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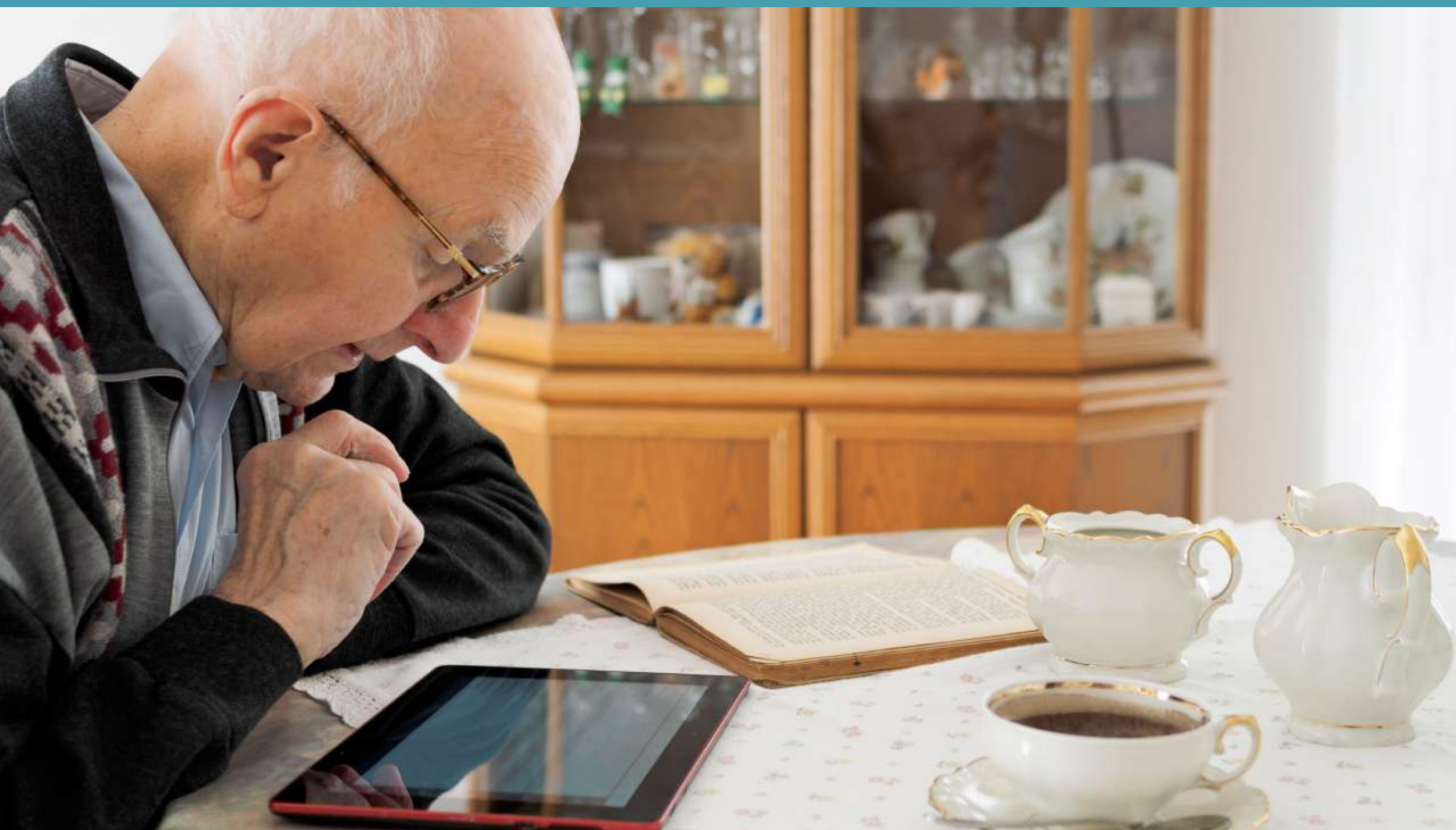
# Technology and Aging in Place



# Introduction

With an aging United States population, there is a significant need for supporting older adults. This means there is a high demand for healthcare professionals and support workers to care for individuals in institutions such as hospitals, nursing facilities, assisted living, and long-term care facilities. However, many older adults are increasingly interested in remaining in their homes as they age. Therefore, they require a range of environmental modifications and assistive technology in this setting to ensure their safety and well-being.

Both high-tech and low-tech devices can provide solutions for older adults to remain independent, safe, connected to others, and maintain their quality of life. The topic is highly relevant to the domain and scope of occupational therapy, given the emphasis on occupational participation, focus on compensatory strategies, client factors, routines, education, and client-centered approach. All occupational therapists should have an understanding of how technology can intersect with each patient's occupations, as these devices can be used by older adults as well as those who care for them.



# Section 1: Background and Definitions

**References:** 1, 2, 3, 4, 5

The aging population in the United States is growing at a rapid pace. Between 2010 and 2020, America's older adult population grew at the fastest rate since the 1800s. In 2020, the number of older adults in this nation reached 55.8 million, which is equivalent to 16.8% of the population. This means that 1 in 6 people in the United States are 65 years or older. These statistics indicate that the older adult demographic is growing five times more quickly than the total population is.

With so many older adults among us, there is an increasing need for services, care, and technology to support their well-being. Aging in place is a growing trend among this population, and is defined as a person having the ability to live within the home and community of their choosing independently, comfortably, and safely. Aging in place extends to all individuals regardless of their skills, income, and age. Because aging in place is inclusive of older adults with all abilities, the use of technology to help the aging in place process is becoming increasingly common.

In a general sense, assistive technology (many times referred to simply as technology by individuals outside of the healthcare field) is any piece of equipment that individuals with disabilities use to improve or maintain their functional abilities. Assistive technology can be low-tech, mid-tech, or high-tech. Low-tech assistive technology is classified as any device that is basic and non-electronic. Some examples are paper-based communication boards made with cardboard, lamination, felt, or velcro; rubber pencil grips; adaptive scissors; and page holders. Mid-tech assistive technology is often digital and requires batteries or another power source that is not electricity. Mid-tech assistive technology includes items such as calculators, digital recorders, adapted seating, and voice amplifiers. Most durable medical equipment, especially those that are mobility-related such as rollators, scooters, gait trainers, and manual wheelchairs, are also considered mid-tech. High-tech assistive technology is defined as any device with more sophisticated or advanced features that allow a high degree of customization for its user. Many times, high-tech devices are some variation of a computer such as a tablet, smartphone, or another digital device. Some examples of high-tech assistive technology include electric wheelchairs, screen readers, screen magnifiers, hearing aids, voice recognition software, mouse alternatives, and word prediction software.

Due to the array of objects that fall under the heading of assistive technology, devices can be used to aid individuals with disabilities in a range of contexts and occupations. Many therapists may think of assistive technology as the chief way to help older adults remain safe within the home. While this is certainly one of their functions, assistive technology can and should also be used to enable participation. Older adults can also benefit from assistive technology to help with ADLs, IADLs, managing their health, and remaining active in the community. Technology can also help older adults who choose to age in place while continuing to work. With so many changes in the economy, many older adults are choosing to extend retirement longer than older adults in previous years. Evidence supports this statement and also projects these numbers to rise over the years. In 1950, there were around 10,000 older adults above the age of 65 still in the workforce. By 2010, this number more than doubled to almost 40,000. It is expected that between 2010 and 2030, the number of adults over the age of 65 who are still working will be 70,000. Therefore, assistive technology can also help older adults remain productive and gainfully employed for longer. There are various products, software, and devices that can help older adults with the aging process, and many of these will be discussed in the coming sections.



## Section 1 Personal Reflection

In addition to functional participation and safety, how else might assistive technology help older adults aging in place? How can assistive technology help older adults in other settings such as long-term care facilities and memory care units?

### Section 1 Key Words

Low-tech assistive technology - Devices used to help individuals with disabilities, but those that lack electronic components and are largely simple in nature

Mid-tech assistive technology - Devices used to help individuals with disabilities that require non-electric power sources

High-tech assistive technology - Devices used to help individuals with disabilities that have a wider range of features and more sophisticated workings; high-tech devices offer a greater degree of customization to the end user's needs than other types of assistive technology do

## Section 2: Older Adult Occupational Areas Supported by Technology

**References:** 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

As the amount and sophistication of technology in the aging in place sector has evolved, some guidelines have also been developed to guide its implementation. Research suggests that policymakers, therapists, and allied health professionals utilize a life course perspective when making technology recommendations for older adults aging in place. The evidence also states that technology used within the home should adapt as frequently as needed to keep up with an individual's changing needs and abilities. All technology recommended should aim to solve a targeted, real-time concern. Experts have outlined the importance of this principle, since older adults will likely not find the technology impactful otherwise. Another way to ensure aging in place technology properly works is by using it to support or enhance existing healthcare services, such as skilled nursing, PT, OT, and SLP. Therapists and other healthcare professionals are trained to implement technology in a way that complements human interactions and occupations

across the spectrum. Allied health professionals are urged to use aging in place technology as a means to establish a relationship with patients, so they can continually offer insight regarding the creation, design, and instruction of devices.

Therapists may use technology to assist older adults in a range of settings, but the definition of aging in place is exclusive to the patient's home – not assisted living facilities or long-term care. Some literature suggests classifying aging-in-place technology into three categories: assistive devices aimed at compensating for cognitive, motor, or sensory impairments; social communication aids; and monitor and response systems for both critical and less urgent situations concerning safety. Many healthcare settings label intrinsic aids – which help strengthen someone's internal ability to perform – as rehabilitation technologies. Conversely, extrinsic aids (or those that help someone better acclimate to their environment) are often referred to as compensatory technologies. These definitions align with the two major approaches used in occupational therapy and other rehabilitation professions.



## Technology for Activities of Daily Living (ADLs)

- Long-handled scrub brushes
- Long-handled sponges
- Skin inspection mirror (to be used on feet, lower legs, buttocks, and other areas at risk of skin breakdown or injury)
- Premoistened shampoo and body wash gloves
- Fingernail brush
- Toenail scissors
- One-handed nail care station

- Shampoo tray
- Bath mitt
- Automatic dispensers for toothpaste, body wash, shampoo, and conditioner
- Handheld shower head
- Poseidon robotic shower
- I-Support assisted bathing platform
- Sock aid
- Zipper pull
- Button hook
- Long-handled shoe horn
- Reacher
- Lotion applicator
- Bedside beverage holder
- Spillproof cup
- Rocker knife
- Swivel eating utensils
- Bendable eating utensils
- Weighted eating utensils
- Handle foam (to modify any existing objects with handles that are too small)

- Standard silverware with adjustable yokes on either side
- Large-handled utensils
- Compartmentalized dinner plate
- All-in-one placemat with integrated plate or bowl
- High-lip plate
- Dycem mat
- Plate guard
- Scoop plate
- Suction cup plate or bowl
- Straw clip
- Two-handle cup
- Cutout cup (designed for people who have limited neck motion and can't tip their head back to drink)
- Lip block straw protector
- Weighted cup
- Gravity-assisted drinking cup
- Safestraw (to assist with pacing when drinking fluids)
- Steadi-One stabilizing glove
- Universal cuff
    - Universal cuffs can come in various styles to accommodate a range of attachments. Some examples include the D-clip, which can be

fastened, unfastened, and adjusted by pulling it with the teeth. The palmar clip version of the universal cuff has its fastener in the palm of the hand where the utensils attach, which is designed for someone who can use their opposite hand to adjust it. Universal cuffs may also be designed with a right angle insert for someone who has limited wrist motion. Universal cuffs may also be elastic depending on the user's abilities.

- Overbed table
- Bed rail
- Bed cane
- Wedge pillow
- Leg lifter
- Bed bolsters
- Headboards, foot supports, and wall protectors (inflatable, upholstered, anti-microbial)
- Apps to assist with recognition of ADLs
    - Many of these can be customized to monitor typical ADLs along with bed usage, functional mobility and transfers, stair usage, TV usage, and sleep.

Evidence shows it's especially important to prevent technological barriers from impacting ADL function for older adults with cognitive impairments. In fact, this has been shown to help sidestep and manage depression symptoms in this population of community-dwelling older adults.  Therefore, technology can play a

big part in ADL performance within the home, but therapists must be sure they are supportive and do not create more obstacles for those using them.

## Technology for Instrumental Activities of Daily Living (IADLs)

- CLOi autonomous robots
    - These were initially implemented in the food service industry, but are now available for home use where they can help with a range of tasks from clearing and disinfecting cooking surfaces to serving food.
- Rolling laundry basket
- Raised laundry cart
- Shirt folding templates
- Eversafe, artificial intelligence that helps monitor bank accounts
- Online banking desktop platforms and mobile apps
    - Features such as direct deposit, auto pay, account alerts, and mobile deposit can all assist with financial management.
- Alarm clock reminders for medications, appointments, and other important events
- Pill grinder
- Pill splitter
- Smart pill boxes
- Weekly or monthly pill organizer with large print
- Mobile health apps to assist with IADL completion

    - These can function similarly to ADL monitoring apps or can simply offer reminders for IADLs such as medication management, bill paying, recreation, and household chores.
- Timer necklace
- Grip turner for cans and jars
- Cutting board with pivot knife
- One-handed cutting board
- Automatic oven control
- Amazon Basics smart appliances (with integrated voice control)
    - Many brands are developing smart appliances that can be of use to individuals who are aging in place, but those made by Amazon can smoothly be integrated with voice assistants for further benefit.
- Cordless, electric can opener
- Doorknob grips
- Doorknob latch handle extender
- Motorized shade controls
- Talking alarm clock
- Portable text reader
- Screen readers
- Online grocery delivery apps
- Picture-based and switch-based augmentative assistive communication devices

- Amplified telephone equipment
- Closed captioning on TV
- Voice-to-text typing software
- Adaptive switches for switch-enabled devices
    - These vary largely based on the device they are connected to, but can assist with a range of IADLs. There are sensor switches, sip-and-puff switches, head switches, gumball switches, wobble switches, pillow switches, eye blink switches, plate switches, thumb switches, tilt switches, and more to accommodate various client factors such as range of motion, strength, and coordination deficits.

Research shows that individuals with both mild and severe cognitive impairment overestimated or underestimated the frequency and personal value of IADL performance. This shows that IADL assessment as well as a thorough evaluation of patient needs and abilities is necessary before implementing any type of technology for older adults within the home. Studies also show that sensor-based devices in the home can be some of the most effective technology for IADL performance in older adults.

There is not much research on the outcomes of IADL technology for those aging in place. However, some literature looks at technology used to assess IADL function for older adults in this setting. This evidence suggests that ambient technology is most commonly used for this purpose with contact sensors and passive infrared motion sensors being the most prevalent types. Technology was most often used to assess the following IADLs: daily technology use, personal/household management, activities performed outside of the home, orientation, and medication management.

Other evidence has explored the use of wearable cognitive assistive technology (CAT) to offer task cueing for IADL completion by older adults with dementia living in the home. Since IADLs are often unique to the person, anyone recommending technology in this occupational area should customize devices to the person. In particular, environmental cueing with carefully timed feedback should be the focus of wearable devices for IADL monitoring. This study and others have emphasized that low-cost, portable, programmable devices are the most ideal option, but are not as readily available as many therapists might think since smart technology is more well-known.

## Technology for Health Management and Health Maintenance

- Nobi smart lamp to assist with fall detection
- Grand Care sensors and hub
- LISA furniture kit that comes with embedded sensors
- Smart devices
    - There are many reasons smart devices are beneficial for the aging in place population. This is why they are often broken down into several categories: smart devices used for control and connectivity such as smart speakers and voice assistants; smart devices used for security (this includes but is not limited to motion sensors, indoor cameras, camera doorbells, smart home monitoring, fall detection sensors, GPS trackers, door locks); those used for comfort and lighting (automated indoor light fixtures, smart bulbs, motion-sensor flood lights outdoors, etc.); and smart devices for energy management (wifi-based and/or bluetooth-controlled thermostats, radiator controls, fans, heated towel bars, heated floors, and more).

    - Virtual assistants and smart speakers can be used to help with medication reminders, fall detection, emergency alerts, physical activity programs, and more. In addition, smart plugs and outlets can be used to offer customization and programming features for non-smart devices.

- Memory aids
    - Calendar clocks
    - Centralized calendar, which is especially useful for households with several members who must coincide with one another
    - Journals
    - Phone alarms
    - Analog alarm clocks
    - Location feature on cellphones
    - Independent location devices (e.g. Tile bluetooth tracker)
    - To-do lists
    - Basket dedicated to “don’t lose” items
    - Laminated emergency contact information
    - Sticky notes
    - Labels (which can be used for item identification if photos and names are included on the labels, organization if the labels list where the item typically “lives”, and activity prompting if the labels remind someone when and how to use the item)

    - Medication reminder box
    - Color coded devices, labels, and stickers for keys, medications, paperwork, and other important items that need to be highlighted
    - Voice recorder
    - Digital lists (e.g. the bookmarks section of internet browser, notes section in cellphones, or dedicated note-taking apps)
    - Apps that can record life stories
- Wearable devices
- Stair lifts
- Grab bars
- Power-assisted recliners
- Hearing aids
- Large-print materials, especially when used for printed pill bottle labels, home exercise programs, medical records, and other health information
- Glucose monitors
- Blood pressure monitors
- Smart ovens/stoves with automatic shutoff and fire prevention units
- Robotic vacuum
- Electric heating pad

One study looked at the effects of an Intelligent Activity-based Client-centered Training (i-ACT) system on the physical activity levels of older adults. Results showed that i-ACT was user-friendly and helped motivate older adults to engage

in physical activity more often. There also appears to be potential carryover for ADL monitoring with older adults as well as using this same technology to assist with health maintenance within the home.

Other research showed that many community-dwelling older adults are presently using a range of technology with the chief purpose being the prevention of or preparation for a decline in health. This same study found that older adults were most likely to continue using the technology presently in their homes as long as they perceive a distinct need for it. Most participants in this study cited that family, friends, reputable healthcare organizations, and their personal medical providers all played a part in helping them initiate and continue to use technology within their homes.

A separate study aimed to discover how technology aids in physical and mental health promotion for older adults. Results showed that older adults in assisted living facilities were more likely to use health promotion-based technology that entertained them rather than devices that helped them communicate. Individuals who more often used technology for the sake of entertainment reported greater physical quality of life as well as greater support from healthcare professionals when compared to individuals who used technology to communicate. While this study was completed on assisted living residents, results can be used to inform technology recommendations and personal motivations for individuals using tech within the home.

A systematic review weighed the benefits of virtual reality for older adults living at home and remaining active within the community. Studies in this review utilized VR apps with head-mounted displays, and found benefits included improved posture, enhanced cognitive function, decreased falls, and better pain management. The intervention also yielded a positive impact on cognitive

function related to navigational errors, which has a direct impact for community mobility and safety.

Another piece of research looked at the use of intelligent voice assistants by home-based older adults who do not use much other technology. Results showed that older adults used various device features within the first week. However, entertainment- and leisure-based uses such as playing music dropped significantly by the end of the 3-week study, as did features like timers and reminders that were used to assist with memory. Most older adults reported they initially found the device's memory aids as useful, but later stopped utilizing them due to concerns over reliability. Participants continued consistently using the assistant to find health-related information online over the course of the study period. While this shows promise as a way to assist older adults with health maintenance in the home, it brings up the concern of needing to find and use credible information through this medium.



## Technology for Community Mobility

- Electric wheelchair
- Manual wheelchair
- Automated vehicles
- Self-driving vehicle functions (adaptive cruise control, lane assist, blind spot detectors)
- Steering wheel pins
- Ramp
    - Threshold ramp (aluminum with rubber coating or rubber)

    - Threshold plate
    - Threshold mat
    - Portable/folding ramp (tri-fold or bi-fold)
    - Modular ramp
    - Permanent ramp
    - Rollable car/van ramp
    - Suitcase ramp
- Large-text map
- Apps that assist with GPS navigation, bus routes,
- Car pulley
- Swivel seat cushion
- Seat belt extender
- Hand pedals
- Car door hook handle
- Power scooter
- Slideboard
- Blind spot sensors for wheelchairs
- Ceiling track lift
- Automatic door opener
- Stair lift

- Porch lift
- Leverage-operated car door opener
- Furniture risers for beds, chairs, couches, and tables
- Hospital bed
- Vertical platform lift
- Walking pole
- Cane
- Crutches
- Rolling walker
- Front-wheeled walker

Literature posits that therapists and other providers should use a community-based approach when implementing technology to avoid social isolation in older adults and increase self-efficacy with digital tools. This framework, along with rolling wave planning, can help older adults better engage within their local communities while aging in place.

A different study looked at the possibility of using high-tech devices to assist older adults with community mobility. This study involved allowing older adults to use an automated vehicle simulator as well as a real automated shuttle. Results showed that consistent exposure to automated vehicles as a whole can positively impact older adults' perceptions (in the form of increased trust and more perceived safety) of this technology. After being exposed and acclimated to the simulator and automated vehicle, older adults' perceptions of automated vehicle cost and perceived usefulness also increased.

One study looked at community barriers and how they played a role in activity levels of older adults who were aging in place. Results showed that mobility-related barriers within an older adult's immediate neighborhood were correlated with lower physical activity levels than barriers further away from the home. This suggests community mobility technology for this population would be best served addressing the local neighborhood rather than the community at large.

Research also evaluated the utility of an automatic fall detection system used by community-dwelling older adults in wheelchairs and power scooters. Participants reported that, in order to feel the most safe within the community and their homes, they wished to see features such as wearables (specifically watches) to control the system remotely, wireless charging, easy customization of features (specifically being able to simply adjust the contact person who is notified after a fall), and ease of use when making adjustments for a false alarm. Participants all noted that such a device would be ideal as long as it had specific design requirements that helped facilitate ongoing use of the system.



## Technology for Safety

Many of the above devices serve multiple purposes. For example, locked, talking pillboxes offer someone reminders to take their medication while also simultaneously providing safety in the way of protection from taking too much medication.

- Medical alarm/alert systems
- Home monitoring systems
- Smart watches with GPS capabilities
- Location feature on smartphones

- Location-based apps on smartphones, including Life360, Find My Kids, and WhatsApp

### Section 2 Personal Reflection

What sort of devices might serve a dual benefit for an older adult's ADL participation and health maintenance?

### Section 2 Key Words

Ambient technology - Electronic environments that are attuned to the presence of people

Rolling wave planning - A technique that focuses on various tiers of short-term objectives and modifications that keep the big picture in mind; waves are scheduled and allow for gradual, efficacious implementation

## Section 3: Implementation Challenges with Aging-in-Place Tech

**References:** 26, 27, 28, 29, 30, 31, 32

As with any type of technology – low- or high-tech – older adults must be trained before they begin using devices. Training should be catered to the individual's cognitive abilities as well as any other relevant client factors that are present. Therapists should ensure that training covers the benefits of the device, pertinent features they should use, basic troubleshooting, device care (battery maintenance, cleanliness, etc.), storage, transportation, and more.

Most studies on the use of technology within the home pertain to the applicability of technology. Devices that assist with IADL completion are typically viewed as more important and of value to individuals in the young-old category (60 to 70 years old) while those in the old-old category (80+ years old) were more interested in devices that ensured their safety.

One study of European older adults found that many do not perceive technology to be helpful toward their aging in place efforts. However, informal and professional caregivers surveyed felt more positively about the use of technology for those they care for. Older adults did express more willingness and preference for technology aimed at slowing their cognitive decline, keeping them safer, and allowing them to remain more mobile. On the other hand, informal caregivers expressed a preference for technology to help with safety (fall detection and location monitoring) and ADL performance. Professional caregivers tended more toward devices with integrated communication features to help with joint collaboration, surveillance systems for safety, and durable medical equipment used to more easily transfer older adults with limited mobility.

A systematic review weighed the functionality of various types of assistive technology used to aid older adults. Results showed that technology used for vision, hearing, medication, mobility, mental health support, and personal disease management were all beneficial for older adults. However, technology in these categories was not nearly as useful or effective for medically frail older adults. This suggests that special modifications such as simplified training, increased device durability, and greater availability of features should be considered for this population.

In a broader sense, most of the available research notes the following as barriers to older adults using technology for any purpose within the home:

- Aging-related barriers
    - Physical limitations such as low vision and difficulty hearing
    - Mental limitations such as cognitive impairments and varied levels of motivation
- Individual barriers
    - Limited exposure to technology in their lifetime
    - Educational limitations
    - Unfavorable views of technology as a whole

There are also many facilitators that aid in the implementation process for aging in place technology. Some of these include an expressed interest in cooperative design, a personal desire to learn, and an urge to control and understand the data that pertains to their condition. Many older adults who are interested in smart home technologies cite their primary motivations are efficient energy management, improved home-based healthcare, better quality of life, and financial savings. Older adults also noted the barriers they experienced to smart home adoption included limited perception of smart home benefits, financial concerns, privacy concerns, anxiety surrounding technology as a whole, and hearing negative feedback from peers regarding their own technology fears.

On a larger scale, some researchers performed a scoping review specifically on how older adults view and use e-health within the home. Results showed that the most widespread and significant barriers to e-health in this setting were a lack of knowledge regarding what e-health is and the forms it can take, too little support during the implementation phase, sparse functionality, too little information about its benefits, and poor self-efficacy regarding general technology use. In this study, facilitating factors for e-health use included actively engaging each end user

in the delivery and design of e-health programming, offering clear education on security and privacy safeguards in place, and integrating e-health programs across all healthcare services for more ease of use and to prevent continuum of care gaps.

### Section 3 Personal Reflection

What modes of a clinician's therapeutic use of self might assist with some barriers to technology?

### Section 3 Key Words

End user - The person who uses a certain piece of technology

Medically frail - Also known as frailty syndrome, medically frail refers to individuals who have two or more chronic diseases; medically frail may be used to describe someone of any age as long as they meet the diagnostic criteria, which includes slowness, weakness, easily experiencing exhaustion, losing weight, demonstrating poor endurance, and tolerating only low levels of physical activity

## Section 4: Case Study #1

A home health occupational therapist is sent to evaluate and treat a 79-year-old woman who was recently diagnosed with dementia. She has received outpatient OT in previous years after falling in the home and sustaining a hip fracture, which led to a total hip replacement. After being diagnosed with dementia last month and also losing her ability to drive due to concerns over safety, she only leaves the home with family members for doctor's appointments. She has informal caregiver assistance sporadically throughout the day, but her family is concerned about her

safety within the home, the level of support she is receiving, and her well-being as a whole.

1. Based on the information above, does this patient qualify for direct OT services?
2. What broad categories of technology might help this patient age in place more effectively?
3. Is the OT in a position to talk to the patient's family about care recommendations?

## Section 5: Case Study #1 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. Based on the information above, does this patient qualify for direct OT services?

   Based on the new diagnosis of dementia alone, it is very likely this patient is a good candidate for OT services. Due to the fact that she is now homebound and has cognitive concerns, home health OT is the best platform for her to receive these services.

2. What broad categories of technology might help this patient age in place more effectively?

   Technology to assist with safety (fall detection, GPS location, etc.) should be recommended first and foremost. This will not only put the family at ease, but will also place the patient's physical safety as a priority and keep her safe if she wanders or elopes. Technology to assist with preserving ADL

independence can also be helpful at this stage. This can include but is not limited to anything with reminders to assist with self-care. Technology to assist with social interaction would also be helpful. Since the patient recently stopped driving, they may not be as socially active as they once were. Socialization plays an important part in brain health, so this can help regulate any difficult behaviors that may develop and keep her in touch with her loved ones.

3. Is the OT in a position to talk to the patient's family about care recommendations?

   Yes, it is well within an OT's scope of practice to discuss care recommendations with this patient's family. In fact, it is best practice to incorporate the family into treatment whenever possible to encourage carryover and adherence to the therapy plan of care.



## Section 6: Case Study #2

An OT specializing in geriatric rehab has been recruited by their local department of public health to offer consultative OT to older adults. These services are being provided through a grant-funded program that helps seniors with TBIs age in place more successfully. As part of the presentation, the agency wants the therapist to focus specifically on technology recommendations, as the payer is also willing and able to obtain equipment for patients.

1. What technology recommendations might the OT make for TBI patients who have a history of eloping?

2. What low-tech options might the OT consider for patients who want to improve their ADL independence?

## Section 7: Case Study #2 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What technology recommendations might the OT make for TBI patients who have a history of eloping?

   The OT can suggest door alarms, bed alarms, and wheelchair alarms to alert others if the patient attempts to elope or move without caregiver assistance. The OT can also recommend door murals to disguise doors, windows, and other exit points. Other low-tech options include sensory boxes to occupy individuals and take focus away from eloping behaviors.

2. What low-tech options might the OT consider for patients who want to improve their ADL independence?

   Individuals with TBI who do not have overt deficits related to praxis may benefit from a range of low-tech ADL devices. Some examples include dressing sticks, button hooks, sock aids, long-handled shoe horns, elastic shoelaces, long-handled sponges, shower chairs or tub benches, and handheld shower heads.

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