

LESSON 5-1

HOSPITAL

Lesson: Hospital

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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 *special considerations for the geriatric population in a hospital setting in disasters*:

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

Core Competency 7.0 "Demonstrate knowledge of principles and practices for the clinical management of all ages and populations affected by disasters and public health emergencies, in accordance with professional scope of practice."

Sub competency 7.1 "Discuss common physical and mental health consequences for all ages and populations affected by 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."

Sub competency 8.1 "Discuss public health consequences frequently seen in disasters and public health emergencies."

Sub competency 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."

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

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

Sub competency 11.4 “Discuss the importance of monitoring the mental and physical health impacts of disasters and public health emergencies on responders and their families.”

Learning Objectives

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

- 5-1.1 Describe specific planning considerations for hospitals in caring for older adults in disasters.
- 5-1.2 Describe clinical issues relevant to caring for older adults in disasters in the hospital setting.

Estimated Time to Complete This Lesson

120 minutes

Content Outline

Module 5: Setting: Special considerations for older adults

Lesson 5-1: Hospital

- I. Hospital
 - a. The following sections include information on how disasters affect older adults and include suggestions about how to prepare for these occurrences in the hospital setting. Additional sections include information about common health problems encountered when caring for older adults in the hospital setting.
 - i. Disaster plans involving older adults
 - 1. The overall goal of geriatric disaster planning is to reduce the health impacts of disasters on older adults. This planning should include medical care of the elder, transfer to and from hospitals, and the use of proper equipment for older adults.
- II. Review of disasters affecting the geriatric community
 - a. Disasters affecting the geriatric community that may require older adults being transferred into the hospital setting include such scenarios as natural disasters, infectious outbreaks, and manmade events. Many older adults in a disaster may present at a hospital with dehydration, depression, trauma, interruption of skin integrity, and fall-related injuries.¹
 - i. A synopsis of disasters with special issues for the geriatric population follows.
 - 1. Natural disasters, such as floods, tornados, and hurricanes, are just a few of the natural disasters that could affect older adults.

- During the 2005 gulf hurricane season, 74% of the over 1500 people who perished were over 60 years old.²
2. During Hurricanes Katrina (29 August 2005, category 4 Katrina in New Orleans and Gulf Coast) and Rita: 103 of the 877 victims were from nursing homes and 49% of these were older adults age 75 and older; almost half of these older adults died by drowning.^{3,4}
 3. On the eve of Katrina, elderly or disabled populations were less likely to evacuate and relied on the heavily impacted city hospital for treatment.⁵
 4. Of the deaths specifically related to Katrina, 75% were persons over 65 years old.³
 5. Factors relating to survival in such hurricanes include the severity of sustained trauma.⁶
 6. Infectious disease is also a concern for older adults residing in the hospital setting before, during, and after a disaster:
 - a. Vaccination, isolation, and other handling procedures for infectious disease outbreaks, in regards to influenza, methicillin-resistant *Staphylococcus aureus* (MRSA), and other disease is important. In addition, vaccination for known diseases is necessary. Disaster planning scenarios should consider and include information on pandemics and infectious diseases. If a 1918-type flu pandemic should occur today, studies show that hospital supplies and bed capacity would be overwhelmed after 2 to 3 weeks.⁷
 7. Estimations concerning pandemics have shown extrapolated evidence for 865,000 possible hospitalizations, which included those at greatest risk who have chronic illnesses and include the elderly.⁸ Plans to vaccinate individuals over 65 for influenza could impact as much as 75% of those persons over the age of 65.^{6,9}
 8. Terrorist attacks
 - a. Terrorist attacks can affect older adults and frail elderly populations. Geriatric individuals are at risk of being injured during shootings and bombings, which are the most common of terrorist disasters.¹⁰
 - b. Even small pipe bombs can result in a significant casualty rate.¹¹
 - c. Mandating medical facilities to accept victims of a disaster has been shown to be beneficial. A plan for the

involvement of healthcare facilities with rapid transport capabilities is important in terrorist attacks.¹⁰

- d. Studies have shown that approximately 50% of injuries from terrorist attacks contain those with head, neck, and chest and upper extremities damage. This type of injury is of greatest concern for health professionals working in a hospital. Authorities will make decisions based on the type of destruction device utilized. Those persons beyond 6 meters from an average device will have less impact regarding injuries. It is important to keep in mind that secondary injury from flying objects and tertiary injury from being thrown up against other objects can result in thermal, tissue, or bone injury and amputation.¹⁰

9. Terrorist attacks have also brought forward the challenge of dealing with large numbers of walking wounded and worried well in hospital settings. Reverse triage in hospitals involves identifying and marshalling this group because walking wounded will often arrive prior to more serious injuries and may clog medical delivery systems, thus delaying care to more critical patients.¹² One should provide quick care to this group so they can clear the area.

III. Review hospital disaster plans to ensure they include information on providing inpatient care for older adults.

- a. The following was adapted from the 9 components of the World Health Organization (WHO) hospital emergency response checklist for use in planning for older adult populations in the hospital setting. The proposed checklist includes information on the following:
 - i. Incident Command System
 - ii. Communication
 - iii. Continuity of essential health services and patient care
 - iv. Surge capacity
 - v. Human resources
 - vi. Logistics and management of supplies, including pharmaceuticals
 - vii. Essential support services
 - viii. Infection prevention and control
 - ix. Case management
 - x. Surveillance: early warning and monitoring
 - xi. Laboratory services
- b. General disaster planning for hospitals

General disaster planning in hospitals is important no matter what age group is involved. In the hospital setting, geriatric population issues involve many variables such as multiple comorbidities, polypharmacy, hurried placement, and treatment. Hospitals need to plan in the areas of incident command, communication, surge capacity, human resources, essentials of patient care, case management, and other support services. Supply management for pharmaceuticals and direct patient care supplies are important. In addition, hospital plans need to be in place for infection control, surveillance, and ancillary services such as laundry, waste management, morgue, and nutrition service provision.¹³

- i. Additional hospital planning should focus on older adults and include regular drills, evacuation route scenarios, an Incident Command Center, food vendors, backup food vendors, and plans for specific patient dietary needs, medications, and security. Transport scenarios should be considered and should include plans for transport, reciprocal shelters such as hotels or gyms, portable ramps, wheelchairs, stretchers, resident assisted ventilator transport, patient lifts, medication administration and other patient supply transport, oxygen, suction, nonambulatory patient transport assisted by emergency medical services, and chair lifts accommodations on the second floor and beyond.⁹
 - i. Another key concept in hospital disaster planning is external coordination efforts between facilities. Hospitals, nursing homes, and long-term care facilities will often fully coordinate with first responder and important partners. Regional coordination is especially important during widespread natural disasters and in particular during evacuations. Following Hurricane Katrina, with 2 major hospital evacuations and numerous small facilities affected, there was no regional hospital authority or specific entity providing coordination assistance for hospitals.¹⁴ To assist with better coordination between health care partners, Memorandums of Understanding (MOUs) and agency contacts should be a well-defined aspect of disaster planning and hospital plans.
- c. Specific hospital plans: the Emergency Operations Plan (EOP)
- i. The EOP of a hospital is a general set of guiding principles and guidelines used to respond during an internal or external disaster. Key to the EOP is the delineation of lines of authority, command, and control along with actions necessary to support disasters likely to be encountered by the organization. The plan should include¹⁵:
 - Legal basis for emergency response activities.
 - Pre-emergency drills.

- Lines of authority.
- Alternate care sites for providing treatment.
- Decontamination and hazardous materials response.
- Post-emergency critiques of any hospital response.

IV. Hospital Incident Command System

- a. The hospital Incident Command System (HICS) is a system designed for hospitals and is intended for use in both emergency and nonemergency situations. It provides hospitals with the tools needed for preparedness, response, and recovery from emergencies both within the hospital and as members of the broader community.

V. Incident Command System

- a. The Incident Command System (ICS) is a common tool shared among responders to allow for a coordinated response to any emergency. The ICS is prescribed as part of the National Incident Management System (NIMS), which was codified in 2003 under Homeland Security Presidential Directive/HSPD-5.
- b. The ICS outlines 5 major functional areas: command, operations, planning, logistics, and finance/administration. Organization within the ICS is fluid and depends on the situation. Functional areas are set up on the basis of needs identified at the Command level. The ICS response is based on 14 management concepts or principles¹⁶:
- i. Common terminology that allows diverse groups to work across different incident command functions.
 - ii. Modular organization: top-down model based on size and complexity of the incident.
 - iii. Unified command structure: ICS and unified command allow for range of response from single jurisdictions to multiple agencies and jurisdictions sharing command responsibility.
 - iv. Management by objectives: each incident operational period is managed through the establishment of incident objectives, which in turn develop response strategies.
 - v. Incident action plan: written or verbal plan explaining incident objectives
 - vi. Integrated communications: objectives are met through a common communications plan.
 - vii. Span of control: key to an effective response, ICS supervisory responsibility should range from 3 to 7 with 5 being optimal.
 - viii. Comprehensive resource management: accurate picture of resources available to respond to an incident.
 - ix. Designated incident facilities: incident command posts, bases, and staging areas are designated as needed.

- x. Establishment and transfer of command: set up at beginning of any response and requires a briefing to transfer.
 - xi. Chain of command and unity of command: orderly lines of authority with every person having only one designated supervisor.
 - xii. Accountability: each functional area accounts for all resources under its control.
 - xiii. Deployment: only resources requested are involved in incident response.
 - xiv. Information and intelligence management: means of collecting and sharing incident-related information.
- c. Tying in the ICS to hospital disaster planning is important. Every response follows a planning flow initiated by the event, moving onto development of objectives and through meetings and briefing to bring the process back to identification of new objectives. This process is known as the Planning P.
- d. Disaster plans including community support should provide a command center where information about disaster preparedness, response, and recovery should evolve.¹¹ The inclusion of other local medical centers, including hospitals, in handling the disaster is important.¹¹
- e. For more information about how HICS and ICS relate to one another please visit http://www.emsa.ca.gov/disaster_medical_services_division_hospital_incident_command_system_resources.

VI. Communication

- a. Communication to hospital staff and community will help to manage stress of those involved and increase the confidence of the staff and community. There should be a designated emergency medical leader telephone line and family telephone line planned for 24/7 operation.¹¹ Plans for alternate communication methods are important, especially if landlines or cell towers are out; these plans should include communicating via social media about important messages that relate to individuals and their families.¹¹ Hospital communicators who deal with families should provide alternate support plans to receive their loved ones. Sometimes, the nurses at the transferring facility or family can be a source of information regarding how to care for the patient.¹⁷ An electronic medical record can be remotely accessed, especially if paper medical records are destroyed during the disaster. Including copies of the older adult patient's advanced directives is important when transferring members of this group from a disaster setting.
- i. Translation services are necessary if older adult hospital patients speak another language. Professional interpreters can be contracted for assistance at the hospital setting before, during, or after a disaster. In

addition, online translation sources may be utilized prior to the disaster.¹⁸

VII. Surge capacity

- a. Surge capacity can be defined as the “ability to manage a sudden, unexpected increase in patient volume (i.e., number of patients) that would otherwise severely challenge or exceed the current capacity of the health care system.”²⁰ Emergency planners are faced with the reality that staffed hospital beds may be decreasing in availability. In the 1990s alone, the Centers for Disease Control and Prevention estimated that as many as 10,000 staffed inpatient medical/surgical beds and up to 7800 intensive care unit beds were lost as the result of hospital closings and consolidations.²¹ When planning for surge, it is critical to identify unique stresses for each department within the facility. For example, one of the first steps for a surge plan is likely to be emptying the emergency department. Identifying space near the emergency department to house those patients should be a part of any surge plan. Also, utilizing beds not normally staffed during a disaster may be possible through disaster protocols involving additional medical staff and changes to traditional patient to staff ratios.²²
- b. The hospital will need to estimate the capacity of each unit and make plans for expansion. Use of computer-based programs such as Flu Surge may help a facility plan for pandemic.²³ For country-level health system pandemic influenza planning, France developed a Monte Carlo simulation model for testing various scenarios.¹⁷

VIII. Human resources

- a. Human resources: Adequate staff will be needed to care for older adults in hospitals during a disaster. When a disaster is announced, the retention of staff present at the time, including preventing some staff from leaving the hospital if appropriate, and calling in those with specialized training, all prove to increase survival of patients. Having said this, personal needs of employees must be considered. There needs to be an adequate employee resource pool for which lodging provisions have been arranged and one must keep in mind provisions for pets.⁹
- b. In providing hospital care to the elderly, special care should be taken in regard to delirium, malnutrition, polypharmacy, pulmonary complications, and skin breakdown.^{18,24,25} Several specialists may need to be enlisted to provide adequate care. A physician specialized in the treatment of the elderly will help to detect and treat known geriatric complications such as altered mental status, urinary tract infection, and dehydration. Recommendations regarding

- medication management state that an approach that discourages polypharmacy when treating those of the geriatric age group results in fewer side effects of polypharmacy.
- c. A pharmacist should be enlisted to care for problems associated with polypharmacy and chronic disease management in the setting of disaster such as ensuing cognitive loss and or confusion.¹⁸
 - d. Additionally, a disaster may require the help of gastroenterologists, ophthalmologists, and thoracic, vascular, and orthopedic surgeons.¹¹
 - e. Extra staff may be needed to help care for the elderly to prevent abuse and neglect of the elderly, because they are particularly susceptible to abuse and neglect during the time of a disaster.¹⁸ The use of restraints and added force and voice tone is never appropriate for the care of these individuals.¹⁸ Additionally, the loss of hearing and sight may cause instructions normally adhered to become jumbled.¹⁸
 - f. Therapists may be needed to implement devices or resources to increase sight (readers or magnifying glasses) or hearing (pocket talkers), which could increase cooperation of the individual. Likewise, even for the individual with the ability to ambulate, wheelchair use during this time could decrease falling risk.¹⁸
 - g. The enlistment of retired nurses and other trained medical personnel would be an added resource to utilize. Retired nurses may be available for use, because 33% of the nation's nurses are over 50; and in one study, 27% of the nurses were interested in volunteering.²⁶
 - h. For bedridden individuals, extra staff will be needed to ensure their cleanliness and position change every 2 hours. Dietary services may need to make plans to provide soft or chopped food for residents with swallowing difficulties. Additional staff may be needed to feed or otherwise observe individuals who have dysphagia (difficulty swallowing).¹⁸ A general rule of keeping the head up for 1hour after being fed or the provision of thickened liquids may be in order until full diagnoses can be established for transferred individuals with dysphagia.
- IX. Logistics and management of supplies, including pharmaceuticals
- a. Education/training of staff: Staff should be trained to be aware of some of the specialized needs of residents in this age group and how these needs might impact their care. Many supplies and equipment are needed as well as devices to locate missing residents.
 - b. Training and planning will help to ensure a swift transition to provide power to run equipment, mitigate, prepare, respond to drills, educate staff, and regularly update plans.^{24,35}

- c. Key components to an emergency plan for those of geriatric age include communication with local authorities, vendors, and suppliers identified as part of the plan such as providers of transportation, medical and food provisions, and patient tracking and identification devices.¹⁰
 - d. Logistical concerns include transporting these and other expert staff to the hospital to ensure their safety.¹⁸
 - e. Supplies such as enteral feeding bags used to provide nutrition to those individuals being fed by tube, other nourishment supplies, Foley catheter supplies, wheelchairs, hearing aids and batteries, glasses, and medication refrigerators are needed as well as plans for mental health activities and medical record keeping supplies for which limited paper copies may be recommended in case of power failure.¹⁰ A previously arranged and secure evacuation plan including receiving facilities and power supplies including a generator placed above flood level to operate equipment is essential, as are prescription supplies with backup of prescription orders.¹⁰ The plan should be a living document that is updated to include new vendors, transportation arrangement, etc.¹⁰ One study found that gasoline was needed to provide cars to staff who were working during the disaster as well as to run generators.²⁸ A week of backup supplies are needed to include food, power to run equipment, incontinence supplies, medications including IV fluids, batteries, generators, emergency plugs in all rooms, washers and dryers, and kitchen lights. The support of local authority connections is important when federal agencies are not able to help quickly enough.²⁸
 - f. Particular situations related to geriatrics include provision of the appropriate supplies, which may consist of diapers, incontinence pads, tube feeding pumps, nutritional supplements, jet nebulizer mask and units, bathing cloths, and emollients.
- X. Essential support services
- a. Possible support staff may consist of psychologists, counselors, medical social workers, volunteers, medical students, surgeons, or psychiatrists. Privacy screens or quiet meeting places or exam rooms may be needed for staff. A specific planned approach for pain and psychologically related medication use post-devastation in a disaster may be in order.²⁹ Stress felt by patients and staff can be great, and provisions need to be made both for the patients for their chronic and acute conditions and for staff for their relocation.²⁸ Additional stress may be present from mistreatment of older adults. Be alert and report signs of abuse such as bruising, anxiety, and lacerations.¹⁹
 - b. Infection prevention and control

- i. Infection control: Infection control in hospitals and of those who are evacuated is of the utmost importance. Residents with draining wounds or signs of pneumonia, including cough and shortness of breath, may necessitate isolation procedures such as contact precautions.¹⁹
- ii. Proper hand washing, including provisions for contact and airborne isolation, will be important in infection control planning. Modification to heating and air systems on an emergent basis may help to maintain air clearance with the addition of particulate respirators (fit tested N95mask).²² To prevent the spread of infection within the geriatric environment, prior planning would involve plans for contact or droplet isolation if needed for evacuees of the geriatric age group.
- iii. Provision of vaccines and antiviral drugs (especially for influenza) are important.¹⁷ The Department of Health and Human Service's plan does not dictate the distribution or rationing of vaccines.³⁰ The elderly may not be top priority for vaccines, and antiviral drugs may not be available. Therefore, proper hand washing, masks, and restriction of visitors may need to be considered as well as mortuary issues.²⁷ The provision of vaccines or antiviral drugs will be important. To prevent the spread of infection within the geriatric environment, prior planning should involve immunizations to prevent the spread of disease during or after a disaster.
- iv. Case management
 1. Case managers are important to provide specialized care, find payer sources, and enable transfer of older adult patients in hospitals before, during, and after a disaster.
 2. Case managers should keep records of the evacuees, their names, addresses, families, and payer sources. If federal disaster monies are slow to surface, patients may be stressed about finances. Case managers can help to ensure these stressors are minimized.
- v. Surveillance for early warning signs and situational monitoring
 2. The planning section of the Hospital Incident Command Center is responsible for tracking disaster developments and including a plan to evacuate patients to a more secure area.
 3. A group of individuals will need to continuously survey the situation and be ready to evacuate the hospital if the organization becomes compromised. Shelter in place or evacuation plans need to be anticipated. Specific shelter in place plans need to include consideration of the disaster type, such as having high floors for

floods, windows or battery-operated lights for light infusion, or lower floor locations in case of tornados.

4. Always knowing who is in the building and sending escorts when needed so as to not lose patients will be important.⁹
 5. Early warnings may induce the need to further evacuate the hospital to a safer area. Since Hurricane Katrina in 2005, great concern and planning for transfer and care of our most frail and elderly was realized. Thus, long-term care facilities as well as assisted-living facilities were encouraged, if not mandated, to make plans to have their residents transferred before or during a disaster. These plans include the transfer of those individuals to hospitals. It is important to consider the need for an identification system including patient names, allergies, major diagnosis, and information about the sending and receiving facility.⁹ Accessible buses or vehicles with patient lifts will be needed.³¹ Some plans to evacuate at night may be considered for cooler weather or less traffic.¹⁹
- i. Laboratory services
 6. A provision for onsite or off-site laboratory services will be needed to help diagnose and treat individuals, especially in a pandemic setting. Other testing may be needed including the ability to obtain arterial blood gases, complete blood count with differentials, influenza spot tests, coagulation international normalized ratio (INR) determination, strep testing, and specimen culture and sensitivity. Specialized arrangements for wave testing, bedside occult blood testing, and INR may be necessary. Contaminated waste management contracts should be set up before a disaster for disposal of sharps and biohazardous items. Laboratory supplies such as monitors for blood glucose, INRs, etc will need to be arranged. Other needed lab supplies include such items as alcohol wipes, tourniquets, and venipuncture supplies.
 - i. After-action planning:
 7. Meetings held after disasters should reflect on the most recent disaster and discuss ideas for improving performance during future disasters. Staff should think of concrete examples of successes and failures and apply them to their future work. These after-action sessions are suggested to meet quarterly and include administrative staff.

8. During Katrina, failed disaster plans contributed to 34 geriatric deaths. After-action studies revealed that persons charged in the deaths did not follow facility evacuation plans. Related deficiencies were found in water provision, host facility planning, prior hazard analysis, training of employees, routes of evacuation, planning for fire or other emergency, care of patients with specialized problems and needs, and basic plans for disaster. Of these specific needs, items of concern included planning for incontinence of bowel and bladder, dementia, mental disabilities and disorders, body transfer, feeding, and toileting.¹¹ Specific problems resulted in dehydration, skin tears, and depression.¹¹ A large number of deficiencies were found in provision of water and routes of evacuation.⁵

Suggested Learner Activities for Use in and Beyond the Classroom

1. Form several small discussion groups with your learners and invite them to list 5 important items to think about regarding the care of older adults with access and functional needs. In addition, ask learners to list 5 logistical considerations of hospital evacuation of older adults with access and functional needs, before or during a disaster.
2. Imagine you are in charge of setting up the hospital unit that will house residents from a local long-term care facility. A group of volunteers has agreed to help you with this task. The volunteers include nurses from a local retired nurses group, a group of student RNs in their second year of training, and a representative from a medical supply company who has equipment to help with the disaster. Discuss how you will utilize each group of volunteers to staff your hospital unit.

Learner Assessment Strategies

1. Ask learners to form groups of 3 and write a list of 5 specific planning considerations for hospitals in caring for older adults in disasters.
2. Ask learners to work independently and write a list of 3 clinical issues relevant to caring for older adults in disasters in the hospital setting.

Readings and Resources for the Learners and Educators

- Suggested Resources
 - Reuben DB, Herr AK, Pacala JT, Pollock BG, Potter JF, Semla TP. *Geriatrics at Your Fingertips*. New York, NY: American Geriatrics Society; 2014.
 - *Healthcare COOP & Recovery Planning*. Assistant Secretary for Preparedness and Response.

- <http://www.phe.gov/Preparedness/planning/hpp/reports/Documents/hc-coop2-recovery.pdf>. Published January 2015. Accessed June 2015.
- *NIMS Implementation for Healthcare Organization Guidance*. Assistant Secretary for Preparedness and Response.
<http://www.phe.gov/Preparedness/planning/hpp/reports/Documents/nims-implementation-guide-jan2015.pdf>. Published January 2015. Accessed June 2015.
- Supplemental Resources
 - Hospital Preparedness Program Guidance, Reports and Research. US Department of Health and Human Services, Public Health Emergency website. Any resource found at this link:
<http://www.phe.gov/Preparedness/planning/hpp/reports/Pages/default.aspx>.

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