



Eastern Pennsylvania – Delaware Geriatric Education  
Center (EPaD GEC)

**Older Adults and Technology Toolkit**

**Toolkit Workgroup:**

Jessie Mooers, OTS

E. Adel Herge, OTD, OTR/L

Leigh Ann Hewston, PT, MEd, CEEAA

Tracey Vause Earland, MS, OTR/L

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# **Introduction and Toolkit Navigation**

Hello and welcome to the EPaD GEC Older Adults and Technology Toolkit.

This toolkit contains resources for providers, clinicians, consumers, and caregivers. It is designed to assist you in accessing current information, as well as recommended tools and resources specific to the use of technology among older adults.

# Benefits to Engaging Older Adults with Technology

- Reduces social isolation and feelings of loneliness:
  - McCausland and Falk (2012) describe the use of tablet technology to reduce social isolation in the article, "From Dinner Table to Digital Tablet: Technology's Potential for Reducing Loneliness in Older Adults." This technology aims to improve connectivity and reduce loneliness, which currently affects about 35% of older adults.
  - Ballantyne, Trenwith, Zubrinich, and Corlis (2010) discussed the use of social networking to reduce loneliness among older adults. This was a qualitative pilot project implemented over three months including six older adults, ages 69 to 85. Findings showed that the use of online social networking had the ability to reduce feelings of loneliness among older adults, and the authors concluded that data should be collected in a larger population.
  
- Helps older adults prolong living within the home:
  - Tomita, M., Mann, Stanton, Tomita, A., and Sundar (2007) conducted a two year randomized control trial testing the feasibility and effectiveness of current home safety technologies in the article, "Use of Currently Available Smart Home Technology by Frail Elders: Process and Outcomes." The study included 46 older adults who were placed in the treatment group, which received smart home technology in their homes. The technology installed within the homes cost less than 400 dollars. Sixty-seven individuals were placed in the control group, which did not receive smart home technology. After two years, the treatment group maintained physical and cognitive levels of function when compared to the control group, whom experienced significant overall decline. The authors also found that the technology mitigated the loss and/or decrease in daily skills, maintained higher levels of independence, and enhanced the safety of the individual in the home.
  
- Enhances quality of life and well-being:
  - Orpwood, Sixsmith, Torrington, Chadd, Gibson, and Chalfont (2007) discuss a project using technology as a means to improve quality of life among older adults with dementia in their article, ["Designing technology to support quality of life of people with dementia"](#). A survey was conducted to determine what areas were important to the individuals in the study. Four categories were determined and made into prototypes. Categories included: access to music, social engagement, conversation prompting, and prompts to complete daily tasks. These devices were tested, and the authors concluded that the impact depended greatly on the individual's level of dementia. Furthermore, the authors concluded that input from the users was crucial for further development and research.
  - Shaunfield, Wittenberg-Lyles, Oliver, and Demiris (2014) designed a program using virtual field trips in their article, "Virtual Field Trips for Long-Term Care Residents: A Feasibility Study." The authors used a quasi-experimental

pre-test, post-test design to determine the impact of a one-month intervention, called "Passport." "Passport," which consisted of activities, face-to-face visits, and virtual fieldtrips decreased levels of depression, and increased physical health and social engagement. This study showed that virtual field trips are a way to improve resident care and interaction in a cost-effective way.

- Leuty, Boger, Young, Hoey, Mihailidis (2013) discussed a new way to engage older adults with dementia in their article, "Engaging Older Adults with Dementia in Engaging Occupations Using Artificially Intelligent Assistive Technology." The authors based the study off the theory that engaging older adults with dementia in creative occupations improve their overall well-being. The Engaging Platform for Art Development (ePAD), a touch-screen tablet that is able to monitor the user's engagement and provide prompts if there is an absence or decrease in engagement, was tested in this study. Usability measures found that all participants found the device engaging; however, the prompts were not effective.
- Reduces caregiver burden:
    - The UP-TECH program seeks to find and test innovative solutions to caregiving and safety among community-dwelling older adults in Italy. It is a current clinical trial including 450 patient-caregiver dyads, which are randomized into 3 treatment groups. One of the treatment groups receives an assistive technology intervention. Data regarding the sample population and recruitment results were published by Lattanzio, et al (2014) and can be found in the article, "The UP-TECH Project, An Intervention to Support Caregivers of Alzheimer's Disease Patients in Italy: Preliminary Findings on Recruitment and Caregiver Burden in the Baseline Population."

# Technology Devices for Older Adults

- Verizon offers specially designed [phones, tablets, and phone plans](#) for seniors. Items available include phones with larger keys, voice clarity mode for those with hearing difficulties, large display screens, and specialized lighting for enhanced usage.
- AARP's [RealPad android tablet](#) is a tablet designed for seniors that comes with apps pre-loaded and ready to use. It features large graphics and icons as well as an 8-inch display screen. The cost is just 189 dollars.
- [EnableMart's "SeniorPC"](#) is a computer designed specifically for senior citizens. It is easy to set up, comes with all software installed, and is ready to use right out of the box. Computers can be customized depending on what the user wants.
- The [Telikin computer](#) is a touch screen desktop computer designed specifically for seniors. This easy to use computer has an 18 or 22-inch display screen and is a favorite among older adults.

# Resources for Learning

- Some Senior Centers are equipped with computers, which are available for use and may offer classes focused on the learning needs of older adults. Senior Centers can be found by using each state's Department of Aging website:
  - [Pennsylvania Senior Centers](#) – Senior Centers located in the state of Pennsylvania, contact information, and locations.
  - [Delaware Senior Centers](#) – Senior Centers located in the state of Delaware, contact information, and locations.
  - [New Jersey Senior Centers](#) – Search by town or zip code for Senior Centers in New Jersey.
  
- Libraries offer computers for public use, and some may offer host computer training courses. Locations of libraries by state can be found at [the Public Libraries website](#).
  
- Technology classes may be offered at community centers, local schools, or colleges and universities in the area.
  
- Verizon, AT & T, and Apple stores offer on-site assistance for learning how to use devices.
  
- [OASIS](#) is a program that seeks to promote healthy aging through encouraging lifelong learning, implementing healthy lifestyles, and facilitating social engagement. This program partners with college and universities, libraries, and Senior Centers in 23 US states to provide evidence-based technology classes dedicated to older adults.
  
- [AARP and GeekSquad](#) have partnered with Best Buy to provide in-store, on-line, and in-home technology assistance for seniors at a yearly fee. Services include consultation for purchasing devices in stores, home visits for trouble-shooting and assistance, and help either over the phone or online.
  
- [Connecting to Community](#), a pilot program through the AARP Foundation, provides low-income seniors with technology training. It is a six-month course that covers Internet basics, email, social media, and other topics. The goal of the program is to mitigate social isolation among older adults. This pilot program is taking place in Washington DC as well as Sioux Falls, South Dakota.

## General Websites and Applications (“Apps”)

- [Virtual Senior Center](#) is an online source for seniors to meet others and get connected. Volunteers facilitate live classes, which are about 45 minutes in length, to meet each senior’s area of interest. Classes provided include yoga, Jewish history, politics, technology basics, current events, and much more.
- [Senior Planet](#) is an online community for older adults that provides daily “tech tips.” Tips include many topics such as, “How to use Emojis?” or “How to get started on Instagram?” The online community provides news and information focusing on older adults and healthy living, technology, entertainment, etc.
- [Teach Parents Tech](#) is a website supported and ran by Google that provides short video tutorials for different computer functions. These include how to copy and paste, change your screensaver, take a screenshot, video chat, share photos, and other functions.
- There are many [apps for seniors](#) that can help accomplish daily tasks. EyeReader App allows individuals to use their iPhone as a magnifying glass. Silver Surf App makes the buttons on the screen larger for individuals with impaired dexterity. Pillboxie App acts as a reminder and organization tool for medication information. Park n’ Forget App tracks the location of your parked vehicle. This application also includes a meter timer to keep track of how long your vehicle has been parked.



# Health and Wellness Technologies

- [The first safety smartband](#), “Sync,” was created by ActivContent and is the first all-in-one health, safety, and fitness smartband. This device allows individuals to track their physical activity, monitor sleep schedules, pinpoint their location, and stores emergency health information. It is worn on the wrist and has a battery-operated system that holds a charge for three months. Corresponding Android or Apple Apps allow individuals to synchronize and monitor the data that is collected. Another feature of the “Sync” smartband is its ability to set an alert if the individual wearing it travels outside of a certain perimeter.
- There are [medical alert devices](#) that send notifications to pre-selected contacts and/or local emergency medical services in the event of a fall. These devices can be worn on the neck or wrist and also come in the form of a phone. The App [Red Panic Button](#) is available for download on Android or iPhone devices and sends a text message alert or alert via social media when the button is pushed.
- Applications and computer games are available for individuals to exercise their cognitive fitness. These work by challenging memory, focus, concentration, and attention. These Apps are available to download onto computers, tablets, and smart phones for free or at a low price. Some examples include: [Lumosity Brain Games and Brain Training](#), [Dakim BrainFitness](#), [CogniFit](#), [Eidetic](#), and [FitBrains](#).
- Applications are available to assist in medication adherence. Daily reminders are set when medications need to be taken. One example, [Medisafe](#), is available for iPhone and Android devices and provides personal alerts and treatment adherence programs for individuals. Medisafe can sync with other devices to inform caretakers or health care providers if a dose has been missed. This App has a low-tech option for medication adherence, which uses automated phone systems or text messages for reminders. Another application for medication management is [Pillboxie](#). This App allows individuals to visually manage medications and set alerts.
- [My Pain Diary](#) is an application that allows individuals to track pain and symptoms such as headaches, changes in skin, anxiety, etc. A feature of this App is that it allows manual input information such as triggers, severity, and photos; this App also automatically records the weather throughout the day. Data is formed into a doctor report that can be taken to appointments with health care providers, and the changes in data is tracked over time to display trends.
- Smart phone applications are available to measure [heart rate](#) and [blood pressure](#). Vitals are taken by placing a finger over the lens and holding the phone to a specific location on the body to get a reading. This App is useful to check vitals between doctor's appointments or an easy way to monitor at home.

# Safety Technologies

- Wander Management Systems are designed to keep older adults with dementia, Alzheimer's disease, or other neurocognitive disorders safe at home. One of these is [Project Lifesaver](#), which includes a small device to be worn on the person's wrist. If the person wanders or is unable to be located, the family can alert Project Lifesaver to activate the wristband. Once activated, the wristband will emit a radiofrequency and send an alert to local emergency medical services, civic groups, businesses, and law enforcement. When searching for the lost individual, helpers can tune into the radio frequency to locate the individual.
- [Care Watch](#) is another technology tool used to prevent individuals from wandering and becoming lost. It also is useful at nighttime decrease the amount of interrupted sleep by the caregiver. The watch has day and night modes, which are customized for each individual. During the day, it alerts if the individual leaves the door. At night, it alerts if the individual gets out of bed.
- Daniel, Cason, and Ferrell (2009) describe several home safety technologies in their article "Emerging Technologies to Enhance the Safety of Older People in their Homes". These include "Smart" Front Doors, the Gator Tech Home Smart Home, and Smart Wave Technology for Cooking.
  - The Smart Front Door involves the use of a camera at the front door. When someone rings the doorbell, the camera projects an image of the person at the door to display screens located inside the home. The person in the home can view who is at the front door without getting up and opening the door to see. The person inside can unlock the door and invite the individual inside using a speaker system. This increases safety for the individual inside and prevents a potentially unsafe situation. The Smart Front Door may also be useful for adults following a surgery or in the event they may not be able to safely make their way to the door to let someone inside.
  - Gator Tech Smart Home, developed by the University of Florida, is an extensive system of technologies available throughout the home that can be accessed and monitored remotely by family, caregivers, or the individual themselves. Part of this technology includes pressure sensors in the floors and under the beds. This alerts the caregiver that movement has or has not occurred and when the movement has occurred. This technology also includes remote appliance monitoring, which can send an alert if an appliance has been left on. Finally, the system monitors the locks on the doors, the position of the windows (open or closed), and what lights are on in the house.
  - Smart Wave Technology is a new feature on some microwaves. The microwave has the capability to identify food and determine the correct cooking time. It has audio and visuals that provide steps for food preparation and provides a reminder and/or warning when food is too hot.
- Guitard, Sveistrup, Fahim, and Leonard (2013) describe the benefits of "smart" grab bars in the article, "Smart Grab Bars: A Potential Initiative to Encourage Bath Grab Bar

Use in Community Dwelling Older Adults.” Guitard et. al. conducted a study on 69 healthy older adults ages 60-89 to see if artificial intelligence improved the use of grab bars. Guitard et. al. concluded that the “smart” grab bars increased grab bar use by 39%. After the “smart” grab bars were removed, individuals continued to use grab bars. Users preferred the visual cue; however, the audio cue was found to be more impacting on adherence to the use of the grab bar.

- Leuty, Boger, Young, Hoey, and Mihalidis (2014) described the use of an engaging platform for art development, ePAD, in the article, “Engaging Older Adults with Dementia in Creative Occupations Using Artificially Intelligent Assistive Technology.” The ePAD is a set of devices that use touch screen interfaces to provide simple art activities. Art Therapists and/or other Therapists can monitor the individual’s engagement, responsiveness, and internal state. ePAD’s are currently being used with individuals who have Alzheimer’s disease. The ePAD’s provide a fun and meaningful activity while allowing skilled therapists to monitor their psychological well-being based on the interactions and responses with the device.

# Electronic Documentation Technologies

- Electronic Health Records (EHR) aim to reduce the number of medical errors, duplicate testing performed, health costs, and negative medication interactions as well as improve diagnosis and exchange of information. EHR come in the form of electronic medical records (EMR), electronic prescriptions, and referrals. Medicare and Medicaid offer [EHR Incentive Programs](#) to provide financial incentives for “meaningful use” of certified EHR technology when used in 3 stages:
  - Stage 1: Must meet data capture and sharing requirements over 90 days in year one and throughout the entire second year.
  - Stage 2: Must meet additional requirements for the advancement of clinical processes and the promotion of health information exchange for two full years.
  - Stage 3: Must meet requirements for improvement in patient outcomes and self-management tools for patients.
- E-Health is a broad term for heterogeneous and evolving [digital resources and practices](#) that support patient health and health care. This enables patients, consumers, and caregivers to access tools and resources such as:
  - Health Information: a wide spectrum of information or more narrowly defined content.
  - Behavior Change/prevention: support for specific behavior change (smoking cessation).
  - Self-Management: tools for achieving and maintaining health behaviors (diet and exercise) and/or management of chronic diseases.
  - Online Communities: internet-based communities for communication among individuals with shared health concerns.
  - Decision Support: structured support for making treatment decisions, choosing insurance plans, and managing healthcare benefits.
  - Healthcare Tools: accessing EMR and communicating with healthcare providers.
- Physicians may use crowdsourcing via social media sites such as [twitter](#), [doximity](#), and [sermo](#) to:
  - Gather advice and expertise from other physicians
  - Share knowledge on chronic diseases
  - Keep up on the latest news and research in a specific field
  - Gather multiple, rapid, and thoughtful responses to questions posed
- A personal health record (PHR) is different than an EHR in that it allows its contents to be maintained by the patient, and it allows the patient to collect, store, and share their personal health data. This is especially helpful when sharing information between primary care physicians and specialists. Examples of a PHR can be found at [revolutionPHR.com](#).
- Telehealth involves the use technology to remotely communicate with and monitor the patient, often from the patient’s home. Benefits include patients receiving care in their

preferred environment, improving adherence to drugs and/or treatments, educating and supporting for preventive care, earlier detection of disease exacerbations, and timeliness of management and support. Telehealth communicates via:

- Phone calls or video calls with healthcare providers
  - Telemonitoring: a physician prescribes telehealth and a home care agency installs equipment and provides training on proper use. The patient uses the equipment to take their vital signs and answer personalized clinically relevant surveys. This information is then relayed to the physician where it is monitored.
    - The [IDEATel trial, a clinical trial for telemonitoring for diabetes care](#), discovered that the individuals using this technology had decreased glycated hemoglobin, blood pressure, and low-density lipoprotein cholesterol.
- Medical Health Applications, or “mHealth apps” are available for smart phone or tablet technology. The applications monitor conditions, document health trends, and provide educational references for patients. There are many available and include: [athenaWell](#), [First Aid by American Red Cross](#), [CareZone Meds](#), [Diabetes LogBook](#), and [myRA](#).
- Challenges encountered while using mHealth apps include:
    - Lack of evidence in the clinical effectiveness for most users
    - Need for more formal evaluation and review
    - Potential threats to patient safety and privacy
    - Problems with using the applications in the older adult population
    - Lack of integration with healthcare delivery systems