

Handout for Individuals & Caregivers: Technology

A significant research and development effort has been emerging in the last decade into the design and development of assistive technologies for older adults in general, and more specifically for the support of people living with dementia.

WHAT IS ASSISTIVE TECHNOLOGY?

Assistive technology includes products, services and systems used to maintain or improve function. There are many types of assistive technology available that can support people living with dementia. An individual's needs should be fully assessed first in order to identify the best solutions. The key to success is providing effective assistive technology that will help maintain a person's independence and make best use of their abilities for as long as possible.

BENEFITS FROM USING ASSISTIVE TECHNOLOGY

Assistive technology can optimize the function and safety of people living with dementia and enable them to stay in their community and/or home longer.

Technology can also benefit families caring for a relative living with dementia by, as examples, allowing them to monitor their well-being at a distance, remind them to take medications or locate them if way-finding is an issue.

Technology can also support service providers through a digitally enabled workforce, assessment and monitoring functions, and provision of interventions.

KEEP IT SIMPLE

It is important not to rush out to buy and install a range of assistive technology devices until simple solutions have been tried first. For example, if a person is falling often, it may be because carpets are loose or worn, the person is wearing the wrong footwear, electrical cords are in a poor position or the person would benefit from handrails. Just increasing the levels of lighting can make a big difference.

There are several 'low-tech' ways to assist people living with dementia to overcome memory problems. If the person can recognize and understand written notices, a well-positioned reminder board in key areas of the house can alleviate distress. Many people will find it easier to read notes written with black ink on yellow paper using large, clear letters; these are the best contrast colours for visual impairment. Clear signs on doors, cupboards, drawers, and taps can be crucial in helping a person living with dementia to find their way safely around and help themselves to what they need.

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TECHNOLOGY FOR MAINTAINING FUNCTION, SAFETY, AND INDEPENDENCE IN THE HOME

Lighting

Technology can help keep light at the right level (e.g. a light sensor can make sure that lights go on when the natural light is reduced). It also reduces costs by reducing electricity use because the lights won't go on until they are needed. However, it is important to pick the right type of bulbs – some low-energy bulbs take a little while to get up to full light level, and this could be very dangerous around a stairway or doorstep.

Alarms

If a person living with dementia needs to call for help or alert someone when something has gone wrong (e.g. the person has fallen), interactive equipment such as pull-cord alarms can be useful. Individuals can also use wearable alarms, usually worn around the neck or wrist as a pendant. The user presses the red button on the pendant to raise the alarm. A fall detector with built in accelerometers which respond to sudden changes can also be clipped onto a waistband, jacket or belt, or be part of a wearable device such as a smart watch.

Self-Activating Technology

Non-interactive equipment includes smoke detectors, flood and temperature-extreme monitors (these detect very hot or cold temperatures in a room and set off a noise). The success of these devices depends on the person living with dementia understanding what the noise made by the alarm means. Alternatively a signal can be sent to a monitoring service or family member.

Smart Homes

Emphasizing the potential for maintaining people living with dementia at home and delivering care remotely, numerous products and systems utilizing sensors and instrumented devices have been developed.

- Virtual assistants (such as Amazon Alexa or Google Assistant), allows you to give voice commands or ask questions, which they then carry out or answer. This can range from asking what the weather is like, to creating an entire 'smart home' system which plays music, controls the lights, and adjusts the central heating (although additional equipment would be needed for these). They can be useful for adding a home alarm system that will 'listen' for sounds like glass breaking and can alert you

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remotely. They can also be programmed to remind about appointments or when to take medication or make phone calls.

- Individual items such as bed occupancy sensors, floor mat sensors, door opening alerts, motion detection, or activity monitors can be purchased online for individuals and organizations to establish their own monitoring systems.
- GPS devices are now being co-created with people who live with dementia to provide ambient support to maintain their activities of daily living.

Reminders/Memory aids

Technology can also help with simple reminders and prompts.

- **Devices that detect motion:** These use a sensor or pressure mat and play a pre-recorded voice when there is movement (e.g. to play a message when you walk out of the kitchen to remind you to turn off the stove).
- **Verbal reminder.** This can be as simple as arranging for someone to call at a specific time or using a talking alarm clock that can be programmed to provide helpful reminders throughout the day.
- **Devices that play set reminders:** These play messages at certain times (e.g. a recorded message reminding the person to take medication). Using calendar apps, such as Google Calendar, can be helpful when caregivers are overloaded with tasks to remember or when trying to coordinate a network of care. The calendar can be shared, too, allowing more than one person to set reminders, and “invite” others to see the calendar, allowing multiple caregivers to be aware of forthcoming appointments and events.

Medication aids

There are lots of different aids that to assist in taking medication at the right time. These include simple pill boxes (often known as dosette boxes) – with separate compartments for days of the week and times of day - or more sophisticated automatic pill dispensers that set off an alarm and the right compartment opens so that the individual can access the correct pills for the time slot. Some devices can be set so the alarm goes off until the pills are removed.

Locating devices

A locator device can be used to find commonly misplaced things such as keys or a wallet. A small electronic tag is attached to each item. Locator devices can work in different ways.

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In some systems, if an item gets lost, pressing a button on a dedicated locator device will activate the tag with either a beeping noise, a flashing light, or a combination of both.

Communication and socialization

People living with dementia initially continue to use email, cell phones, texts and apps such as Skype, FaceTime and Google Hangout, if they used them before.

Fun and Games

Another important application of technology is to support people living with dementia to engage with and enjoy leisure activities. Just like the rest of the population, people living with dementia seek meaningful and enjoyable activities. Games can provide this satisfaction but despite the millions of games in online stores, very few are dementia-friendly, i.e. accessible for people living with dementia.

ROBOTS

Robots for older adults include robots as direct caregivers, assistants, companions, and facilitators of social interaction in older adults living with and without dementia.

- **Social commitment** robots take the form of relatively simple pseudo-animal robots made of metal or with synthetic fur, such as NeCoRo, AIBO, and Paro, which represent a cat, dog, and baby harp seal, respectively. The research shows, that the robots could significantly decrease loneliness in users and stimulate conversation between users.
- **Cognitive assistive** robots and technologies that aid users in performing activities of daily living. Such devices typically have roles in helping patients to maintain a schedule and remember certain tasks.
- **Telepresence robots** which are basically a video conferencing system controlled by a remote user, i.e. rather than appearing on a fixed desktop monitor or screen, the person speaking/viewing (family member or caregiver) can move the robot around the environment of the individual. Family caregivers had a feeling of presence and connectedness when talking to their family member via the telepresence robots.

ADDITIONAL RESOURCES

- Assistive Technology www.scie.org.uk/dementia/supporting-people-with-dementia/dementia-friendly-environments/assistive-technology.asp

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- Accessible Touchscreen Apps for People Living with Dementia (AcToDementia) www.actodementia.com
- House of Memories, a museum-led dementia awareness program using an app to explore historical artefacts houseofmemories.co.uk/app
- Hammond Care www.hammond.com.au/
- Locating Devices archive.alzheimer.ca/sites/default/files/files/national/brochures-day-to-day/day-to-day-series_locating-devices.pdf
- MedicAlert® Safely Home®: a nationwide service that helps identify the person who is lost and assist them to safely return home www.medicalert.ca/safelyhome

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