

LESSON 2-4

ASSISTIVE TECHNOLOGY

Lesson: Assistive technology

Author: Mary Helen McSweeney-Feld, PhD, LNHA
Associate Professor, Health Care Management
Department of Interprofessional Health Studies
Towson University

Intended Audience of Learners

A broad range of health professionals who may work with the older adult population.

Competencies

This lesson supports learning related to the following competencies, with regard to *assistive technologies related to conditions present in the geriatric population that impact their disaster preparedness, response, and recovery.*

Core Competencies and Subcompetencies from [Walsh L, Subbarao I, Gebbie K, et al. Core competencies for disaster medicine and public health. *Disaster Med Public Health Prep.* 2012;6\(1\):44-52. doi: 10.1001/dmp.2012.4.](#)

Subcompetency 5.2 "Describe risk reduction measures that can be implemented to mitigate or prevent hazardous exposures in a disaster or public health emergency."

Core Competency 8.0 "Demonstrate knowledge of public health principles and practices for the management of all ages and populations affected by disasters and public health emergencies."

Subcompetency 8.2 "Identify all ages and populations with functional and access needs who may be more vulnerable to adverse health effects in a disaster or public health emergency."

Subcompetency 8.3 "Identify strategies to address functional and access needs to mitigate adverse health effects of disasters and public health emergencies."

Subcompetency 8.4 "Describe common public health interventions to protect the health of all ages and populations affected by a disaster or public health emergency."

Learning Objectives

At the end of this lesson, the learner will be able to:

- 2-4.1 Describe the scope of assistive, alternate, and augmentative communication technologies and how they are utilized by older adults living in the community and in residential care communities.

- 2-4.2 Identify the issues involved in evacuation of older adults utilizing assistive, alternate, and augmentative communication technologies in the event of an emergency or disaster.
- 2-4.3 Develop strategies to accommodate older adults utilizing assistive, alternate, and augmentative communication technologies evacuated to shelters or alternate medical centers in the event of an emergency or disaster.

Estimated Time to Complete This Lesson

90 minutes

Content Outline

Module 2: Conditions present in the older adult population that impact their disaster preparedness, response, and recovery

Lesson 2-4: Assistive technology

- I. Definitions and legal requirements
 - a. Assistive technology: any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capacities of individuals with disabilities. (Federal Register, August 19, 1991, p. 41272)
 - i. Assistive technology can include machines, equipment, communication devices, personal assistance devices, service animals, etc.
 - ii. Assistive technology helps to address the functional needs of older adults during an emergency or disaster (older adults may meet the definition of a functional needs population under the National Response Framework).
 - iii. Assistive technology can help to meet the Americans with Disabilities Act (ADA) requirements for an emergency shelter.
 - b. Augmentative and alternate communication (AAC): includes all forms of communication other than oral speech that are used to express thoughts, needs, wants, and ideas (www.asha.org, 2013)
 - i. People with complex communication needs (CCN) rely on AAC equipment and communication strategies to supplement existing speech or replace speech that is not functional. These individuals may include adults with intellectual disabilities, such as adults with autism or related conditions.
 - ii. Special augmentative aids, such as picture and symbol communication boards and electronic speech-generating devices, are available to help people express themselves.

- c. ADA requirements for individuals with disabilities: the ADA requires people with disabilities to be accommodated in the most integrated setting appropriate to their needs (28 C.F.R., section 35.130 (d)).
 - i. A total of 38.7% of older adults in the United States reported having one or more disabling conditions that limited their activities of daily living during the period of 2007-2012.
 - ii. Older adults with disabilities have a right to be accommodated in mass shelters when possible; many utilize assistive devices, especially for ambulation.
 - iii. Shelters and receiving medical centers need to consider the sensory, cognitive, and mobility issues of older adults with disabilities as well as any assistive devices, technology, personnel, or services necessary to maintain their functional needs.
 - iv. Older adults with disabilities should register with a confidential, emergency service voluntary registry so that they are given priority in the event of an emergency or disaster and can be located with geographic information system (GIS) technology if assistance is needed.
 - v. CALIF 2009 and BCID 2011 decisions underscore the need for localities to provide notification systems for individuals with hearing and cognitive impairments, as well as evacuation plans, shelter accessibility, and communication appropriate for individuals with disabilities.

- II. Equipment requiring power
 - a. Motorized wheelchairs and beds
 - b. Ventilators and other respiratory support equipment such as nebulizers and suction machines
 - c. Infusion pumps for medication or nutrition
 - d. Electronic communication devices (iPads, tablets, speech-generating devices, etc.)
 - e. Medications requiring refrigeration
 - i. Battery backups should be available, fully charged, and checked on a periodic basis; battery backups should provide enough power for 72 hours.
 - ii. Backup generators can assist facilities in keeping lighting, breathing equipment, and refrigeration running; fuel resources should last for 72 hours.
 - iii. In the event of an emergency, individuals using medical equipment that uses electricity should register with local emergency management

agencies or organizations that assist older adults so that they are a priority for specialized evacuation.

- III. Modified equipment
 - a. Modified beds and chairs
 - b. Accessible portable toilets
 - i. In the event of an evacuation, beds with firm mattresses are needed for individuals with breathing difficulties.
 - ii. Chairs with backs as well as raised toilet seats are needed to assist older adults with mobility issues.
 - iii. Accessible portable toilets should be provided for older adults using a wheelchair.

- IV. Communication devices
 - a. Can be written, printed, visual, verbal/audible for individuals with sensory or cognitive issues
 - b. Signage, magnifiers, typed premade words and phrases
 - c. Includes specialized personnel such as sign language interpreters, readers, guides
 - i. Individuals with CCN may utilize paper communication displays if electronic devices run out of power or are not brought with them in an emergency.
 - ii. First responders and emergency managers should know how to get information from individuals with CCN by asking yes/no questions.
 - iii. Communities should accommodate individuals with sensory disabilities with texting and video captioning messages to inform them of the emergency and how to respond.

- V. Mobility devices
 - a. Manual wheelchairs (electric wheelchairs are covered under devices requiring electricity)
 - b. Walkers or canes
 - i. To comply with ADA requirements for physical accessibility, clear paths, ramps to enter and exit buildings, wider hallways, and accessible parking should be considered for individuals with mobility issues if they are transferred to shelters or other healthcare facilities.
 - ii. Individuals using motorized wheelchairs and motorized beds may need to be transferred to manual chairs and beds in the event of an extended emergency period.

- VI. Assistive personnel and systems
 - a. Personal care assistants and family members
 - b. Service animals
 - c. Texting and video captioning
 - d. Geographic information systems
 - i. Personal care assistants and/or family members may accompany individuals utilizing assistive technology or AAC devices in the event of an emergency.
 - ii. American sign language interpreters, readers for individuals with vision conditions, and guides should be provided for individuals with CCN needs.
 - iii. Service animals should be allowed to accompany individuals, and food and water should be provided for the service animal; this may require a reasonable modification in existing policies for shelters and receiving medical centers.
 - iv. Individuals with disabilities should be accommodated with texting, smartphone, and video captioning to inform them of emergencies and how to respond.
 - v. GIS systems allow emergency planners and responders to map locations where assistance is needed; this technology may be helpful in locating larger numbers of older adults needing assistance.

Suggested Learner Activities for Use in and Beyond the Classroom

1. Invite students to work in groups of 4 to 5 people. Ask them to discuss the following scenario: Weather conditions have created severe flooding in your local community that requires individuals to evacuate from their homes. Two apartment complexes housing older adults have lost their power, and the water continues to rise. Have 1 to 2 students act as first responders, 1 student act as an older adult with mobility issues who uses an electric wheelchair, and 1 student as an older adult with vision issues who uses a service dog. The first responders must help both older adults evacuate to a shelter. Have the first responders develop a small set of questions they would ask the older adults about their assistive technology and determine how would they assist the older adults in the evacuation. The students acting as older adults should develop a small set of questions that they would ask the first responders about how they would be able to use their technology if they evacuated their residences. The students should then dialogue in their assigned roles for 10 to 15 minutes and then debrief. Groups should report back to the full class for further discussion.

2. Break students up into pairs and have one person be an individual with CCN and the other person an emergency manager or first responder. Have the first responder practice communication with the individual with CCN by using yes/no questions, and then with pictures, focusing on questions that would be asked in the event of an emergency or disaster needing an evacuation. After 10 to 15 minutes, have the students reverse their roles for the same period of time. Have the students debrief and exchange their findings with the full class.

Readings and Resources for the Learner

- Required Resources
 - Banerjee M, Tanchak T. Emergency preparedness strategies for persons with complex communication needs.
http://www.asha.org/events/convention/handouts/2008/2078_banajee_meher/.
 - Calahan C, Renne J. Safeguarding independent living: emergency evacuation of the elderly and disabled. *In Transition*. 2007; Spring:7-12; 29-31.
http://www.intransitionmag.org/Spring_2007/v14spring/evacuating_elderly_disabled.pdf. Accessed July 6, 2015.
 - Centers for Disease Control and Prevention. *Identifying Vulnerable Older Adults and Legal Options for Increasing Their Protection During All-Hazards Emergencies: A Cross-Sector Guide for States and Communities*. Atlanta: US Department of Health and Human Services; 2012.
 - Ivey SL, Tseng W, Dahrouge D, et al. Assessment of state and territorial-level preparedness capacity for serving deaf and hard of hearing populations in disasters. *Public Health Rep*. 2014;129(2):148-155.
 - Rutkow L, T HA, Gable L. Emergency preparedness and response for disabled individuals: implications of recent litigation. *Journal of Law, Medicine and Ethics*. 2015;43(s1):91-94.
 - US Department of Education. *Emergency Management Research and People with Disabilities: A Resource Guide*.
<https://www2.ed.gov/rschstat/research/pubs/guide-emergency-management-pwd.pdf>. Published April 2008. Accessed July 6, 2015.
 - US Department of Justice, Civil Rights Division, Disability Rights Section. Americans with Disabilities Act: ADA checklist for emergency shelters.
<http://www.ada.gov/shleterck.htm>. Published July 26, 2007. Accessed July 6, 2015.
 - US Department of Justice. (2011). ADA requirements: Service animals.
http://www.ada.gov/service_animals_2010.htm. Published July 12, 2011. Accessed February 24, 2015.

- Supplemental Resources
 - American Speech-Language Hearing Association website. www.asha.org. Accessed July 6, 2015.
 - *Recommendations for Best Practices in the Management of Elderly Disaster Victims*. Baylor College of Medicine, American Medical Association. www.bcm.edu/pdf/bestpractices.pdf. Accessed July 6, 2015.
 - Al-Rousan TM, Rubenstein LM, Wallace RB. Preparedness for natural disasters among older US adults: a nationwide survey. *Am J Public Health*. 2014;104(3):506-511.
 - Billy Builds A Kit. <http://www.ncbi.nlm.nih.gov/pubmed/24432877>.
 - Fernandez LS, Byard DL, CC, Benson S, Barbera JA. Frail elderly as disaster victims: emergency management strategies. *Prehosp Disaster Med*. 2002;17(2):67-74.
 - He W, Larsen LJ. *Older Americans With a Disability: 2008-2012*. US Census Bureau, American Community Survey Reports, ACS-29, Washington, DC:US Government Printing Office;2014.

Learner Assessment Strategies

1. Ask students to list 5 to 7 items that should be considered if older adults utilizing assistive technology or AAC devices are evacuated to a local shelter and why these issues are important.

Readings and Resources for the Educators

- Required Resources
 - Same as above.
- Supplemental Resources
 - Same as above.

Sources Cited in Preparing Outline and Activities Above

1. Same as above.