it was an eye opening experience to see how much the residents were able to learn or remember certain items from their past”
“Since the program has started my phone conversations with my Dad have changed. He seems to be more cheerful. I recognize that with his dementia, he isn’t going to get better but it has been refreshing to hear cheerfulness in his voice again”.

“She really loves the travel app and has been zipping all over the world with this technology! I told her I was jealous. I was stuck in my office while she was off to a beach in Mexico”.

“Thank you. I understand that Mom is enjoying it. She has tried to pick a flower and wanted someone to dry her hands after she touched the waves on the screen”.

Family Testimonials
The quality of life of resident’s who were using the iN2L significantly improved in comparison to the control group.

iN2L’s were enjoyed so much that they are being rented by many residents

Caregivers loved the program

Residents were able to reconnect with distant family members
Conclusions

- We purchased a 70 inch iN2L for use in our memory care unit along with additional individual and group computers for the skilled and assisted living residents.

- Each floor now has 2 iN2L’s for group use.

- We are continuing Phases II and III of this study to further evaluate the efficacy of this technology in less cognitively impaired adults.
### PHASE 2

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<thead>
<tr>
<th>Inclusion Criteria:</th>
<th>Reside in Assisted Living Unit</th>
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<tbody>
<tr>
<td>Average Age:</td>
<td>87</td>
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<tr>
<td>Average MoCA:</td>
<td>17</td>
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<tr>
<td>Gender compare:</td>
<td>F=87.5%</td>
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<td></td>
<td>M=12.5%</td>
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iN2L Demonstration
For More Information

- iN2L Website: http://in2l.com/
- Birdsong Initiative: http://www.wcbay.com/birdsong
- Contact Information:
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  - 757-496-1161
Questions & Answers