

LESSON 4-3 PUBLIC HEALTH CONSIDERATIONS

Lesson: Public Health Considerations

Authors: Cheryl A. Levine, PhD
Team Lead for At-Risk Individuals
Division for At-Risk Individuals, Behavioral Health, and Community Resilience (ABC)
Office of the Assistant Secretary for Preparedness and Response (ASPR)
US Department of Health and Human Services (HHS)

Alana Morrell, MPH Candidate
Milken Institute School of Public Health
The George Washington 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 *public health considerations during a disaster for the geriatric population*:

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.* Mar;6\(1\):44-52. doi: 10.1001/dmp.2012.4.](#)

Core Competency 5 “Demonstrate knowledge of personal safety measures that can be implemented in a disaster or public health emergency.”

Subcompetency 5.1 “Explain general health, safety, and security risks associated with disasters and public health emergencies.”

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 “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:

- 4-3.1 Describe the role of public health and state and local health departments in caring for the geriatric population during a disaster or public health emergency.
- 4-3.2 Identify the various public health environmental hazards and their impact on older adults in a disaster.
- 4-3.3 Discuss how public health can help to reduce the incidence of disaster and emergency related injury in older adults.

Estimated Time to Complete This Lesson
 60 minutes

Content Outline

Module 4: Caring for older adult populations during the disaster cycle: Preparedness, response, recovery, and mitigation
 Lesson 4-3: Public health considerations

- I. The role of public health and state and local health departments in caring for the geriatric population during a disaster or public health emergency.
 - a. Epidemiology and disease surveillance
 - i. This section is intended to define epidemiology and disease surveillance and the basic components of this process.
 - 1. Public health surveillance involves ongoing and systematic collection, analysis, and interpretation of health data to promote disease prevention and control. It is essential to planning, implementing, and evaluating public health practice. Additionally, public health surveillance involves dissemination of critical health data to public health officials who coordinate response activities.¹
 - 2. To guide public health surveillance, the table below describes the 10 Essential Public Health Services that provide the framework for the public health system with examples relevant to geriatric populations.

10 Essential Public Health Services ²		Geriatric Examples
1	Monitor health status to identify and solve community health problems	Compare medical issues as well as the access and functional needs of the geriatric population you serve with data from state and national surveillance systems. <ul style="list-style-type: none"> • Compare the rate of risk factors for the 65 and older population in your county to the rate of risk factors for the 65 and older population in your state or region of the country. This may reveal a community problem in need of intervention. • Centers for Disease Control and Prevention

		<p>(CDC) WONDER: This resource provides a single point of access to a wide variety of public health reports and data systems. To view risk factors among the geriatric population using the WONDER webpage, see Topics tab, go to Disease and Disability/Aging Population/The State of Health Aging in America and input your state.</p>
2	<p>Diagnose and investigate health problems and health hazards in the community</p>	<p>Build rapport with local and state health departments to receive current information, and when appropriate, to report health concerns, surveillance issues, and disease cases. Request feedback on epidemiologic investigations conducted on patients by use of guidance from the following resource:</p> <ul style="list-style-type: none"> • CDC: Enhancing Surveillance: This chapter highlights differing surveillance approaches and strategies to incorporate healthcare providers into surveillance efforts.
3	<p>Inform, educate, and empower people about health issues</p>	<p>Work with the local Area Agency on Aging and Senior Centers to disseminate preparedness information geared towards older adults including building a preparedness kit that includes food, water, and medications to last for at least 72 hours.</p> <ul style="list-style-type: none"> • For more information, go to: http://www.ready.gov/seniors • Area Agencies on Aging (AAA) were established under the Older Americans Act to respond to the needs of Americans aged 60 and over in every local community. For more information, go to: http://www.n4a.org/ and http://www.aoa.acl.gov/AoA_Programs/OAA/Aging_Network/Index.aspx
4	<p>Mobilize community partnerships to identify and solve health problems</p>	<p>Work with retirement communities and long-term care facilities to implement closed Point of Distribution (POD) plans and conduct exercises in the event of a public health event requiring medical countermeasure dispensing in support of treatment or prophylaxis.</p> <p>For individuals who live independently in private</p>

		homes outside of retirement communities, work with community partners to ensure that they have access to closed PODs or coordinate with general public PODs to accommodate the access and functional needs of these individuals.
5	Develop policies and plans that support individual and community health efforts	Work with the local Area Agency on Aging and Medicare Ombudsman to implement policies that integrate older adults into disaster and emergency planning activities, including engaging with emergency management and promoting participation in CERT programs .
6	Enforce laws and regulations that protect health and ensure safety	Develop relationships with the legal assistance and elder rights programs funded by the Older Americans Act that promote resilience by empowering older adults to remain independent, healthy, and safe in their homes and communities. <ul style="list-style-type: none"> For more information, go to: http://www.aoa.acl.gov/AoA_Programs/Elder_Rights/Legal/index.aspx
7	Link people to needed personal health services and ensure the provision of health care when otherwise unavailable	People who live independently in the community but who rely on personal assistance services to support their activities of daily living may become separated from their caregivers in a disaster or emergency. Develop Memoranda of Agreements (MOAs) between local emergency shelter providers and local personal assistant services providers to ensure that individuals with access and functional needs who may require supportive services can be accommodated in a mass care shelter in the event of a disaster or emergency. In addition, develop MOAs for the continuity of personal assistance services if older adults living independently in the community temporarily lose track of their home health care provider and remain at home rather than go to a mass care shelter. <ul style="list-style-type: none"> For more information, go to: http://www.cdc.gov/aging/emergency/legal/agreements.htm
8	Ensure a competent public and personal health care workforce	Ensure that staff roles are clearly defined and expectations are widely understood; healthcare providers' emergency preparedness and response planning and training should occur at both the county and regional levels. Health care providers

		<p>and public health authorities who respond to disasters are often not the same as those who respond to daily emergencies in a given locality. To ensure continuity of services, it is critical that public health emergency and disaster plans integrate the day-to-day responders with emergency response units from other jurisdictions. For example, this could mean developing Memoranda of Understandings with ambulance service providers in adjacent counties or partnering with a long-term care facility from a different district in the event of a power outage impacting your facility's area.</p> <ul style="list-style-type: none"> Review the following web resources: http://www.acl.gov/Get_Help/Preparedness/Index.aspx#ServiceProviderPreparedness
9	Evaluate effectiveness, accessibility, and quality of personal and population-based health services	Perform preparedness exercises and drills regularly to refresh skill sets and make adjustments to current plans. FEMA offers a range of hypothetical disaster situations to evaluate the competence level of the staff, geriatric population, and family members you serve by conducting tabletop exercises.
10	Research for new insights and innovative solutions to health problems	Use data collected while monitoring the health status of the geriatric population you serve as a springboard for identifying evidence-based solutions.

3. Disease outbreaks begin at the local level. When health care professionals notice fluctuations and patterns in health outcomes among the geriatric populations they serve, they have the opportunity to contribute to the surveillance process. Public health information moves from the local, to the state, to the federal level; therefore, the role of the local health care provider can be critical to surveillance by contributing and reporting observed changes.
- ii. Provide tools to monitor trends and apply public health information in interactions with the geriatric population. Emphasize the following for clinical care providers:
1. Through the process of monitoring and reporting local, state, and national trends, health care professionals can provide an enhanced assessment of the geriatric population. By practicing routine public health surveillance awareness, health care professionals can enhance the provision of informed, timely, and appropriate care.

- Example (Part 1): I noticed that a large percentage of the residents at my assisted-living facility near Birmingham, Alabama, have high blood pressure. Many of our residents take high blood pressure medications (such as beta-blockers). A side effect of these medications, however, can be inhibited sweating and decreased blood flow to the skin.³ After checking the [Health Aging Data Portfolio](#) for more information about my state, I found that 95.2% and 98% of the geriatric population (≥65) in my state and county respectively take medication for high blood pressure. Therefore, in the event of a heat wave, we should be prepared to mitigate heat exposure and, where necessary, treat large numbers of the geriatric population with heat stress.
 - 2. Health care professionals can incorporate the use of public health data into their routine to provide informed, timely, and appropriate care. For example, the [Behavioral Risk Factor Surveillance System \(BRFSS\)](#) data from CDC provides state and local information to support and evaluate ongoing projects, monitor public health trends and needs, identify risks, and assess health care access. This data can also prevent misdiagnosis and marginalization of the geriatric population.
 - Example (Part 2, based on previous example in ii.1): I reported my observation of the relationship between blood pressure medication and heat stress on the geriatric population I serve in Alabama to my local health department and collaborated with their team to create reminders to take extra precautions as temperatures were expected to reach record highs this summer.
- II. Environmental hazards
- i. Environmental health addresses all the physical, chemical, and biological factors external to a person and all the related factors impacting behaviors. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted toward preventing disease and creating health-supportive environments.⁴
 - ii. Environmental hazards are elements of the environment that can lead to negative health outcomes and may include the built environment in addition to the natural environment.⁵
 - iii. As a result of the normal aging process, older persons in good health may experience increased health risks from exposures to environmental pollutants. As we age, our bodies are more susceptible to hazards from the environment, which may worsen chronic or-life threatening conditions.⁶
 - iv. Common environmental hazards that may be especially harmful to the health of older persons include⁷:
 - i. Climate change
 - ii. Lead
 - iii. Mercury
 - iv. Ozone

- v. Particle pollution (particulate matter)
- vi. Pesticides
- vii. Temperature extremes
- viii. Water contaminants

8 Common Environmental Hazards	Environmental Hazard Scenarios for Group Activity
Climate Change	A category 5 hurricane is expected to hit your state this weekend and the residents of your adult daycare center will be affected. Sustained winds will reach 160 mph, with a storm surge of almost 20 feet above normal. As the storm moves closer to land, massive evacuations will be required. Certain low-lying escape routes will be flooded starting at 5 hours before landfall. As the storm moves across inland states, it will stall, impacting communities with sustained tropical wind and rain, inland flooding, and tornadoes.
Lead	A factory explosion resulted in the collapse of several adjacent high-rise buildings in your area. The air quality is poor because particles such as lead make up the gray smoke cloud covering the northern region of the town. Dozens of survivors are being located beneath the rubble each day, many of whom are older adults residing in a nearby assisted-living facility.
Mercury	Early one Saturday morning, a floor model sphygmomanometer (blood pressure unit) in the room of a nursing home resident began leaking mercury. The operator rolled the leaking unit down a carpeted hallway to the nurses' station. During the day, staff attempted to clean up the mercury beads in the hallway. Unfortunately, they used a vacuum cleaner which increased the air levels of mercury vapor.
Temperature Extremes	Temperatures are expected to reach record lows in your area within the next week. A large proportion of the geriatric population in your area relies on public transportation and your area has a large population of individuals experiencing homelessness, including many older veterans.
Water Contaminants	The continuing care retirement community you serve is located on the shores of Indigo Lake. The 120-mile long, 12-mile wide lake is the source of drinking water for the region and other waterfront municipalities; there are no public groundwater sources available. The city discharges its treated wastewater and storm water into Indigo Lake and takes its drinking water from the same source. Nonpoint source pollution from treated wastewater and storm water agriculture is the priority contamination threat to the water supply. The watershed for the lake spans most of the northern region of your state. A series of thunderstorms bombard the area for 3 consecutive days.

	Following the storms, reports of gastrointestinal ailments emerge.
Ozone	It's a bright and sunny Thursday afternoon where your community health clinic is located. Several of your older adult patients are calling for appointments and complaining that they are experiencing similar symptoms of coughing, throat irritation, chest tightening, and wheezing. A few of the patients reporting these symptoms have a history of asthma, but several have no history of respiratory tract health issues. After questioning several of the patients, you discover that many experienced symptoms after extended periods of walking outdoors and other forms of physical exertion. The local air quality agency declared an Air Quality Action Day for Ozone because the levels are forecasted to reach unhealthy levels for the next 2 days.
Particle Pollution	Recent reports indicate that asbestos is present in several cement pipes throughout your area. The local water supplier failed to comply with mandates to reduce the amount of asbestos present. Local government authorities are working on identifying problem areas and information is scarce.
Pesticides	A truck driver transporting thousands of gallons of pesticide falls asleep at the wheel resulting in a severe collision at 11:30 PM. The driver survives and manages to dial 911 to report the accident. He notes that the pesticides are leaking from the truck onto the road. Cars passing the accident disperse the chemicals for several miles. It begins to rain and the pesticides react with the water creating a poisonous gas. Your nursing home is adjacent to the highway and is immersed in a thick cloud of the gas.

III. Injury prevention

- i. This section will cover causes of injury and how public health can reduce the incidence of disaster and emergency-related injury.
 - i. In the context of this curriculum, injury is defined as "harm or damage to an individual occurring as a result of a public health emergency event or disaster."⁸ Note that injury can be intentional or unintentional.
 - ii. Injury often occurs during and after an emergency event as a result of:
 1. Stress and trauma
 2. Evacuation process
 3. Disruption of services
 4. Detachment from social network
 - iii. Risk reduction involves measures designed to either prevent hazards from creating risks or lessen the distribution, intensity, or severity of hazards.⁹
 - Acknowledging the diversity of the geriatric population in terms of individual limitations, race, ethnicity,

- socioeconomic status, and access to care is essential to injury prevention during an emergency event. Not every member of the geriatric population faces the same threats during an emergency; therefore, assessing the risks and services available quickly and effectively is critical to preventing injury and maintaining independence.
- iv. Identifying your population's living arrangements and the potential threats in each setting allows service providers to plan for the continuity of services during and after an emergency. Nursing homes, shelters, assisted-living facilities, hospitals, and private residences are areas to consider.
 - v. Discussion on where injury occurs. **Instructor note: Reinforce the importance of surveillance and monitoring trends during a public health emergency or disaster recovery and response.*
 1. What are the greatest concerns for each type of living arrangement before, during, and after an emergency?
 - Consider ability to communicate in each setting. Members of the geriatric population living independently may not receive warnings of impending danger through the same channels as the general population (e.g., may not participate on social media or have a smartphone).
 2. Why is bidirectional communication important in risk reduction?
 - Consider evacuation procedures and systems such as access to transportation (e.g., it is accessible to individuals with mobility impairments or individuals with durable medical equipment such as an oxygen concentrator) or the ability to access and be accommodated in a general population shelter during an emergency (e.g., will shelter accommodate an individual who relies on a home-health nurse to assist with activities of daily living or will personal assistive services be provided if the individual's regular care provided is not available?).

Suggested Learner Activities for Use in and Beyond the Classroom

Exercise 1:

Propose the following scenario to students:

You work at the Pleasant Hills Nursing Home in an urban area and care for 80 individuals, many of whom have multiple chronic conditions and depend on the services provided by you and your team. On Tuesday, 4 residents of the Pleasant Hills Nursing Home became ill with nausea, diarrhea, and abdominal pain within 6 hours after lunch was served. Your team

suspects the Pleasant Hills Nursing Home kitchen to be the cause of the observed symptoms and requests that staff thoroughly clean and inspect the kitchen area to ensure that Wednesday's meals are prepared in compliance with rigorous safety and sanitary standards. Unfortunately, 12 residents become ill by nightfall and by the end of the day on Thursday, more than half of the residents are symptomatic. One of your team members hears on the local news that similar events have transpired at the nearby Whispering Woods Nursing Skilled Nursing Facility, resulting in 3 fatalities. The director calls Whispering Woods who indicates that the cause of the outbreak was believed to be consumption of salmonella-contaminated peanut butter.

Discussion:

- What resources would you use to contain the situation and prevent the spread of illness?
- How can we incorporate the 10 Essential Public Health Services into the situation in Exercise 1? Do you think the incident could be resolved by using these services? If so, how?
- Example: Ensure a competent public and personal health care workforce.
 - In planning for the future, employees managing residents' meals should have in place viable options to provide nutrition if the kitchen must be closed because of contamination or recalls. Kitchen managers and staff should be aware of resources used to identify food hazards as well as precautionary measures.
- What are some policies or procedures the staff at Pleasant Hills Nursing Home should put into practice to prevent future foodborne illnesses? Share and discuss methods and solutions.

Exercise 2:

Divide the class into 8 groups (depending on class size) and assign each group 1 of the 8 common environmental hazards. Ask each group to perform the following tasks based on their assigned hazard and scenario (refer to the table earlier in the lesson). Each group will present and discuss their environmental hazard, scenario, and strategies to the class.

1. Devise strategies and control measures to safeguard the health of the geriatric population in the setting of your choosing.
2. Assess the risks or secondary events resulting from the emergency.
3. Create an asset map including resources from the EPA Aging Factsheets and other web sources helpful in resolving issues related to your environmental hazard. Ensure that each group considers setting (urban or rural) and time constraints.

Helpful Hints: An asset map demonstrates the resources available in your community and how they are connected. To create an asset map, list your community's strengths and resources, and organize the information into a diagram or table. Use the map to identify ways to use your community's assets to spread your messages. Refer to page 9 of the CDC's [Roadway to Better Health-A Guide to Promoting Cancer Prevention in Your Community](#) for more information.

Individual Preparedness Discussion:

- Do you have a preparedness plan for you and for your family?
- Are there any aspects of developing a plan that you find overwhelming or difficult? How can we mitigate these difficulties?
- Think of the people you care for on a day-to-day basis. How prepared are they? Consider aspects of personal preparedness that you find stressful and how additional barriers may complicate the planning process for members of the geriatric community.

Share the following profiles with the group.

- How would you assist these individuals with their preparedness?
- What would they need to prevent injury?

Profile 1: Louis

- 73-year-old man living in East Harlem
- Spanish speaker with strong ties to Venezuelan culture
- Lives alone in a high-rise
- History of asthma, arthritis, and hypertension
- Relies on an oxygen concentrator
- Does not own a car
- His only son lives on the other side of the city

Profile 2: Rose

- 86-year-old woman residing in the suburbs of Georgia
- Vietnamese-American immigrant with limited English proficiency
- Lives with her son, daughter-in-law, and their 4 children
- Recently suffered from a stroke that left her bedridden for the last 3 months
- The family relies on Medicaid and Medicare for her care

Profile 3: Jackie

- 80-year-old residing in a long-term care facility in Los Angeles
- Jackie does not identify with any single gender
- Suffers from dementia and depression
- Jackie's diabetes requires dialysis
- Has specific dietary restrictions

Readings and Resources for the Learner

- Required Resources
 - *A Profile of Older Americans: 2013*. Administration on Aging, Administration for Community Living, US Department of Health and Human Services.
http://www.aoa.acl.gov/Aging_Statistics/Profile/2013/docs/2013_Profile.pdf.
Published 2013. Accessed February 4, 2015.
A profile created by the Administration on Aging (AOA), Administration for Community Living of the United States, US Department of Health and Human Services, containing facts and statistics about the geriatric population. Important information on employment, education, housing, and insurance coverage are highlighted in this document. This resource is recommended

- because it allows caregivers and medical providers to familiarize themselves with data that may aid them in identifying fluctuations in the health status of the population and quickly implement solutions.
- BRFSS prevalence and trends data. Centers for Disease Control and Prevention website. <http://apps.nccd.cdc.gov/brfss/>. Accessed February 4, 2015.
This resource provides data on risks associated with chronic disease within the US population. This information is pertinent because a large proportion of the geriatric population has multiple chronic conditions.
 - See recent recalls. Foodsafety.gov: Your Gateway to Federal Food Information website. <http://www.foodsafety.gov/recalls/recent/index.html>. Accessed February 4, 2015.
This resource provides information on recent food recalls with links to additional information on what to do if you have a recalled food product. It is important to be prepared for a food recall before it occurs as the geriatric population is especially vulnerable to foodborne illness because of changes in immunity and the compounding effect of multiple chronic conditions. A large proportion of the population has a fixed income and mobility limitations and is more likely to be unable to seek out alternate sources of nutrition. The website acts as a supporting resource to prevent monetary and nutritional loss for members of the geriatric population.
 - Maps. Division of Heart Disease and Stroke Prevention. Centers for Disease Control and Prevention website. <http://www.cdc.gov/dhdsp/maps/index.htm>. Updated August 19, 2015. Accessed February 4, 2015.
A central location for state and national maps and dashboards that provide basic statistics regarding chronic diseases and other health indicators.
 - Aging. Fact sheets. US Environmental Protection Agency website. <http://www.epa.gov/aging/factsheets/index.htm>. Accessed February 4, 2015.
 - A Profile of Older Americans: 2011. Administration for Community Living, Administration on Aging website. http://www.aoa.gov/Aging_Statistics/Profile/2011/6.aspx. Updated December 31, 2014. Accessed February 4, 2015.
The AoA provides a brief overview of the living arrangements of persons 65 and above.
 - Injuries among older adults. Centers for Disease Control and Prevention website. <http://www.cdc.gov/ncipc/olderadults.htm>. Updated October 9, 2007. Accessed February 4, 2015.
CDC's webpage highlights the risks for many types of injuries that pose the greatest threat to older adults.

- Supplemental Resources
 - None

Learner Assessment Strategies

1. Ask each learner to list and describe 6 of the 10 essential public health services; next, provide an example involving caring for the geriatric population in disasters.

2. Ask each learner to list 4 of the 8 most common environmental hazards; next, explain why older adults are at increased risk from these hazards, especially in a disaster.
3. Ask each learner to define injury in the context of this lesson and provide at least 2 causes of injury for older adults during and after a disaster or public health emergency; next, describe how surveillance and monitoring impact the incidence of injury among the geriatric population.

Readings and Resources for the Educator

- Required Resources
 - Carter J, Slack M. Chapter 3: public health at the local, state, national, and global levels. American Society of Health-System Pharmacists. <http://www.ashp.org/DocLibrary/Bookstore/P1725/P1725SampleChapter.aspx>. Accessed May 18, 2015.
This chapter examines the public health organizations within the United States and the organizations that exist for international public health needs to better understand how agencies at different levels fit together to provide public health services,
- Supplemental Resources
 - None

Sources Cited in Preparing Outline and Activities Above

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2. The Public Health System and the 10 Essential Public Health Services. Centers for Disease Control and Prevention website. <http://www.cdc.gov/nphsp/essentialServices.html>. Last updated May 29, 2014. Accessed July 12, 2015.
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<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5022a1.htm>. Accessed July 12, 2015.

9. Risk Reduction and Emergency Preparedness: WHO Six-Year Strategy for the Health Sector
http://www.who.int/hac/techguidance/preparedness/emergency_preparedness_eng.pdf.

Additional Resources Utilized

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<http://wonder.cdc.gov/Welcome.html>. Reviewed November 24, 2014. Accessed February 4, 2015.
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