Disrupting the Technology and Aging Landscape: New Technology and Approaches

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There is **STRONG POTENTIAL** for technology to support **HEALTHY & ACTIVE LIVING**
However…..

We NEED to do better
Globally, healthcare systems are currently faced with the challenge of caring for an increasing number of older adults.

A large proportion of these individuals are living with diseases and impairments that are beyond those related to the normal aging process.
Further Complications….

There is also a significant decrease in the number of caregivers, many of whom are experiencing their own physical and mental health challenges.
Technology as a Solution

Technologies for active living, cognitive stimulation, and brain health
From Reactive to Proactive Care

Quality of Life vs. Cost of Care / Day

Home Care
- Independent, Healthy Living
- Community Clinic
- Chronic Disease Management
- Doctor’s Office

Residential Care
- Assisted Living
- Skilled Nursing Facility

Acute Care
- Specialty Clinic
- Community Hospital
- ICU

Technology
Technology as a Solution

There are very few devices available, with many of them being too expensive and difficult to use.
Why is it like this?

The needs of older adults are complex, and are even more so in the face of specific impairments and diseases.

More often than not, an understanding of these users’ needs is not part of a project.

There has been a “silos” mentality in this field that has resulted in poor outcomes.
Current technologies are stigmatizing
Older adults (and their caregivers) are becoming more tech savvy. There are growing expectations on the integration of technologies into their daily lives.
Disruption

NEXT EXIT
Disruptive Technologies

….when introduced, either radically transforms markets, creates wholly new markets or destroys existing markets for other technologies.
Our Goal

Our goal MUST BE to develop disruptive technologies that can enable aging-in-place, and to support caregivers and families.
Disruption requires INSPIRATION
Disruption requires NEW WAYS OF THINKING
Looking at other Disciplines
Re-Shaping the Field

Need to apply novel approaches in research and development:

- Development of new innovative technologies through new techniques and applications
- New collaborative approaches to overcome current limitations in technology transfer, knowledge translation, and training
Disruption needs to be COLLABORATIVE and TRANSDISCIPLINARY
Different Approaches

**Disciplinary** research within academia

**Interdisciplinary** (multidisciplinary) research within academia

**Transdisciplinary** research goes beyond academia and involves stakeholders from policy, civil society etc.

Keil, 2015
A Transdisciplinary Approach

Researchers and stakeholders MUST embark on a program of joint visioning that will produce practical applications and drive the development of novel technologies.
Emerging Areas

New approaches are leading to new promising areas of research and leading edge technologies

Smart Homes  Robotics  Big Data
Smart Homes
Many seniors are required to monitor and report on various chronic conditions (e.g. diabetes, CHF)

They are required to use technologies to collect data

Often these technologies have poor usability leading to poor adherence
Ambient-Based Physiological Monitoring
Robotics

Social Robots

Cognitive Robots
Introducing, Ed
“The self-driving car — a godsend for older Americans — is now on the horizon” – AARP (2015)
Big Data in the Home

- Actigraphy devices
- Localization sensors
- Physiological sensors
- Phone sensors
- Activity sensors
- Walking sensors
- Door sensors
- Cell phone as prompting device and for location tracking
- User PC: Experience sampling; cognitive testing; social engagement; coaching
- Medication tracking device
Big Data – Patterns of Living

Activity Monitoring in the Home

Sensor Events
Residential
Facility

Bedroom
Bathroom
Living Rm
Front Door
Kitchen

Kaye et al. (OHSU)
Big data allows us to look forward and predict changes in health before they even occur.
Predicting Cognitive Impairment

01 JAN
02 FEB
03 MAR

3 months

85%
ACCURATE
The current landscape needs to change in order for these new innovations to make it to the marketplace.
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THE INNOVATORS’ DILEMMA

We put too much emphasis on customers’ current needs, and fail to adopt new technology that will meet their unstated (or unknown) future needs.

Christensen, 1997
Going Forward

The time is now!

Being incremental in this field is no longer acceptable

The technology may be the easy part

Ethical, social, and cultural aspects need to be considered and incorporated throughout the process
For More Information

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