The Integration of Technology into Dementia Care

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The Growing Challenge of Dementia Care

6M

People Living with Dementia in the US*

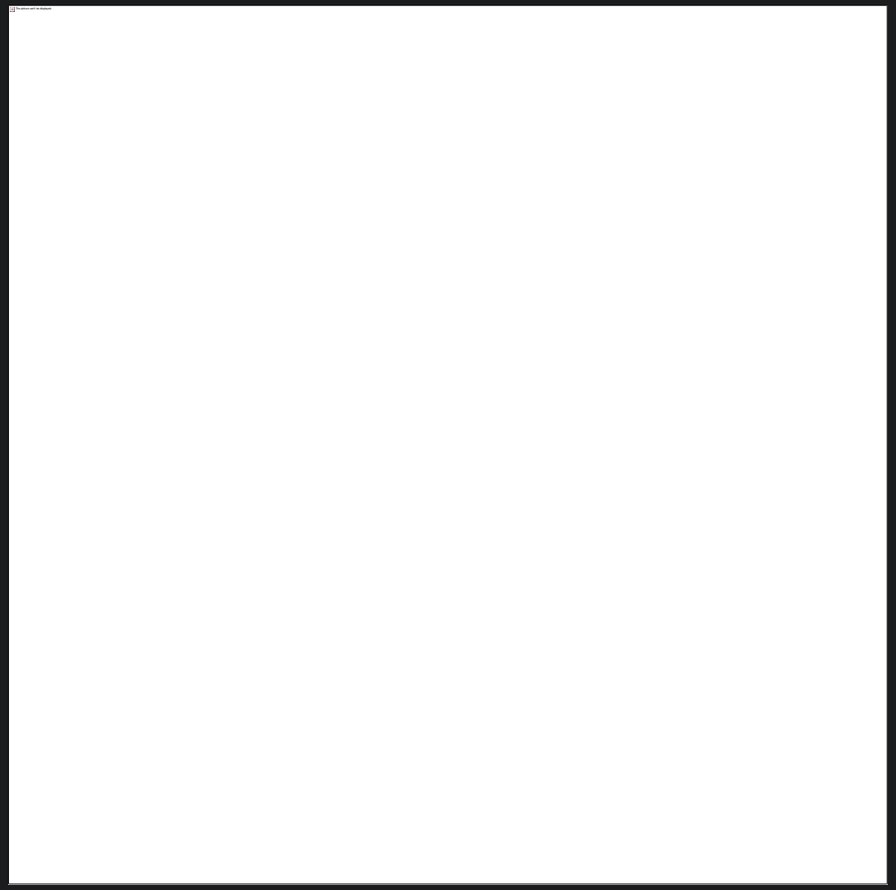
100,000

Deaths Annually*

Dementia patients in long-term care facilities require specialized, round-the-clock support. Care providers face significant burden and time demands. Technology can help to bridge the gap by improving safety, increasing autonomy, facilitating therapy, and reducing labor-force requirements.

*NIH. (2025). Risk and future burden of dementia in the United States. https://www.nih.gov/news-events/nih-research-matters/risk-future-burden-dementia-united-

Meet Robert: A Care -Recipient in Need



Robert is an 83-year-old resident at Meadowbrook Long-Term Care Facility. He was diagnosed with Alzheimer's disease five years ago. His symptoms have progressed to the point where the patient's family and care team have multiple concerns.

Robert often become disoriented, and he has wandered from his living space several times. He often tends to wander at night upon waking up and trying to use the restroom. He has now had two falls during these nighttime events.

Robert is also starting to demonstrate increasing issues with managing his daily activities and routines. He can no longer manage his medications, and he requires reminders for hygiene tasks. While he is generally amenable, he has begun to evidence some increasing agitation. This agitation appears to be less present after his family visits, but they live over 150 miles away from the facility and find it difficult to regularly see him.

Robert's family and care team are looking for options. They want to help him maintain his autonomy as much as possible, but they also worry about his safety.

Daily Activities

- **Orientation:** Digital clocks, Interactive calendars
- **Hygiene/Management Tasks**: Pill dispensers, Electronic appliance monitoring, Prompting devices
- **Feeding:** Weighted utensils, Adaptive utensils
- **Communication:** TouchChat

Agitation, Apathy, and Lack of Stimulation

Reminiscence Therapy: Digital photo albums, Wall display, and VR

Sensory Engagement (Sense-Garden): Multi-modal sensory engagement rooms, Music devices

Relaxation (Ambient Echo): Virtual window, Familiar scents

Digital Social Engagement (PARO): Robotic pets, Human-like robots

Social Stimulation: Simplified phones and tablets

Cognitive Stimulation: Virtual art installations

Wandering and Falls

GPS-embedded devices

- Enables Geofencing
- Future options for more robust detection of wandering

Sensor-based monitoring

- Wearable fall-detection
- Bed and chair monitors
- Tile/flooring sensors

Smart Walkers/Wheelchairs

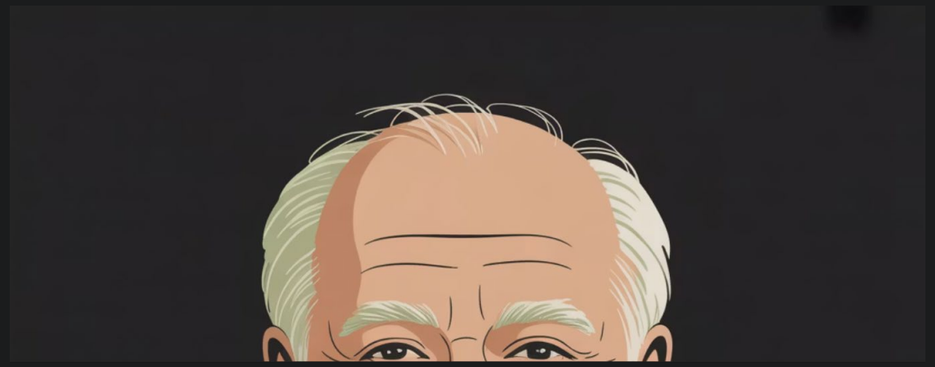
Caregiver Burden

1. Easier/Remote Access to Therapies
   - Hippocamera
   - VR/AR for OT
2. Lifting/Mechanical Support Robots
3. Automated Reminders (Smart-home devices, Alexa, etc.)
4. Monitoring of symptoms that can prompt medical intervention

Challenges & Considerations in Technology Adoption

- Privacy & Ethics
- Digital Literacy & Comfort
- Increased Disorientation
- Disease Severity
- Progression of Disease
- Physical Comfort
- Difficulty with Integration
- Financial Cost
- Human vs. Digital Connection

Robert Revisited



After discussion between Robert, his care team, and his family, they established the following ways to integrate technology to address Robert's symptoms:

Disorientation: A digital clock was installed into his room. Bed sensors were used to detect when Robert left the bed and he was prompted to the time of the day. If it was nighttime, then Robert was prompted to return to bed if he did not need to use the restroom.

Wandering: Robert started to use a bracelet that helped to track his movements. If Robert left his room between the hours of 10 pm and 6am, then his care team was alerted and a voice prompted him to return to his room.

Falls: When Robert was detected to awake during the night based on his bed sensors, lighting to his bathroom is turned on to reduce likelihood to fall. Robert's wearable bracelet also featured the ability to detect motion consistent with a fall. The care team was prompted if he fell.

Hygiene Tasks: When bed sensors detected that Robert had awoken in the morning, he was prompted to brush his teeth. When entering the bathroom, he was provided with a reminder that he still needs to brush his teeth and instructions of the location of his toothbrush and toothpaste.

Agitation Management: The care team provided Robert with speakers in his room that played a list of songs during day-time curated by his family. They also had the mobile robotic unit that allows patients to easily call their family visit Robert every night.

While Robert continued to demonstrate progression in his overall cognitive symptoms, some of the more concerning symptoms (agitation, wandering, etc.) were reduced based on these interventions. Robert, the care team, and his family all were happy with improvements in his symptoms and felt that had supported his independence in ways that were not otherwise possible.

Questions?