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The Use of an Avatar Virtual Service Animal to Improve Outcomes in Hospitalized Older Adults

Pace University College of Health Professions
 Lienhard School of Nursing
 New York, NY

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PIONEER PRESENTERS:
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 Lin Drury, PhD, RN, FNGNA



College of Health Professions
PACE UNIVERSITY
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Funding

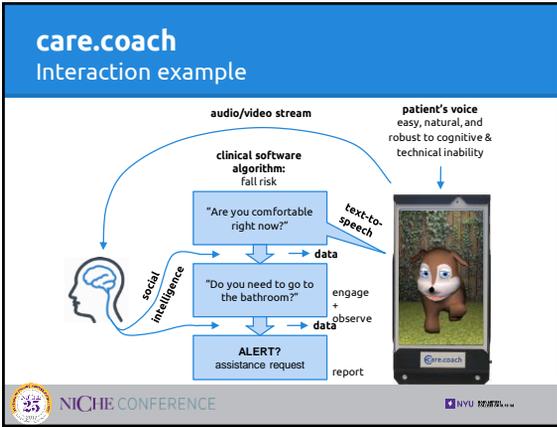
New York City Economic Development Corporation Pilot Health Tech NYC






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care.coach

Actionable data & reports

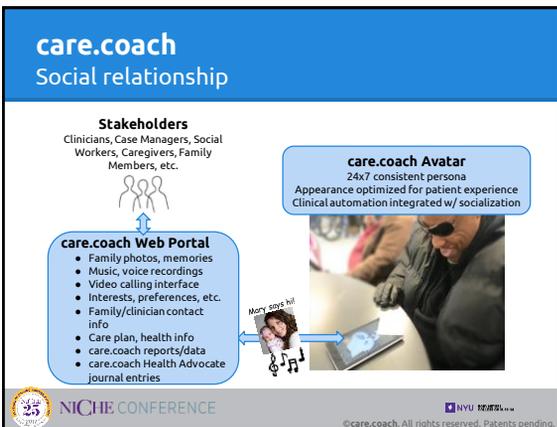
Event #	Location	Event Name	Timestamp	Task Name	Category	Answer	Present Time	Expiration
548	careUnit3	AmericaChicago	2018-10-18 00:00	COACH: Have you been feeling during the	Yes	2018-10-25 23:59	2018-10-25 23:59	🚩
549	careUnit3	AmericaChicago	2018-10-18 00:00	COACH: Are	(None)	2018-10-25 23:59	2018-10-25 23:59	🚩
550	careUnit3	AmericaChicago	2018-10-18 00:00	COACH: Have you had someone who had a	No	2018-10-25 23:59	2018-10-25 23:59	🚩
551	careUnit3	AmericaChicago	2018-10-18 00:00	COACH: Would it be hard to keep out	2018-10-25 23:59	2018-10-25 23:59	2018-10-25 23:59	🚩
552	careUnit3	AmericaChicago	2018-10-18 00:00	COACH: How do you feel about	2018-10-25 23:59	2018-10-25 23:59	2018-10-25 23:59	🚩
553	careUnit3	AmericaChicago	2018-10-18 00:00	COACH: How did the scale feel?	211	2018-10-25 23:59	2018-10-25 23:59	🚩

Customizable coaching programs based on clinical best practices:

- Heart failure
- Myocardial infarction
- Pneumonia
- COPD
- Diabetes
- Depression
- Hypertension
- Inpatient delirium & falls

Actionable data analysis, reporting, and risk stratification, with urgent alerts via email/phone/SMS

The slide includes logos for NICHE CONFERENCE and NYU RWJMS.





Design for All

Multiple avatar options

Immersive Avatar

Regular mobile interface hidden.

Optimal experience for older patients who are not comfortable with technology or who have cognitive impairment. Zero learning curve.

Hardware provided by care.coach.






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Summary of Pilot Study by Pace University

<p>Participants</p> <ul style="list-style-type: none"> Community-dwelling older adults at Henry Street Settlement NORC in NYC, received care.coach service 4 men, 9 women Aged 65-93 Living alone with no caregiver in evenings/nights Rolling enrollment over ~8 months 	<p>Results</p> <ul style="list-style-type: none"> Pace University researchers reported "improvement in speech, attitude, outlook, and behavior" of the older adults, who were originally "apprehensive," "uncooperative," and "belligerent" Highly positive feedback from both caregivers and older adults
<p>Funding</p> <ul style="list-style-type: none"> Verizon Thinkfinity Grant Pace University Lienhard School of Nursing 	



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Psychosocial Support Outcomes



“Improvement in speech, attitude, outlook, and behavior” in population of older adults



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De-identified Patient Data, Qualitative

Health Advocate Journal Entry

03/25/2015-11:55

I woke up and saw PATIENT. I greeted her good morning. She was taking her medications. I asked her a few questions and she was able to answer them. She said she slept well last night. **She told me she feels like quitting the cardiac rehab program but that she doesn't want them to take me away from her.** I encouraged her to continue the program and that I will be with her to support her. She said thank you. She said it was hard to do everything on her own, like cooking and preparing her meals. I agreed with her it was difficult but we will get through it in the end.

Compared to technology point solutions like IVR calls or tablet-based care management apps, the **psychosocial support** and **patient relationship** from care.coach enables improved adherence and clinical outcomes.



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The Current Study

Inpatient Hospital Program

Study Aim:

To investigate the impact of a virtual service animal on hospitalized older adults.

Variables of Interest:

- Delirium
- Depression
- Loneliness
- Cognition
- Falls
- Restraint use



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The Setting

- An urban community hospital (644 bed) medical center in NYC that targets the underserved.
- 100,000 Emergency Department visits annually
- 23,166 Patient admissions annually
- Ethnically diverse patient population
- Ethnically diverse staff



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The Setting

- The facility serves the most ethnically diverse borough of NYC and the most diverse zip codes in that borough.
- 82% of the population identifies as Black, Hispanic or Asian
- Almost half are foreign-born
- English is often a second or third language with Spanish or South Asian languages predominating.



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The Setting

- Income levels are lower than average for NYC with the majority of insured residents receiving Medicaid and/or Medicare benefits. 25% of the population is uninsured, usually due to undocumented immigration status.
- Levels of education and health literacy are among the lowest in NYC.



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The Setting

Health Disparities associated with lack of access to health care and high psychosocial stress are reflected in the ranking of death rates across the facility's service area:

1. Heart disease
2. Cancer
3. Flu and/or pneumonia
4. Stroke
5. Accidents
6. Diabetes



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The Research Team

- Two Co-PIs
- Project Manager: Graduate Nursing Student
- Research Assistants:
 - 2 Graduate Nursing Students
 - 8 Undergraduate Nursing Students
- Coverage in hospital: 7 days/week
- Nursing staff on intervention/control units



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The Inpatient Units

- Medical Units
- Two intervention Units and One control unit.

- Beds = 34-37
- ADC = 32
- LOS = 3-6 days



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Instruments

- Cognition: Mini Cog
- Delirium: CAM
- Loneliness: 3 item UCLA loneliness questionnaire
- Depression: Geriatric Depression Scale (15 item)
- Demographic data
- Falls
- Hours of restraint use

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Protocol

- Nurse Managers on each unit do initial screening
- Inclusion criteria: Over age 65, communicate in English, can consent or have someone who can consent
- RA rounds daily
- Introduces care.coach avatar on intervention unit
- Obtains consent and enrolls patient
- Completes initial assessments

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Protocol

- RA visits all patients who have care.coach avatar on a daily basis
- RA assesses if patients want to have care.coach avatar at home post-discharge
- RA visits all patients who are enrolled in study on control unit on a daily basis
- RA completes assessments prior to discharge
- RA completes home visit to set up care.coach at home

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Results

Patient Engagement with Avatar

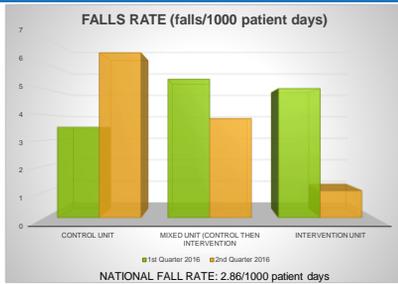
- Average # of avatar check-ins per patient per day: 71.3
- Average minutes of avatar engagement per patient per day: 61.0
- Average # of media files (music and images) used per patient per day: 11.5
- Average # of "protocol tasks" completed per patient per day: 6.5



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Patient Falls



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Restraint Use

- Unable to obtain accurate restraint rates
- Observational data only
- 4 intervention patients restrained at time of enrollment
 - 3 patients with upper extremities restrained
 - 1 patient with upper and lower extremities restrained
- In all instances restraints discontinued within two hours of care.coach initiation



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Qualitative Results: Patient Feedback

- "I love it."
- "It reminds me of my dog, Poochie"
- "It is adorable"
- "This is just what my mother needed in the hospital"
- "It's a good thing for my mother. Thank you"



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Preliminary Data: Nursing Staff Feedback

- "This is a wonderful project. [care.coach] is just great. I am thrilled that the study is happening on my unit. It is good for the patients." (Nurse Manager of Intervention Unit)
- "It is great. I talk to it every time I come to care for my patient."
- "It makes a difference for the patients."



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Patient Characteristics

Table 1: Patient Characteristics by Study Arm

	Intervention (n=43)	Control (n=54)	p
Age (mean)	76.88	76.22	0.7073
Race (%)			
White	24.39	25.93	
African American	53.66	48.74	
Asian / Pacific Islander	12.20	22.22	
Hispanic	7.32	9.26	
Other	2.44	1.85	0.678
Sex (%)			
Male	31.71	55.56	
Female	68.29	44.44	0.021
Residence Prior To Admission (%)			
Home	92.68	85.19	
Nursing Home	4.88	14.81	
Other	2.64	0.00	0.161
Discharge Location (%)			
Homeless	2.64	0.00	
Home	78.05	83.33	
Nursing Home	12.20	12.96	
Short-Term Rehabilitation	2.64	0.00	
Other	4.88	3.70	0.592
English as a Second Language (%)			
No	60.98	51.85	
Yes	39.02	48.15	0.375



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Loneliness

Study participants in the intervention group had a greater improvement in their overall mean Loneliness Score than participants in the control group ($p = 0.008$)

	Intervention Group (n=41)	Control Group (n=54)
Pre Mean Score	4.98	4.72
Post Mean Score	3.76	4.35



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Delirium

Study participants in the intervention group had a greater improvement in their overall mean Delirium Score than participants in the control group ($p = 0.003$)

	Intervention Group (n=41)	Control Group (n=54)
Pre Mean Score	0.29	0.11
Post Mean Score	0.02	0.05



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Depression & Cognition

The mean pre and post scores were not statistically different between the Control and Intervention groups for Depression and Cognition.



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Restraint Use

There was no statistically significant difference in the use of restraints during hospitalization between the Intervention and Control groups.



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Conclusions

- The use of an avatar virtual service animal decreased delirium, falls, and loneliness.

Next Steps

- Investigate other technological modalities and their impact on hospitalized older adults....

Robotic Animals



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