Emergency Management Planning for Assisted-living Facilities

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that were the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed:



Abstract

The establishment of an emergency management template for the Town of Chelmsford's assisted-living facilities has become an increasingly important issue within the past several years. The problem that prompted this research project was the Fire Prevention office was approached by several of the assisted-living facility managers to provide guidelines for an emergency management plan. The Chelmsford Fire Department does not have an emergency management guideline that is geared toward assisted-living facilities. The purpose of this research project was to identify essential life safety components in order to create an emergency management guideline for town-wide use. The research will identify existing Massachusetts laws and codes that shape emergency management planning and the importance of their continuing enforcement. In addition, this research will explore existing emergency management plans and its role in providing a systematic emergency response. The methodology applied in conducting this research was the action method. Action research was utilized to answer the following questions: (a) What are the four phases of the emergency management cycle? (b) How is a hazard analysis conducted for an assisted-living facility? (c) What components are required in developing an effective emergency management guideline for assisted-living facilities? (d) What emergency statewide plan is in place to aid assisted-living facilities?

Information was gathered through personal communications with national emergency management leaders and local mutual aid providers. An emergency management guideline was developed based on the research and a hazard vulnerability analysis was identified. By developing an emergency management planning guideline for assisted-living facilities, the Chelmsford Fire Department has an opportunity to aid assisted-living facilities in the creation of their emergency management plans.

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Emergency Management Planning for Assisted-Living Facilities

The establishment of an emergency management template for the Town of Chelmsford's assisted-living facilities has become an increasingly important issue within the past year. Until recently, the Chelmsford Fire Department had limited interaction with the assisted-living facilities which centered on responding to medical emergencies and conducting in-service code inspections. A recent fatal fire in town has prompted the town's assisted-living facility managers to review their emergency management plans, which are required by code.

The Fire Prevention office was approached by several of the assisted-living facility managers to provide guidelines for an emergency management plan. The problem was that the Chelmsford Fire Department does not have an emergency management guideline that is geared specifically toward assisted-living facilities. The purpose of this research project was to identify essential emergency management components for assisted-living facilities in order to create an effective emergency management guideline. The guideline will be made available to local assisted-living facilities for the creation of their individual plans. The research will identify existing Massachusetts laws and codes that shape emergency management planning and the importance of their continuing enforcement. Action methodology was used to guide the research to answer the following questions: (a) What are the four phases of the emergency management cycle? (b) How is a hazard vulnerability analysis conducted for an assisted-living facility? (c) What components are required in developing an effective emergency management guideline for assisted-living facilities? (d) What additional emergency statewide plan is in place to aid assisted-living facilities?

Background and Significance

Chelmsford is a suburban town in Middlesex County, Massachusetts and is located 24 miles north of Boston. As of the 2010 United States Census, the town's population is 33,802 (United States Census Bureau, 2010) ranking it 14th in population among the 54 municipalities in Middlesex County (Town of Chelmsford, 2013, p. 1). The city of Lowell, a historic mill city, borders the town on the northeast with a population of 106, 519 making it the fourth largest city in the state. The Chelmsford Fire Department shares a long standing mutual aid agreement with Lowell, which has seen increased activity in recent years. Chelmsford is bordered by two sizable rivers: the Merrimack River to the north, and the Concord River to the east (Town of Chelmsford, 2013, p. 1).

The Chelmsford Fire Department is a fully paid, career department consisting of 59 uniformed employees that currently operate out of five stations. The administration consists of a Fire Chief, Deputy Chief of Operations, Deputy Chief of Fire Prevention, four Unit Captains, one Fire Prevention Captain, and a Training Captain. The Chief has one full time administrative assistant and the Fire Prevention Officer recently added a part time Fire Prevention clerk.

Massachusetts ranks 38th out of the 50 states and 9 territories for the number of FEMA disaster declarations. Massachusetts has had more than 30 major disaster declarations, both federal and presidential, and has received more than $558 million in federal relief aid since 1991 (Massachusetts Emergency Management Agency, 2010, p. 11).

In the 2006 Pre-Disaster Mitigation Plan for the Northern Middlesex Region, it was noted that several assisted-living facilities in Chelmsford were considered "at risk" in terms of their ability to deal with multi-day emergency events. Some of the facilities can house up to 500 people. The report noted the significant challenges involved in transporting, evacuating, and

sheltering the residents. The majorities of the facilities do not have backup generators and would require a strong reliance on local resources (Northern Middlesex Council of Governments, 2006, p. 4).

More recently, the local emergency management system in Chelmsford has been inundated with historic storms and a devastating fire, calling increasing attention to the importance of emergency preparedness and its role within the Chelmsford Fire Department. Chelmsford has experienced two major federal disaster declarations which have received presidential disaster relief approvals since 2008. The December 2008 Ice Storm and the October 2010 "Halloween Storm" both had severe impacts to public infrastructures and lasted several days. Downed trees blocked access to roadways and widespread power and utility outages forced many residents to seek local shelter. The outages significantly impacted the delivery of services, the regional economy, and the quality of life for the residents. In October 2012, Hurricane Sandy, one of the largest storms to ever hit Massachusetts, toppled trees and caused widespread power outages throughout Chelmsford. The extent of the damage and the number of people affected prompted the governors of both Massachusetts and New Hampshire to request federal disaster assistance. In January 2013, the town experienced a devastating fire in one of the larger apartment complexes. This tragic fire resulted in the deaths of an elderly couple and left many people homeless. With these recent events in mind, the Chelmsford Fire Prevention office has been asked to meet with area assisted-living facilities to review their emergency management plans.

This research project is significant to the Chelmsford Fire Department because it presents an opportunity to develop an emergency management guideline for assisted-living facilities and to bring awareness to the applicable codes and statewide emergency management components.

This paper is relevant to the Executive Fire Officer Program's Executive Analysis of Fire Service Operation in Emergency Management (U.S. Department of Homeland Security, 2012, p. 13) in the following ways: (a) The Emergency Operations Center: A Vital Preparedness Tool's focus on the characteristics of an effective organization, with the understanding that there is no substitute for planning, training, and exercising (Shouldis, 2010); (b) The Emergency Operations Center's spotlight on local government's responsibility for the management of emergency activities within its jurisdictional boundaries (Shouldis, 2010); (c) The Emergency Operation Center's recommendation that today is the day to start improving and updating your emergency management plans and standard operating policies (Shouldis, 2010). In addition, this research project relates to the United States Fire Administration's operational goal number 2 of improving local planning and preparedness and operational goal number 5 of leading the nation's fire and emergency services by establishing and sustaining USFA as a dynamic organization (United States Fire Administration, 2010, p. 41-43)

Literature Review

Assisted-living facilities began to develop in the United States in the mid 1980s based on a Scandinavian model for elderly care. The popularity of assisted-living increased considerably in the 1990s, and by 1996 it accounted for over half of all senior housing construction in the United States (Day, 2003, p. 1). Assisted-living facilities are privately-owned and operated business enterprises. Most expenses, which are not covered by insurance, are privately paid. While assisted-living is the most frequent terminology used, these facilities are also known as residential care, enhanced care, and community based retirement facilities. Despite the differences in labels, assisted-living facilities adhere to a universal consumer focused

philosophy. This philosophy emphasizes independence, while providing housing and supportive services to people who cannot live on their own (Day, 2003, p. 1).

According to the U.S. Census Bureau, adults aged 65 years and older made up 12 percent of the U.S. population (United States Census Bureau, 2010). It's predicted that people aged 65 and older will comprise 16.3 percent of the population by 2020, and in 2030 nearly one in five Americans will be 65 and older (U.S. Fire Administration, 2006, p. 8). Data from the 2010 Census also reveals an increase in the aging population in Massachusetts. One in five Massachusetts residents is aged 60 or over and residents aged 65 and over represent 13.8% of the total population, which is slightly higher than the U.S. average of 12.0% (United States Census Bureau, 2010).

Under Massachusetts General Law Chapter 19D, Section 18(d) (Commonwealth of Massachusetts, 2013), all assisted-living facilities are licensed by the Executive Office of Elder Affairs and regarded as residential use group under the Massachusetts State Building Code 780 CMR (Commonwealth of Massachusetts, 2010, p. 3). Although Massachusetts does not have any specific life safety code requirements for assisted-living facilities, applicable federal and state building codes, along with fire and life safety codes do apply (Commonwealth of Massachusetts, 2013). In addition, under the Commonwealth of Massachusetts's Regulation's 651 CMR 12, assisted-living facilities are required to have a comprehensive emergency management plan (Commonwealth of Massachusetts, 2004, p. 13). This regulation requires the operators of the assisted-living facilities to work in conjunction with local public safety officials in developing a plan. The plan should reasonably ensure the continuity of operations of the facility in the event of an emergency (Commonwealth of Massachusetts, 2004, p. 14).

An emergency is any single or series of unplanned events with the capability to endanger life, disrupt operations, cause environmental damage, and threaten property (George Fox University, 2012). Effective emergency response planning is required in dealing with localized events to ensure a community's ability to respond to an emergency situation, natural or man-made, in a coordinated, timely and effective manner. A well prepared emergency response plan will help protect lives and minimize losses to property and the environment (George Fox University, 2012).

Emergency management was institutionalized with the creation of the Federal Emergency Management Agency (FEMA) under the 1978 Presidential Reorganization Plan No. 1 and implemented in 1979 by President Jimmy Carter with Executive orders 12127 and 12148 (U.S. Department of Homeland Security, 2012, p. 1). The newly established agency consolidated many emergency management organizations, including Civil Defense, the Federal Preparedness Agency, the Federal Insurance Administration, and the National Weather Service Community Preparedness Program. The agency was formulated to ensure minimization of the damage due to disasters by meticulous planning, thorough preparations, efficient execution, and suitable planning. Emergency management also included reconstruction and rehabilitation measures to help ensure a smooth recovery effort for those impacted by a disaster (U.S. Department of Homeland Security, 2012, p. 1).

With the consolidation of many federal agencies to form FEMA, many state and local governments have adopted the organizational change to include the words "emergency management" in their approach to a formal emergency management system ("Emergency management and disaster coordination," 2012). With the organizational change, came a new approach to planning. The focus of preparedness shifted from a narrowly defined category of

hazards toward an "all hazards" approach that includes potential threats to life and property through environmental and technological hazards, as well as, domestic and foreign attacks. The all hazards approach to disaster preparedness is based on the concept that while adverse events cannot be predicted in their timing, location or type, there are limited ways in which they can impact a community, business, or individual ("Emergency management and disaster coordination," 2012). There are many common features of technological and natural disasters and an "all hazards" management strategy provides a basic framework for responding to a wide variety of emergencies (McEntire, 2004, p. 3).

Emergency management is the discipline that works to avoid or reduce the potential losses from disasters, and assures a prompt and appropriate response to bring effective recovery (Rosenberg, 2012). When natural or human made disasters occur, they take on a life cycle that requires an emergency management plan that is continuous and integrates all levels of government and non-government entities. The disaster life cycle includes a series of phases that include strategies to mitigate the hazards, prepare for emergencies, respond to the crisis, and recover from their effects (Rosenberg, 2012). These four phases are the foundational elements of an emergency management plan (D. Thompson, personal communication, July 23, 2013).

Mitigation is the first stage of the emergency management cycle. Mitigation aims to prevent hazards from developing into disasters or to reduce the effects of disasters when they occur. The mitigation phase differs from the other phases in that it focuses on long term measures for reducing and/or eliminating risk, while strengthening the long term emergency planning policy.

Mitigation measures are generally divided into two types of activities, structural or non-structural. Structural mitigation utilizes engineering mechanisms to construct physical and

tangible measures to reduce or avoid hazards. Structural mitigation examples include the design of new buildings, constructing disaster resistant structures, and retrofitting existing structures to withstand future events (Garayev, 2010, p. 1). An assisted-living facility will incorporate construction features that help reduce the spread of fire and provide safe passage ways for egress (H. Hicks, personal communication, August 26, 2013).

Non-structural mitigation seeks to reduce risk through modifications in human behaviors or natural processes. These measures tend to be less costly and can be implemented with few financial or technological resources. Non-structural mitigation often employs regulatory measures to ensure safety by legally dictating human actions (McEntire, p. 3). In addition to regulations, non-structural mitigation utilizes community awareness and education to inform people that hazards exist and the preventive measures that can be taken to reduce their exposure to risk. In assisted living facilities, all residents shall be trained in the proper actions to take in the event of an emergency and employees shall be instructed about their responsibilities. Furthermore, residents shall be educated about the leading causes of fire and the preventative measures prohibiting cooking and open flame devices in the residence's individual rooms (H. Hicks, personal communication, August 26, 2013). Legislation is often necessary to enact structural and non- structural mitigation measures (McEntire, p. 12-13).

The preparation phase of emergency management is the steps to organize and be ready for the unavoidable (D. Thompson, personal communication, July 23, 2013). The goal of emergency preparedness programs is to achieve a level of readiness by strengthening a community's ability to cope with a disaster. This phase can take many forms, including formulation of disaster supply kit, address alternative power supplies and rehearsing evacuation plans. Disaster preparedness involves the preparation of people and essential service providers

within a community and ensuring they have the vital resources to maintain essential services ("Introduction to disaster management," 2010, p. 47-49). To guard against over taxing local municipal services, assisted-living facilities should identify private sector vendors who will provide resources for transportation, housing and medical supplies to ensure the continuity of care ("Introduction to disaster management," 2010, p. 49).

The response phase of emergency management represents the actual measures adopted after a disaster has occurred. Its success will be significantly influenced by the extent with which the previous phases were accomplished. The response phase addresses tactical procedures, protocols, and guidelines, while mobilizing essential emergency responders in the disaster area. For an event at an assisted-living facility, the primary response will comprise of local public safety personnel. This initial response may be augmented by Disaster Response Teams, such as, the Urban Search and Rescue group, and humanitarian organizations like the American Red Cross.

A well developed emergency plan integrates resources from the state and federal government who will activate through the Emergency Operations Center to ensure central coordination (Rosenberg, 2012, p. 1). The Emergency Operations Center will utilize the Incident Command System and function under a Unified Command structure to provide a coordinated response. Response items that are included within the incident actions plans address urgent life safety matters such as, public notifications, evacuation, search and rescue, resource mobilization, and sheltering. An effective response plan to a disaster helps to maintain life, reduce injuries, and limit destruction (Bell, 2005, p. 1).

The final stage in the emergency management cycle is the recovery stage. In order for emergency management plan to be effective, it is necessary to overcome the negative effects of a

disaster. The goal of recovery is to restore the affected area to a normal or near normal state. It differs from the response phase in that its focus is with issues and decisions that must be made after immediate needs are addressed (Bell, 2005, p. 2). The recovery phase encompasses both short and long term plans. For an assisted-living facility, recovery would include restoration of the facility and services and providing crisis counseling services. This phase also provides an opportunity to conduct an after action analysis to critique and review the effectiveness of the emergency response measures. Lessons learned from the critique can be implemented in future plans to provide for a more effective emergency response (Warfield, 2008).

As part of a systematic program, the four cycles form the foundational elements of an effective emergency management plan (D. Thompson, personal communication, July 23, 2013). Each phase in the cycle addresses critical emergency management components and the phases of the cycle will often overlap and augment one another. When developed in collaboration with each other, the cycle will address and mitigate both natural and non-natural hazards that pose a threat (D. Thompson, personal communication, July 23, 2013).

A hazard vulnerability analysis provides a systematic approach for identifying hazards and the effect they will have. Although all hazards should be addressed, resource limitations usually do not make it a feasible option. The escalating cost of emergency relief aid, along with the reality of limited funding, has prompted the Federal Emergency Management Agency (FEMA) to focus its priorities towards mitigation. This entails the creation of a partnership between the Federal, State, and local emergency planning committees ("Hazard mitigation planning," 2012). Under Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, states must evaluate and mitigate potential hazards as a condition of receiving federal disaster assistance (Bell, 2005, p. 1). The Stafford Act requires states to develop a hazard

mitigation plan and to submit it to the Federal Emergency Management Agency (FEMA) for approval. In addition, assisted-living facilities realize both a legal and moral obligation to ensure life safety (M. Banville, personal communication, July, 2013).

The Pre-Disaster Mitigation Program was authorized by section 203 of the Robert T. Stafford Disaster and Assistance Act to provide funding to assist states and local governments. These funds would subsidize these entities to undergo hazard vulnerability analysis. To provide technical assistance, Massachusetts is one of only a few states that has provided a position solely dedicated to hazard mitigation planning by establishing a State Hazard Mitigation Planning Coordinator. The State Hazard Mitigation Planning Coordinator assists local officials and planning teams perform their multifaceted risk analysis.

During a hazard vulnerability analysis, hazards are evaluated in terms of the probability that an event will occur and the damage it would cause. According to Dale Thompson, Threat Assessment Manager for Kaiser Permanente, the hazard vulnerability analysis provides an assisted-living facility the opportunity to prioritize and quantify the risks it faces and to determine the demands on emergency services and vital resources (D. Thompson, personal communication, July 23, 2013). "You need to consider all hazards, how likely they are to occur, and how well you are to mitigate them," (D. Thompson, personal communication, July 23, 2013). Preventive emergency management plans can then be developed to target resources to the highest priorities and provide the factual basis of a mitigation strategy ("Hazard mitigation planning," 2012).

The development of a hazard vulnerability analysis for an assisted-living facility is a time consuming process. The analysis should be conducted by a diverse group of people who are knowledgeable about the area and can identify all of the potential hazards based on historical and

scientific data (D. Thompson, personal communication, July 23, 2013). "The committee will identify the top 3 risks in order to develop a mitigation plan" (D. Thompson, personal communication, July 23, 2013).

Keiser Permanente has developed a Hazard Vulnerability Tool that provides an assisted-living facility a systematic approach to recognizing potential hazards, determining their probability of occurrence, and assessing its' impact to life, property, and the environment. The toolkit draws on many pre-established datasets and resources to help minimize the time required to complete the analysis. In the first step of the Keiser Permanente Hazard Vulnerability Tool, a grouping of potentially disruptive hazards across a wide array of natural, technological, human, and hazardous experiences are analyzed and listed under the "Event" column. For each hazard identified in step one, a judgment based upon historical data, manufacturer statistics, and known risk needs to be considered in determining the probability of each hazard resulting in an emergency event. In step two, a numerical value needs to be assigned under the probability column for each hazard. The probability is ranked by the likelihood that the hazard will occur with, "0" for not applicable, "1" for low probability, "2" for moderate, and "3" for a high probability of occurrence (Appendix A).

In step three, the impact that each hazard will inflict is measured across the "Severity" section. The Severity section is assigned a numerical value based on the degree possible, that damage can be expected in the community as a result of the hazard. The rating quantifies the expected impact of a specific hazard on human, property, and business assets. The human impact column, which is the most important category, involves determining the potential for staff or resident death or injury in the assisted-living facility. The property impact column involves evaluating issues surrounding cost replacement and time recovery. Items to consider in

measuring the business impact include; employees unable to report to work interruption of critical supplies to the facility, and relocating displaced residents. With the analysis of the human, property, and business impacts completed, a numerical value is entered with a "1" representing the least severe impact, and a "3" representing the most severe impact of the event (Appendix A).

The fourth step involves determining how prepared an assisted-living facility is against the hazard and if mitigation steps have been taken to reduce risk. This step also involves evaluating the facility's response capabilities by determining the time needed to gather essential responders on scene. In addition, this step evaluates the preparedness of the assisted-living facility by reviewing current emergency plans, training records, and availability of critical supplies. Issues involved in examining external resources include an appraisal of mutual aid agreements and coordination with local health care facilities. In step 4, a numerical value of "3" indicates the facility is least prepared and a "1" is entered for very prepared (Appendix A).

Once the values have been entered into the required fields, the Kaiser Permanente toolkit guides the evaluator in calculating the percentage of each risk. Once the percentages have been determined, prioritizing each risk will present a clearer understanding of the hazards that threaten the assisted-living facility. "The outcome of the analysis can be used to target resources at the top 3 to 5 hazards and allow the emergency management group to build their training and exercises around managing those hazards" (D. Thompson, personal communication, July 23, 2013).

A hazard vulnerability analysis allows the assisted-living facility to take critical resources and allocate them to their top risks. "A hazard vulnerability analysis is not a one-time process.

It can be time-consuming but an annual review is needed to update the facilities emergency plan" (D. Thompson, personal communication, July 23, 2013).

In accordance with the Commonwealth of Massachusetts's Regulations 651 CMR 12 (Commonwealth of Massachusetts, 2006, pp. 20-22), an assisted-living facility shall collaborate with local public safety officials to ensure the development of an effective emergency operations plan. An emergency management guideline must contain the minimum criteria for creating an emergency management plan. This includes the core functions of emergency management, which are: contact information, organizational chart, and hazard vulnerability analysis, concept of operations, and training and review (Oklahoma State Department of Health, 2005, p. 12).

Once completed, the administration of all assisted-living facilities shall distribute a copy of the emergency operations plan to all supervisory personnel for the protection of all persons in the event of an emergency. All employees shall be periodically instructed and kept informed with respect to their duties and responsibilities under the plan. A copy of the plan shall be readily available at all times within the facility (Oklahoma State Department of Health, 2005, p. 12).

The assisted-living facilities' emergency management plan will state the criteria for, and the process for initiating the plan. The criteria will include the conditions on how to activate the plan, and the individuals responsible for initiation of the plan. Typically, the lead administrator or designee has the authority to declare a state of emergency at the residence. When the administrator has declared a state of emergency, the emergency operations plan shall be activated. The emergency operation plan shall also include a mechanism to alert all staff and employees to ensure proper staffing levels. A communications plan will identify the primary method used to notify essential personnel and outside authorities. The plan should include a current contact list of government and outside vendors that are critical to successfully

implementing the emergency operations plan. The list should include the organization's name, basic function, the telephone number, and list of contact personnel (Oklahoma State Department of Health, 2005, p. 13). The communications plan shall also identify alternative methods of making emergency notification in the event of a wide spread power failure. These include the utilization of alternation communication devices such as, two way radios, ham radios, satellite phones, and the use of amateur radio operators (Oklahoma State Department of Health, 2005, pp. 15-16). Richard Day, Director of the Board of Health for Chelmsford, Massachusetts notes the importance of alternative communication methods. "During Katrina when all traditional communication lines were down, the satellite phones were in demand" (R. Day, personal communication, June 26, 2013). Because of its reliability in the event of a power outage among traditional lines of communication, Richard Day has purchased a satellite phone for Chelmsford, one of the few satellite phones readily available in the area (R. Day, personal communication, June 26, 2013).

During emergencies, the facility shall implement the incident command system to effectively manage and oversee the emergency operations plan. The incident command system established within the plan must be compliant with the National Incident Management System to identify a chain of command and management system that adapts to any emergency event (Oklahoma State Department of Health, 2005, p. 11). The incident command system must be flexible to adjust from small to large incidents in order to minimize disruption of services and to maintain a prioritization of duties. The incident command system will establish common terminology and training that will allow all staff members involved in the emergency incident to be familiar with and allow for easier integration with external agencies. A unified command system will be established where the emergency event requires coordination with outside

emergency responders. The emergency operations plan shall stipulate the location of the command post and identify alternative sites. The incident command system will establish who is to assume initial command and the process of transferring command when relieved by a higher ranking member. A facility organizational chart will be provided within the emergency operations plan to assist the incident commander in allocating staff members to essential staff positions. The use of job action checklists shall be provided for each incident command position to ensure overall goals are accomplished (Oklahoma State Department of Health, 2005, pp. 12-14).

Contingency plans need to be included within the emergency operations plan to ensure the operation of essential building systems during an event, such as, electricity, water, ventilation, communication systems, and fire protection systems. Alternate plans for utility supplies include the use of generators and securing necessary fuel for consumption purposes. The plan needs to ensure that a sufficient amount of food and water are available to sustain the facility for up to 72 hours and to identify outside vendors who can replenish essential medical and pharmaceutical needs. The Logistics Chief will be responsible for monitoring and addressing critical resource needs (Oklahoma State Department of Health, 2005, pp. 12-14).

The emergency operations plan shall include the criteria for determining whether an assisted-living facility should evacuate or shelter- in- place during an emergency. Due to the significant amount of resources required and the challenges involved in transporting high-risk seniors citizens, evacuation should only be undertaken if the shelter-in-place option would result in exposing the resident to greater danger. The decision to evacuate or shelter-in-place is to be made in consultation with the Incident Commander/Unified Command and local public safety

responders. The decision should factor in the available resources, extent of the emergency, the physical ability of the residents, as well as the construction features of the building.

The shelter-in-place strategy is a viable option if the assisted-living facility meets certain building construction features. Assisted-living facilities that are compliant with the NFPA 101, Life Safety Code (National Fire Protection Association, 2009, pp. 252-254), contain vital features that create a safer living environment. The requirements of the Life Safety Code provide for facilities with more than three stories to contain a minimum of two hour fire resistant construction. Assisted-living facilities that are less than three stories may be constructed with lesser fire resistant materials, but will be provided with automatic sprinkler protection. The design features should provide a form of compartmentalization to allow residents to move horizontally to areas of refuge instead of trying to navigate down stairs. The vertical openings in the stairwells must be protected and enclosed in fire rated material. Life safety features are incorporated into the air handling systems in order to provide smoke movement control capabilities (Lee, 2009, pp. 2-3).

The decision to shelter-in-place requires all residents and staff to be notified and all doors, windows, and HVAC systems are to be secured until the "all-clear" announcement has been made by the command staff. Measures must be provided in the emergency operations plan that secures the building from damaging winds and other storm elements (plywood for windows, sandbags for flooding). An adequate fuel supply must be available for the backup generator to meet the duration of the emergency event. The Logistics Chief must ensure that an adequate amount of critical resources such as food and medications are available for up to 72 hours and to communicate with established vendors that are identified within the emergency operations plan for replenishment of supplies. Incident Command/Unified Command will make the decision

when to terminate the shelter-in-place strategy and to identify the issues that need to be addressed to allow the assisted-living facility to resume normal operations (Lee, 2009, pp. 2-3).

If the Incident Commander/Unified Command determines that circumstances necessitate an evacuation of the assisted-living facility, the evacuation component of the emergency management plan shall be adhered to. The Incident Commander/Unified Command shall implement the evacuation policies and staff the required positions that are responsible for implementing the facility evacuation procedures. The emergency operations plan shall include a notification procedure to alert all staff members about the decision to evacuate and include the reporting requirement for off duty personnel. Notification will specify the method of alerting the assisted-living residents and provide a method of communicating with family members. The notification procedures shall also include alerting the alternative facilities, identified in the mutual aid agreements, which will be receiving the displaced residents (Florida Health Care Association, 2006, p. 78).

Transportation arrangements made through mutual aid agreements shall establish the evacuation routes that will be used in relocating the displaced residents and will identify alternative routes. The transportation plan shall estimate the expected travel time to the receiving facility and arrange for logistical support to transport an adequate supply of food, water, and medical supplies for up to 72 hours. The emergency management plan shall establish accountability and tracking plan for the residents prior to relocation and ensure that all residents are accounted.

Once an assisted-living facility has been evacuated, procedures need to be identified within the emergency management plan for a smooth transition back to the residence. A facility re-entry plan will establish the safety procedure for inspecting the residence to ensure that it's

structurally sound and provide for the all the necessary arrangements for the residents to return. Consideration for counseling services should be established within the plan for those residents who may need help in adjusting to the turmoil (Florida Health Care Association, 2006, p. 80).

Emergency planning and training directly influence the outcome of an emergency situation. Facilities with well prepared employees and well developed emergency management plans are often well equipped to handle adverse conditions. OSHA's regulations for an emergency management plan are covered in the OSHA standard 29 CFR 1910.38, Employee Emergency Plans (United States Department of Labor, 2002, p. 1). Stipulated within the emergency management plan are the code requirement for fire drills which includes procedures for reporting emergencies, procedures to account for employees and residents, and the emergency escape procedures and routes to be followed.

Emergency management plans for assisted-living facilities shall contain the code required fire drill procedures to enhance resident and staff safety in the event of an emergency. There are several components of planning and conducting a fire drill that are guided under the Commonwealth of Massachusetts Regulations 527 CMR 10.11 (Commonwealth of Massachusetts, 2010, p. 14) , which establishes the requirement that emergency egress and relocation drills for assisted-living facilities shall be conducted no less than six times per year and two times per work shift. The code requires the actual evacuation of all residents to an assembly point as specified in the emergency plan and must provide residents with experience in egressing all exits and required means of escape (Commonwealth of Massachusetts, 2010, p. 14).

Emergency planning for assisted-living facilities shall also comply with the national standard NFPA 101, Life Safety Code (National Fire Protection Association, 2009, pp. 252-254), in which the primary objective of the fire drill is to conduct an orderly evacuation. NFPA 101

classifies assisted-living facilities as residential board and care occupancies having a slow evacuation capability and requires mandatory training of residents who are capable and willing to assist other residents in need of assistance. The code mandates the drill procedure shall be reviewed with every resident, with details describing the two ways out of every room and the locations of all primary and alternative fire exits. The code requires all residents to participate in the evacuation drill and the training shall include actions to be taken if the primary escape route is blocked. The drill plan shall include a familiarization of the building's essential fire alarm features, including location of the fire alarm panel, fire extinguishers, pull stations, smoke alarms, and sprinkler systems (National Fire Protection Association, 2009, pp. 252-254).

The NFPA 101, Life Safety Code requires periodic refresher training for staff members with respect to their evacuation and drill responsibilities and mandates a review of the drill procedures not less than every two months (National Fire Protection Association, 2009, pp. 252-254). The plan shall contain an emergency response team that is responsible for carrying out the evacuation drills and a logbook should be kept indicating the date, times, and issues from the drill. The evacuation logbook and drill assessment reports shall be critiqued for effectiveness and available for local fire department review. The information collected shall identify deficiencies and offer opportunities for improvement. An accountability system needs to be in place that uses an assigned meeting place for the residents, where a head count will be performed. The emergency drill plan should contain a system for utilizing residents as life safety wardens who can assume responsibility for notifying others on their floor and provide assistance for individuals with mobility issues. The life safety wardens may be responsible for checking resident's rooms, bathrooms, and common areas before being the last person to exit an area. They should ensure that fire doors are closed and assist visitors who may be unfamiliar with the

various escape routes. The life safety wardens could also provide additional monitoring to ensure accountability of the residents (National Fire Protection Association, 2009, pp. 252-254).

Massachusetts is vulnerable to a host of natural hazards including severe winter storms, hurricanes, and coastal and interior flooding. In addition, the state faces potential threats from hazardous material spills, wildfires, dam failure, and terrorism. In the event of a major disaster or emergency, the possibility exists that the water and utility infrastructure could be severely affected and the structural integrity of many facilities and roadways will be compromised (Massachusetts Emergency Management Agency, 2007, p. 3).

When an emergency happens, local governments will utilize their own response capabilities and will augment it as needed with the community mutual aid system**.** However, many disasters occur with little or no warning, and can escalate far more rapidly than a local entity can deal with. When local public safety officials believe an event may deplete or overwhelm their resources, mutual aid assistance can be requested through the Massachusetts Emergency Management Agency (Massachusetts Emergency Management Agency, 2007, p. 4).

The Massachusetts Emergency Management Agency (MEMA) includes in their mission statement the coordination of all federal, state, local, and private resources during emergencies to prepare for, respond, and recovery from natural and man-made emergencies (Massachusetts Emergency Management Agency, 2007, p. 2). Mutual aid agreements and memoranda of understanding are essential components in emergency planning and the private sector can prove valuable in these agreements. The Massachusetts Emergency Management Agency encourages joint planning efforts between the public and private sector and promotes creating a conduit between the public and private sector to improve communication. Establishing a relationship can

help businesses such as assisted-living facilities sustain their core functions, while being better prepared to respond and recover from an emergency (Glebus, Judge, & Morash, 2004, pp. 4-8).

In 2005, Russell Phillips & Associates, a company that specializes in emergency management and code compliance, joined the American Society for Healthcare Engineering (ASHE) to review the impact of Hurricane Katrina on nursing homes, hospitals, and assisted living facilities (Russell Phillips & Associates, 2013, p. 1). According to Michael Banville (M. Banville, personal communication, August 26, 2013), Vice President of Business Development for the Massachusetts Assisted-living Facilities Association, "Katrina forced leaders in the long term care community to address their planning and sheltering needs in the event of an emergency. In a multi-day event, these facilities realize the need to strive to be more self-sufficient." (M. Banville, personal communication, August 26, 2013). In 2008, Russell Phillips & Associates was contracted to create a mutual aid plan for the evacuation and supplying of vital resources for the 790 long term care facilities (Nursing homes and Assisted-living facilities) in Massachusetts. This project was a collaborative effort between the Massachusetts Department of Public Health, The Massachusetts Emergency Management Agency, Mass Senior Care, and the Massachusetts Assisted-living Facilities Association (Russell Phillips & Associates, 2013, pp. 1-3).

This plan, known as MassMaps, establishes a mutual aid agreement among participating assisted-living facilities and other long term care facilities to assist each other in the event of an emergency (LeadingAge Massachusetts, 2013, p. 1). Previously, each assisted-living and long term care facility had agreements with other facilities on a one-to-one basis. MassMap replaces these individualized mutual agreements by supplanting it with a statewide network of resources. In five separate disasters in Massachusetts in the last two years (June 2011 Tornado in

Springfield, Tropical Storm Irene, Storm Alfred "Halloween Storm", Hurricane Sandy, and the February 2013 blizzard), this plan was used to coordinate and manage more than 300 healthcare facilities in the state (Russell Phillips & Associates, 2013, p. 2). "MassMap allowed the facilities to be less reliant on local public safety responders, while providing a system to oversee evacuation, resident placement and tracking, and critical supply support." (M. Banville, personal communication, August 26, 2013).

The Massachusetts long term care mutual aid plan (MassMAP) serves the five emergency management system regions in Massachusetts. According to Bill Arsenault, a regional co-chair of MassMAP, in the event of a disaster, a regional coordination center will be established that functions like an emergency operations center. The MassMAP plan will support an assisted-living facility by first assigning a Command Officer to the facility to determine their needs and help coordinate a regional response (B. Arsenault, personal communication, July 10, 2013). The Command Officer will interface with local public emergency management officials and provide details regarding the facilities sheltering and evacuation plans. In the event of an evacuation, transportation will be identified and tracking forms will be used to follow each resident's placement to a mutual aid facility (B. Arsenault, personal communication, July 10, 2013). The Command Officer will receive updates at least every half hour from the impacted facility to monitor their needs and stay with the facility until the event is over (B. Arsenault, personal communication, July 10, 2013).

All participants in the MassMap plan participate in annual regional emergency preparedness drills that meet the Department of Public Health requirements (Russell Phillips & Associates, 2013, p. 3) According to Michael Banville, the regional drills help ensure a safe and effective relocation process in the event of a fire, flood, or other emergency. The drills also

expose potential weaknesses that may exist and offer an opportunity to address our needs (M. Banville, personal communication, August 26, 2013).

Currently, the membership fee for the MassMap plan is an initial $450 for the first year and an annual fee of $250. According to Bill Arsenault, the MassMap plan has grown in popularity but, "there are some facilities who feel their own emergency management plans are sufficient and don't want to pay for something they believe they won't use." (B. Arsenault, personal communication, July 10, 2013). To encourage participation, the state has offered grants to help minimize the entrance and yearly support fee. Additionally, the MassMap plan is being studied by Massachusetts hospitals. Some who have entered into a memorandum of understanding to enhance their emergency operations plan (B. Arsenault, personal communication, July 10, 2013).

Procedures

Several research methods were used to obtain the information required to answer the research questions. A literature review began June 2013 at the National Fire Academy's Learning Research Center (LRC) and its online catalog. Additional literature research was conducted of internet websites of government, public safety, and assisted-living facilities. Articles germane to the topics of hazard analysis cycles, historical natural disasters, state requirements for assisted-living facilities, and emergency management components were researched. All periodicals and reports were post 2004, with the exception of a descriptive review of assisted-living facilities.

To ascertain information regarding emergency management planning, a phone interview on July 23, 2013 was conducted with Dale Thompson of Kaiser Permanente (Appendix D). Dale

Thompson was selected due to his expertise in the field of emergency management. Interview questions were designed to gather information regarding the four phases of the emergency management cycle as well as hazard vulnerability analysis.

Additional information regarding emergency planning was gathered through a phone interview on August 26, 2013 with Harold Hicks (Appendix E). He is the President of Atlantic Code Consultants and is a Fire Protection Engineer Instructor for the United States Army Corp of Engineers. Mr. Hicks was interviewed because of his expertise in the field of fire protection and mitigation. Interview questions were designed to illicit information regarding structural and non-structural mitigation measures. In addition, Mr. Hicks provided information regarding specific life safety codes pertaining to assisted-living facilities and general recommendations regarding emergency management planning.

An interview of Michael Banville occurred on August 28, 2013 (Appendix F). He is the Vice President of Business Development for the Massachusetts Assisted-Living Facilities Association. He was also a program coordinator for the Executive Office of Elder Affairs which is the agency that oversees assisted-living facilities in Massachusetts. Mr. Banville provided information regarding the creation of MassMAP and how it functions.

A survey was developed using www.SurveyMonkey.com to gain information from current MassMAP users regarding their experience with the MassMAP system (Appendix G). The survey encompassed 10 questions and was distributed through email on September 8, 2013 with the help of Helen Magliozzi, who is the Director of Regulatory Affairs for Mass Senior Care. Ms. Magliozzi was referred by Mr. Banville because of her interaction with MassMAP members.

On September 16, 2013, a phone interview was conducted with Fire Marshal Frank Lowman (Appendix H) of the Palm Harbor, Florida Fire Department. An inquiry was made on the International Association of Fire Chiefs (IAFC) website regarding emergency management guidelines for assisted-living facilities. Responses on the discussion board recommended further contact with Florida public safety officials due to their vast experience in emergency management planning. Based on that recommendation, a fellow EFOC student, who lives in Florida, was contacted and referred Mr. Lowman. The interview with Mr. Lowman centered around the components of an emergency management plan. In addition to the interview in which questions were provided in advance, he provided guidelines and emergency plans to aid in the development of the Emergency Management Guideline for Assisted-Living Facilities (Appendix B).

A phone interview was conducted on September 20, 2013 with Lindsey Greenbaum (Appendix I), who is the Emergency Management Planner for the University of South Carolina. The author met Ms. Greenbaum while attending the EFO program in June 2013. Written questions were provided in advance of the interview regarding components of an emergency management plan. In addition to the interview answers, Ms. Greenbaum provided the Emergency Management plans that she helped develop for the University of South Carolina.

Limitations

The author has had limited interaction with the Town's local emergency management office and was unaware of the emergency management code requirements for the local assisted-living facilities. The current emergency manager, who serves on a part-time voluntary basis, has been working to update the town's response plans and databases. Although the current

emergency manager has been a great resource, there was little information compiled in the current database for emergency management guidelines for the local assisted-living facilities.

The MassMAP survey was distributed through Helen Magliozzi, the Director of Regulatory Affairs for Mass Senior Care, to the MassMAP members within the five regions of Massachusetts. Due to the MassMAP privacy concerns the survey had to be distributed to the MassMAP members through Helen Magliozzi. Therefore, the author had no direct contact with the survey respondents and was unable to ask follow up questions.

According to Helen Magliozzi (H. Magliozzi, personal communication, August, 2013), the survey was distributed to 449 member organizations on September 8, 2013. Responses collected on September 30 totaled 116, which represents a 25.84 percent response rate. This small sample size limits the extrapolation of the results and skews the results toward those who responded.

Massachusetts is broken down into five regions in the MassMAP system. The first question of the survey asked the respondents to indicate which region their facility was located. The results of the survey indicated that although all five were represented, the two regions that were impacted more severely by natural disasters had the least responses. The lower response by these two regions skews the results toward those members who most likely would have had less experience with the MassMAP system.

Results

The first research question addressed by the study was: What are the four phases of the emergency management cycle? Emergency management is the discipline that works to avoid or reduce the potential losses from disasters. It also assures a prompt and appropriate response to

bring effective recovery. When a disaster occurs, it takes on a life cycle that requires an emergency management plan that is continuous and integrates all levels of government and non-government entities. The emergency management cycle relies on all facets of organizations to work together to manage hazards at all points of the disaster life cycle (D. Thompson, personal communication, July 23, 2013). These phases include strategies to mitigate the hazards, prepare for and respond to emergencies, and finally, to recovery from their effects. These four phases are not independent, but instead are integrated with each other in a continual evolution (Rosenberg, 2012).

Mitigation is the first stage of the emergency management cycle, which is followed by preparedness, response, and recovery. The mitigation phase differs from the other phases because it focuses on long term measures for reducing and eliminating risk, while strengthening the long term emergency planning policy. Mitigation measures are divided into structural and non-structural measures. Structural mitigation utilizes engineering mechanisms to reduce hazards (H. Hicks, personal communication, August 26, 2013). For an assisted-living facility, structural mitigation would incorporate compartmentalizing the facility in order to limit the spread of fire. Non-structural mitigation includes measures that seek to reduce risk through modifications in human behavior. For example, residents at assisted-living facilities should be educated about the leading causes of fire: candles, smoking, cooking, electrical (H. Hicks, personal communication, August 26, 2013). Non-structural mitigation measures tend to be less costly than structural mitigation in that it reduces risk without requiring the use of engineered structures. Non-structural mitigation measures include education and training of assisted-living staff members and residents to prepare for an emergency event (H. Hicks, personal communication, August 26, 2013).

The preparedness phase of emergency management is planning how to effectively respond in case an emergency or disaster occurs at an assisted-living facility. The goal of an emergency preparedness program is to achieve a satisfactory level of readiness by strengthening a community's ability to cope with a disaster. This phase is a continuous cycle that ensures essential service providers have the resources to mitigate the effects of a disastrous event at an assisted-living facility. Preparedness at an assisted-living facility involves both long and short term strategies (D. Thompson, personal communication, July 23, 2013). These include everything from routine evacuation drills to more comprehensive drills that simulate an actual emergency. This phase also involves reviewing the communication plan and developing mutual aid agreements among assisted-living facilities. During the preparedness phase, emergency managers must identify private sector vendors to ensure critical resource needs are met for the duration of an incident. To ensure the continuity of care is maintained, the training of staff members and volunteers is essential ("Introduction to disaster management," 2010, p. 49).

The response phase of emergency management represents the actual measures adopted after a disaster occurs. The success of this phase will be significantly influenced by the extent with which the previous phases were accomplished. This phase addresses tactical procedures, protocols, and guidelines while mobilizing essential emergency responders. A well-crafted emergency guideline will integrate resources from the local, state, and federal level. For a significant event at an assisted-living facility, an emergency operations center (EOC) will be established utilizing the unified command structure. The EOC will develop strategies and tactics to effectively deal with sheltering, evacuating, and acquiring critical resource needs (Rosenberg, 2012, pp. 1-3).

The final stage in the emergency management cycle is the recovery stage. In order for an emergency management plan to be effective, it is necessary to overcome the negative effects of a disaster. The goal of recovery is to restore the affected area to a normal or near normal state. Recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed (D. Thompson, personal communication, July 23, 2013). For an assisted-living facility, this phase encompasses securing financial aid for victims, securing grants for rebuilding efforts, and providing crisis counseling services. The recovery phase provides an opportunity to review the effectiveness of the emergency response plan (D. Thompson, personal communication, July 23, 2013. This "after action" analysis reviews components of the plan that went well and those items that need to be improved upon. Lessons learned from the analysis can be used to strengthen and improve the emergency management plan (Warfield, 2008).

The four phases of emergency management deal with addressing mitigation, preparedness, response and recovery efforts for an emergency event. The emergency management cycle is an ongoing process that involves government and private industry working together to reduce the impact of disasters. These phases will often overlap and augment one another to provide a stronger, more effective emergency plan (D. Thompson, personal communication, July 23, 2013).

The second research question was: How do you conduct a hazard vulnerability analysis for an assisted-living facility? The most important foundation of hazard mitigation is that local governments and businesses must assess their own vulnerability. The current federal strategy is moving mitigation planning to the local level in order to build a community-state-federal partnership for multi-level prevention ("Hazard mitigation planning," 2012). Under Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, individual states must

evaluate and mitigate potential hazards as a condition of receiving federal disaster assistance. State and local governments, along with hospitals and assisted-living facilities are realizing they have more at stake than just meeting the legal requirements of conducting a comprehensive mitigation program.

The Pre-Disaster Mitigation Program provides financial assistance to local communities and planning groups in order to conduct their hazard vulnerability analysis. This analysis helps local businesses, such as assisted-living facilities, to identify the natural hazards and manmade events that may impact their community. Massachusetts is one of a few states that fund a State Mitigation Planning Coordinator position, whose sole purpose is to assist local officials and businesses with their hazard mitigation plans.

A vulnerability analysis can be used to identify the hazards that are most likely to impact a community and provide for a measured response. The Keiser Permanente Hazard Vulnerability Tool provides a systematic approach specifically for assisted-living facilities to recognize potential hazards. Within the analysis, hazards are evaluated in terms of the probability that an event will occur and the damage it would cause. The toolkit provides an assisted-living facility an opportunity to prioritize and quantify the risks it faces by drawing upon pre-established datasets and resources (D. Thompson, personal communication, July 23, 2013). This helps minimize the time required to complete the analysis. Preventive emergency management plans can then be developed to assign resources to the highest priorities (D. Thompson, personal communication, July 23, 2013).

In the first step of the Keiser Permanente Hazard Vulnerability Toolkit (Appendix A), a grouping of potentially disruptive events are analyzed and listed under the "Event" column. These events could be human, technological, or natural occurrences. For each hazard identified

in step 1, historical data, manufacturer statistics, and known risk are analyzed to determine the probability of each hazard occurring. Step 2 requires a numerical value be assigned under the probability column for each hazard. The probability is ranked by the likelihood that the hazard will occur with, "0" for not applicable up to "3" for a high probability of occurrence. In step 3, the impact that each hazard will inflict is measured across the "Severity" section. The Severity section is assigned a numerical value based on the degree that damage can be expected to impact a facility. The rating quantifies the expected impact on human, property, and business assets. The human impact column, which is the most important category, involves determining the potential for injury or death among staff or residents. The property impact column involves the issues surrounding replacement costs and defining a recovery timeframe. The business impact column involves the interruption of critical supplies, employees unable to report to work, and the interruption of displaced residents at the facility. With the analysis of the human, property, and business impacts completed, a value is assigned using a scale of 1 to 3 with a "1" representing the least severe impact, and a "3" representing the most severe impact. Finally, step 4 involves evaluating both internal and external response capabilities. Internal resources will center on staff availability and required supply needs. External resources include mutual aid agreements and coordination with local health care facilities. In step 4, an assigned value of “3" indicates the facility is least prepared and "1" is for a very prepared facility ("Hazard mitigation planning," 2012).

After all the steps have been completed, the toolkit will calculate the percentages of each risk. Once the percentages have been determined, a risk index will be developed. By prioritizing each risk, the assisted-living facility will be able to determine those events which they are most exposed. This allows the facility's emergency management planners an

opportunity to target the top 3 to 5 hazards, and allow for training and exercises to properly manage those hazards (D. Thompson, personal communication, July 23, 2013).

The third research question was: What components are required in developing an effective emergency management guideline for assisted-living facilities? The aging population has resulted in the increased need for facilities to care for senior residents. This, combined with the catastrophic effects of recent disasters, has confirmed the need for comprehensive emergency operations plans for assisted-living facilities. It is essential that assisted-living facilities plan in advance and are ready should a disaster occur. The guideline, along with a checklist and job action sheets, are resource tools to assist in the implementation of an effective all-hazards emergency operation plan. The guideline includes administrative responsibilities, logistics, communications, life safety, property protection, continuity of care, acquisition of resources, and restoration/recovery (F. Lowman, personal communication, September 23, 2013). Plans should be reviewed on a regular basis and must comply with the Massachusetts code requirements.

The concept of operation section of an emergency management plan defines the roles and responsibilities that the facility will make during an emergency situation. This area describes who is in charge during the emergency and provides the direction and control for decision-making (F. Lowman, personal communication, September 23, 2013). The plan also identifies a chain of command to ensure continuous leadership. The incident command system established within the plan must be compliant with the National Incident Management System. The concept of operations also ensures proper staffing levels, defines their roles, and addresses emergency power contingencies (L. Greenbaum, personal communication, September 20, 2013).

In the notification section, procedures must be in place for the assisted-living facility to receive updated information during the emergency. The procedures for notifying key staff and

apprising clients of information during the emergency are defined. An alternative communications system must be in place should the primary system fail. In addition, alerting mutual aid facilities of potential evacuation and notifying family members of clients is included in this section.

Under the evacuation section, criteria for whether an assisted-living facility should evacuate or shelter-in-place during an emergency is determined. This decision is made by Unified Command (L. Greenbaum, personal communication, September 20, 2013). Due to the significant amount of resources required and the challenges involved in transporting seniors, evacuation should only be undertaken if the shelter-in-place option would result in exposing the residents to greater danger. If an evacuation is necessary, the evacuation component of the emergency management plan shall be adhered to. Included in this is notification of the receiving facility and the residents' family members. Transportation arrangements made through mutual aid agreements shall establish the evacuation routes that will be used in relocating the displaced residents. The plan includes logistical support to transport food, water, medical supplies, and pertinent medical records for the residents. Additionally, an accountability system must be established to track residents prior to relocation and ensure that all residents are accounted (L. Greenbaum, personal communication, September 20, 2013).

Once an assisted-living facility has been evacuated, a re-entry plan needs to be formulated. This plan identifies procedures for inspection of the facility to ensure that it's structurally sound and safe for the residents to return. Counseling services should also be available for those residents who may need help in coping with the emergency ("Emergency operations planning guidance for facilities," 2012, pp. 8-10).

The final component of an emergency management plan involves employee awareness, personnel training and plan review. All employees should receive a copy of the emergency plan as well as trained in their specific roles within the plan (F. Lowman, personal communication, September 23, 2013). Additionally, during these training exercises, deficiencies should be noted and corrective action to the existing plan should take place.

The fourth research question asked was: What additional emergency statewide plan is in place to aid assisted-living facilities? In 2008, the Russell Phillips & Associates company created a statewide Mutual Aid Plan (MassMap). This plan, which is the first of its kind in the nation, establishes a course of action and agreed commitment among participating assisted-living facilities and other long term care facilities to assist each other in the event of an emergency ("Massachusetts long term care mutual aid plan (MassMap),"2013). Previously, each assisted-living and long term care facility had agreements with other facilities on a one-to one basis (M. Banville, personal communication, August 26, 2013). This plan will supplement those existing resources when the local emergency management or the assisted-living facilities plan is overwhelmed by a regional disaster. The plan provides preplanned evacuation strategies, web based emergency management reporting, equipment and pharmaceutical support, access to evacuation resources, communication structure to support regional coordination, and participation in disaster preparedness (M. Banville, personal communication, August 26, 2013).

The Massachusetts long term care mutual aid plan (MassMap) serves the five emergency management system regions in Massachusetts. The MassMap plan will support an assisted-living facility by assigning a Command Officer to coordinate a regional response. The Command Officer will interface with local public emergency management officials and alert regional long term care facilities for the potential of evacuation and staff support.

All MassMap members are encouraged to participate in regional emergency drills every June to ensure that assisted-living facilities are prepared for any emergency and correct any deficiencies. According to Bill Arsenault, the MassMap plan allows assisted-living and other long term care facilities to "help themselves" during an emergency, while allowing local emergency managers and other public safety officials to focus on other areas in need (B. Arsenault, personal communication, July, 2013). Additionally, the MassMap concept is gaining more recognition and is currently being analyzed by Massachusetts hospitals. Recently, some hospitals have entered into a "memoranda of understanding" with MassMap participant to enhance their existing plan (B. Arsenault, personal communication, July, 2013).

To gain further understanding of the MassMAP system, a 10 question survey (Appendix G) was created through www.SurveyMonkey.com and distributed to current members of MassMAP. In total, the survey was sent to 448 members and 116 responses were collected. Question one required the respondents to indicated what MassMAP region their facility was located within. The question was asked to validate that all regions were represented. The results of the responses showed that although all regions had responses, the two regions that were most impacted by natural disasters within the last three years yielded a smaller sample size.

The second question asked the respondents to indicate the number of residents at their facility. This question was asked to understand the demographics of what size facility would utilize the MassMAP system. The respondents picked from one of five population sizes. The results indicated that facilities of all sizes, from under 100 residents to over 400 residents, utilize the MassMAP system.

The third question asked the respondents to identify why they became members of the MassMAP system. This open-ended question was asked to understand why the facility became a

member instead of utilizing their own mutual aid system. The results fell into three general categories: facilities not having an adequate plan in place, facilities realizing the cost benefits of joining, and the peace of mind in knowing the facility was covered in the event of an emergency.

The MassMAP system has been in place since 2008. The fourth question asked the respondents to indicate how long they have been members. They were asked to choose from 3 categories: 0-2 years, 3-5 years, and over 5 years. The results showed almost an equal percentage across the categories which indicates that the membership is growing year over year.

The fifth question asked the respondents for their opinion about why other long-term care facilities were not part of the MassMAP system. They were asked to choose from three types of responses: cost associated with membership, already had a plan in place, and facility felt they wouldn't utilize the system. The results indicated that a majority (40%) felt that those non-member facilities already had a plan in place, 35% of the respondents felt that the non-members wouldn't use the services, and 25% felt that the cost was the deciding factor.

One of the benefits of being a member of MassMAP is the ability to participate in the yearly preparedness drills ((M. Banville, personal communication, August 26, 2013). Question six as the respondents if they participated in these full scale disaster exercises. The respondents were asked to answer either yes, no, or sometimes. Of the respondents, 70% indicated that they participate in the drills, 16% stated that they participate sometimes, and only 14% responded that they do not participate.

The seventh question asked the respondents to indicate how often they review their emergency management plan. Respondents were asked to choose from four responses: annually, semi-annually, quarterly, and never review. The results showed that every facility reviews their

plan at least once a year. This indicates that facilities understand the importance of reviewing their plans to ensure effectiveness.

Questions 8 and 9 asked respondents to indicate if they have ever had to activate the MassMAP system and if they did how they would rate MassMAP's response to the emergency. The majority of the respondents (94%) indicated that they had not had to utilize the MassMAP system. Of the remaining 6% who did activate the system, a majority (72%) rated the response as excellent or good, 14% rated MassMAP as fair, and 14% thought that they needed improvement.

The final question was an open-ended two-part question. It asked the respondents first to state what they felt were the benefits of being a MassMAP member and then to state what areas needed improvement. The majority of the respondents stated that the main benefits of being a member of MassMAP were the support network, having a good system in place in case of emergency, and the training exercises that were provided. Only a small portion of respondents provided areas that needed improvement. The answers provided dealt with communication issues as well as paying for a service that they may not use.

Discussion

The information collected and analyzed in this applied research paper shows there are many components involved in producing an effective emergency management guideline for assisted-living facilities. Understanding the required Massachusetts General Laws, the importance of the emergency management cycle, and the pivotal role that an accurate hazard vulnerability analysis plays are all critical in the development of the guideline.

The research has revealed that increased concerns regarding emergency management at assisted-living facilities have been growing over the last several years. Chelmsford has experienced two major federal disaster declarations which have received Presidential disaster relief approvals since 2008. The December 2008 Ice Storm and the October 2010 "Halloween Storm" both had severe impacts to public infrastructures and lasted several days. In the 2006 Pre-Disaster Mitigation Plan for Massachusetts Northern Middlesex Region (Northern Middlesex Council of Governments, 2006, p. 4), concerns about providing assistance to assisted-living facilities in the event of a emergency was discussed. In particular, the challenges of protecting the facilities during prolonged power outages. Stephen Conant of the Northern Middlesex Council of Government cited the 2003 Heat wave disaster in France as an example of the need to have emergency provisions in place to protect the elderly at assisted-living facilities (Northern Middlesex Council of Governments, 2006, p. 4).

While researching the components of an effective emergency management plan, the author was made aware of the importance of conducting a hazard vulnerability analysis. According to Dale Thompson, Threat Assessment Manager for Kaiser Permanente (D. Thompson, personal communication, July 23, 2013), the hazard vulnerability analysis provides an assisted-living facility the opportunity to prioritize and quantify the risks it faces and to determine the demands on emergency services and vital resources. Preventive emergency management plans can then be developed to target resources to the highest priorities and provide the factual basis of a mitigation strategy ("Hazard mitigation planning," 2012).

While developing the emergency management guideline, the research revealed the Commonwealth of Massachusetts's Regulations 651 CMR 12 (Commonwealth of Massachusetts, 2006, p. 8) requirements regarding an assisted-living facility. This regulation stipulates that

managers of assisted-living facilities shall work in collaboration with local public safety officials to ensure the development of an effective emergency operations plan. Unlike nursing homes, which are regulated by both state and federal regulations, assisted-living facilities are only regulated by the state. This creates disparity throughout the nation as regulations differ from state to state (M. Banville, personal communication, August 26, 2013). By working in conjunction with the local assisted-living facilities, it provides the opportunity to create awareness of the code requirements and the importance of having an emergency plan in place.

During the research, that author became aware of an alternative mutual aid system, known as MassMAP. This system, launched in Massachusetts, was developed in the summer of 2008 to provide agreed commitment among elder care facilities to assist each other during a disaster. Although a private organization, MassMAP works in conjunction with the Department of Public Health and the Executive Office of Elder Affairs. Their participation includes planning and design as well as periodic review of the plan. According to Michael Banville (M. Banville, personal communication, August 26, 2013), in the 2011 Annual Report, 31% of the surveyed assisted-living facilities are currently members of MassMAP. "In order to attract more participation, grant money is being sought to ease the burden of membership fees and to make it more available to other organizations" (B. Arsenault, personal communication, July 10, 2013). In 2013, the Department of Public Health covered the fees for nursing home participation in MassMAP. Expanding the grant to cover assisted-living facilities will help the program reach its ultimate goal which is to get all at-risk populations working together under one plan (B. Arsenault, personal communication, July 10, 2013).

Recommendations

After completing the research for the project, I feel that the Emergency Management Guideline is an important tool to aid assisted-living facilities in the development of their emergency plan. The guideline (Appendix B) will help the facilities meet state requirements and aid them in the development of their emergency management plan. The author feels that by guiding the facilities in the development of their emergency plan, it will alleviate the concerns that were noted in the 2006 Hazard Mitigation Plan for the Northern Middlesex Region (Northern Middlesex Council of Governments, 2006, p. 4).

It is the author's recommendation that the assisted-living facilities begin their emergency plan by performing a hazard vulnerability analysis (Appendix A). A committee consisting of people with diverse backgrounds and expertise should be formed to ensure that the analysis is thoroughly researched. By taking the time to ensure that the information gathered is germane, precious limited resources can be directed to managing the top potential risks.

As a student of the Executive Fire Officer Program's Executive Analysis of Fire Service Operation in Emergency Management, this research has shown the author the important role that emergency management has in the community. The author has been provided the opportunity to participate in the MassMAP regional drills held annually. It is my recommendation that managers of the local assisted-living facility accompany me to the drills to expand their knowledge regarding MassMAP. It is the author’s belief that by participating in these "real life" scenarios, the assisted-living facility managers will be able to make informed decisions about membership in the MassMAP program.

It is also the author's recommendation that the guideline should be used as an educational tool for the Chelmsford Fire Department. It is my intention to work with the training officer to

incorporate the guideline into an emergency management training class. This will create awareness of the important role that emergency management plays in public safety. The author has already been approached by local businesses to aid in the development of their emergency plans. With some slight modifications, the emergency management guideline that was created could be used to help the businesses in the development of their own plan.

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Appendix A: Hazard Vulnerability Toolkit

Medical Center Hazard and Vulnerability Analysis

INSTRUCTIONS:
Evaluate potential for event and response among the following categories using the hazard specific scale.

Issues to consider for **probability** include, but are not limited to:
1. Known risk
2. Historical data
3. Manufacturer/vendor statistics

Issues to consider for **response** include, but are not limited to:
1. Time to marshal an on-scene response
2. Scope of response capability
3. Historical evaluation of response success

Issues to consider for **human impact** include, but are not limited to:
1. Potential for staff death or injury
2. Potential for patient death or injury

Issues to consider for **property impact** include, but are not limited to:
1. Cost to replace
2. Cost to set up temporary replacement
3. Cost to repair

Issues to consider for **business impact** include, but are not limited to:
1. Business interruption
2. Employees unable to report to work
3. Customers unable to reach facility
4. Company in violation of contractual agreements
5. Imposition of fines and penalties or legal costs
6. Interruption of critical supplies
7. Interruption of product distribution

Issues to consider for **preparedness** include, but are not limited to:
1. Status of current plans
2. Training status
3. Insurance
4. Availability of back-up systems
5. Community resources

Issues to consider for **internal resources** include, but are not limited to:
1. Types of supplies on hand
2. Volume of supplies on hand
3. Staff availability
4. Coordination with MOB's

Issues to consider for **external resources** include, but are not limited to:
1. Types of agreements with community agencies
2. Coordination with local and state agencies
3. Coordination with proximal health care facilities
4. Coordination with treatment specific facilities

Complete all worksheets including Natural, Technological, Human and Hazmat. The summary section will automatically provide your specific and overall relative threat.

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Appendix A: Hazard Vulnerability Toolkit (Cont'd)

HAZARD AND VULNERABILITY ASSESSMENT TOOL
NATURALLY OCCURRING EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 - 100%*
Hurricane								**0%**
Tornado								**0%**
Severe Thunderstorm								**0%**
Snow Fall								**0%**
Blizzard								**0%**
Ice Storm								**0%**
Earthquake								**0%**
Tidal Wave								**0%**
Temperature Extremes								**0%**
Drought								**0%**
Flood, External								**0%**
Wild Fire								**0%**
Landslide								**0%**
Dam Inundation								
Volcano								**0%**
Epidemic								**0%**
AVERAGE SCORE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.00	**0.00**	**0.00**

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Appendix A: Hazard Vulnerability Toolkit (Cont'd)

HAZARD AND VULNERABILITY ASSESSMENT TOOL
TECHNOLOGIC EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 - 100%*
Electrical Failure								**0%**
Generator Failure								**0%**
Transportation Failure								**0%**
Fuel Shortage								**0%**
Natural Gas Failure								**0%**
Water Failure								**0%**
Sewer Failure								**0%**
Steam Failure								**0%**
Fire Alarm Failure								**0%**
Communications Failure								**0%**
Medical Gas Failure								**0%**
Medical Vacuum Failure								**0%**
HVAC Failure								**0%**
Information Systems Failure								**0%**
Fire, Internal								**0%**
Flood, Internal								**0%**
Hazmat Exposure, Internal								**0%**
Supply Shortage								**0%**
Structural Damage								**0%**
AVERAGE SCORE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY
0.00 0.00 0.00

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Appendix A: Hazard Vulnerability Toolkit (Cont'd)

HAZARD AND VULNERABILITY ASSESSMENT TOOL
HUMAN RELATED EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 - 100%*
Mass Casualty Incident (trauma)								**0%**
Mass Casualty Incident (medical/infectious)								**0%**
Terrorism, Biological								**0%**
VIP Situation								**0%**
Infant Abduction								**0%**
Hostage Situation								**0%**
Civil Disturbance								**0%**
Labor Action								**0%**
Forensic Admission								**0%**
Bomb Threat								**0%**
AVERAGE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY

0.00 0.00 0.00

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Appendix A: Hazard Vulnerability Toolkit (Cont'd)

HAZARD AND VULNERABILITY ASSESSMENT TOOL
EVENTS INVOLVING HAZARDOUS MATERIALS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 = N/A 1 = High 2 = Moderate 3 = Low/none*	*0 - 100%*
Mass Casualty Hazmat Incident *(From historic events at your MC with >= 5 victims)*								**0%**
Small Casualty Hazmat Incident *(From historic events at your MC with < 5 victims)*								**0%**
Chemical Exposure, External								**0%**
Small-Medium Sized Internal Spill								**0%**
Large Internal Spill								**0%**
Terrorism, Chemical								**0%**
Radiologic Exposure, Internal								**0%**
Radiologic Exposure, External								**0%**
Terrorism, Radiologic								**0%**
AVERAGE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.00	**0.00**	**0.00**

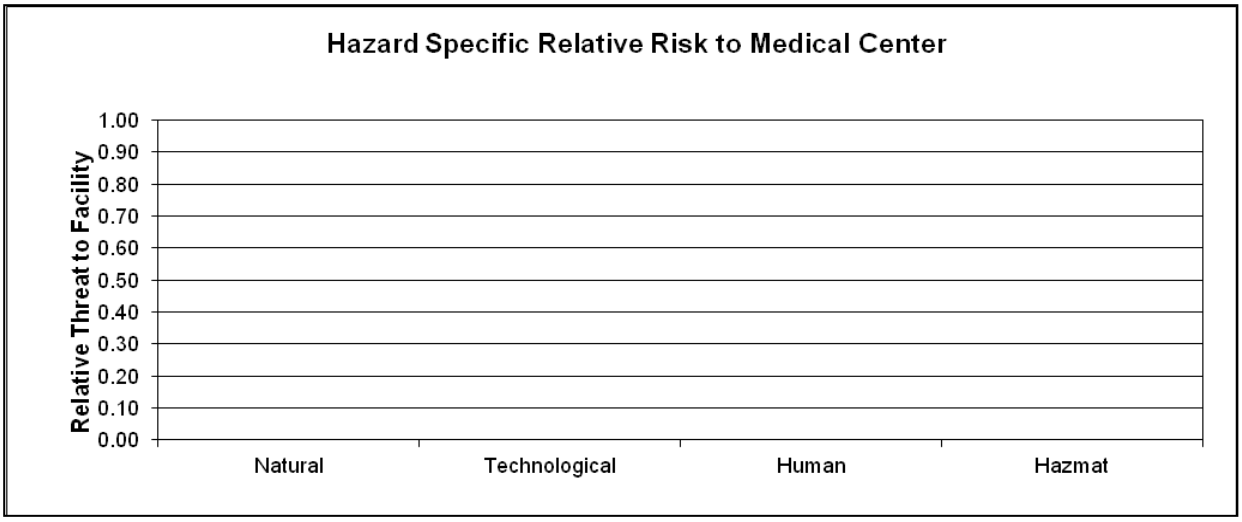


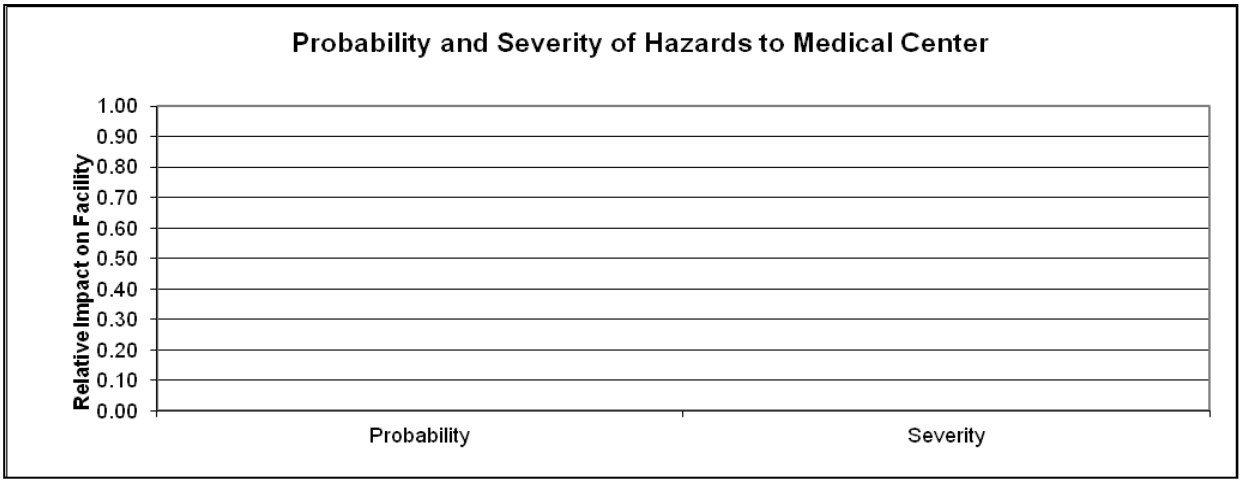
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Appendix A: Hazard Vulnerability Toolkit (Cont'd)

SUMMARY OF MEDICAL CENTER HAZARDS ANALYSIS

	Natural	Technological	Human	Hazmat	Total for Facility
Probability	0.00	0.00	0.00	0.00	0.00
Severity	0.00	0.00	0.00	0.00	0.00
Hazard Specific Relative Risk:	0.00	0.00	0.00	0.00	0.00





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Appendix B: Emergency Management Guideline

CHELMSFORD FIRE DEPARTMENT

EMERGENCY MANAGEMENT GUIDELINE FOR ASSISTED-LIVING FACILITIES

The Chelmsford Fire Department provides this template in an effort to guide facilities in the development of their personalized emergency operations plans. This will also serve as the compliance review document for the Town of Chelmsford Office of Emergency Management upon submission for review and approval pursuant to the Commonwealth of Massachusetts Regulation 651 CMR 12 and the Office of Elder Affairs.

For more information, please contact:

Chelmsford Fire Department
50 Billerica Road
Chelmsford, MA 01824

Office: (978) 251-4288

Appendix B: Emergency Management Guideline Cont'd

GENERAL GUIDLEINES TO FOLLOW TO COMPLETE THE EMERGENCY OPERATIONS PLAN

1. Complete, the Model Facility Emergency Operations Plan Template. Follow this Model Plan, adapting it to your center's situation and needs. Make sure that all of your employees are trained in the provisions of this plan so that they can act in an emergency. Make sure guardians are aware of the provisions set forth in the plan.

2. Submit the completed plan electronically to gryan@townofchelmsford.us and a hard copy to the Chelmsford Fire Department, 50 Billerica Road, Chelmsford, MA 01824.
3. The plan should be written with the following guidelines: No Hand Written Information, Times New Roman 12pt Font for the main text, headings can bolded or underlined, also include page numbers.

4. If the plan is to be submitted, e-mail with 'read receipt requested' or certified mail with return-receipt requested is recommended in order to document proof of submission.

Appendix B: Emergency Management Guideline Cont'd

Emergency preparedness and response plan.

A. The facility shall develop a written emergency preparedness and response plan that shall address:
    1. Documentation of contact with the local emergency coordinator to determine local disaster risks and communitywide plans to address different disasters and emergency situations.
    2. Analysis of the facility's potential hazards, including severe weather, fire, loss of utilities, flooding, work place violence or terrorism, severe injuries, or other emergencies that would disrupt the normal course of service delivery.
    3. Written emergency management policies outlining specific responsibilities for provision of:
        a. Administrative direction and management of response activities;
        b. Coordination of logistics during the emergency;
        c. Communications;
        d. Life safety of residents, staff, volunteers, and visitors;
        e. Property protection;
        f. Continued provision of services to residents;
        g. Community resource accessibility; and
        h. Recovery and restoration.
    4. Written emergency response procedures for assessing the situation; protecting residents, staff, volunteers, visitors, equipment, medications, and vital records; and restoring services. Emergency procedures shall address:
        a. Alerting emergency personnel and facility staff;
        b. Warning and notification of residents, including sounding of alarms when appropriate;
        c. Providing emergency access to secure areas and opening locked doors;
        d. Conducting evacuations or sheltering in place, as appropriate, and accounting for all residents;
        e. Locating and shutting off utilities when necessary;
        f. Operating the emergency generator, and if available on-site, testing it periodically;
        g. Communicating with staff and community emergency responders during the emergency; and
        h. Conducting relocations to emergency shelters or alternative sites when necessary and accounting for all residents.
    5. Supporting documents that would be needed in an emergency, including emergency call lists, building and site maps necessary to shut off utilities, memoranda of understanding with relocation sites, and list of major resources such as suppliers of emergency equipment.
B. Staff and volunteers shall be knowledgeable in and prepared to implement the emergency preparedness plan in the event of an emergency.
C. The facility shall develop and implement an orientation and quarterly review on the emergency preparedness and response plan for all staff, residents, and volunteers. The orientation and review shall cover responsibilities for:
    1. Alerting emergency personnel and sounding alarms;
    2. Implementing evacuation, shelter in place, and relocation procedures;
    3. Using, maintaining, and operating emergency equipment;
    4. Accessing emergency medical information, equipment, and medications for residents;

Appendix B: Emergency Management Guideline Cont'd

5. Locating and shutting off utilities; and
6. Utilizing community support services.

D. The facility shall review the emergency preparedness plan annually or more often as needed and make necessary revisions. Such revisions shall be communicated to staff, residents, and volunteers and incorporated into the orientation and quarterly review for staff, residents, and volunteers.
E. In the event of a disaster, fire, emergency or any other condition that may jeopardize the health, safety and welfare of residents, the facility shall take appropriate action to protect the health, safety and welfare of the residents and take appropriate actions to remedy the conditions as soon as possible.
F. After the disaster/emergency is stabilized, the facility shall:
    1. Notify family members and legal representatives; and
    2. Report the disaster/emergency to the licensing office by the next working day.

Appendix B: Emergency Management Guideline Cont'd

EMERGENCY MANAGEMENT PLANNING GUIDANCE FOR FACILITIES

The following minimum criteria are to be used for creating your Emergency Operations Plan (EOP) for all Assisted Living Facilities (ALFs).
The criteria will serve as the recommended plan format for the EOP. The Town of Chelmsford Fire Department is available to review the documents submitted using this guideline; however, CFD does not serve as a ratifying or approval agency for the plans. The purpose of the template is to assist providers in the development of their plans to be in compliance with regulations stated in Commonwealth of Massachusetts Regulation 651 CMR 12 and the Office of Elder Affairs.

These criteria are not intended to limit or exclude additional information that facilities may decide to include in their plans in order to satisfy other requirements, or to address other arrangements that have been made for emergency preparedness. Any additional information that is included in the plan will be subject to review.

If the plan is to be submitted, e-mail with 'read receipt requested' or certified mail with return-receipt requested is recommended in order to document proof of submission.

Appendix B: Emergency Management Guideline Cont'd

EMERGENCY MANAGEMENT PLANNING CRITERIA FOR ASSISTED-LIVING FACILITIES

Use this form as a cross-reference to your plan, by listing the page number and paragraph where the criteria are located in the plan on the line to the left of each item. This will ensure accurate review of your facility's plan when you submit it for review.

I. INTRODUCTION

_____A. Provide basic information concerning the facility to include:

_____1. Name of facility, address, telephone number, emergency contact telephone number and pager number if available, and fax number, type of facility and license.

_____2. Owner of facility, address, telephone.

_____3. Year facility was built, type of construction and date of any subsequent construction.

_____4. Name of Administrator, address, work/home telephone number of his/her alternate.

_____5. Name, address, work and home telephone number of person implementing the provisions of this plan, if different from the Administrator.

_____6. Name and work and home telephone number of person(s) who develop this plan.

_____7. Provide an organizational chart, including phone numbers, with key management positions identified.

_____B. Provide an introduction to the Plan that describes its purpose, time of implementation, and the desired outcome that will be achieved through the planning process. Also provide any other information concerning the facility that has bearing on implementation of this plan.

II. AUTHORITIES AND REFERENCES

_____A. Identify the legal basis for plan development and implementation to include statutes, rules and local ordinances, etc.

_____B. Identify reference material used in the development the Plan.

_____C. Identify the hierarchy of authority in place during emergencies. Provide an organizational chart.

III. HAZARD ANALYSIS

_____A. Complete the Hazard Vulnerability Analysis (toolkit included in

Appendix B: Emergency Management Guideline Cont'd

document). Include additional notations, if applicable, regarding potential hazards that the facility is vulnerable to and indicate past history and lessons learned.

_____B. Provide site-specific information concerning the facility to include:

_____1. Number of facility beds, maximum number of clients on site, average number of clients on site.

_____2. Type of clients served by the facility to include but not limited to:

_____a. Clients with special needs.

_____b. Clients requiring special equipment or other special care, such as oxygen or dialysis.

_____c. Number of clients who are children (under age 18).

_____3. Identification of which flood zone facility is in as identified on a Flood Insurance Rate Map.

_____4. Proximity of facility to a railroad or major transportation artery (per hazardous materials incidents).

_____5. Identify if facility is located within 10 mile or 50 mile of emergency planning zone of a nuclear power plant.

IV. CONCEPT OF OPERATION

This section of the plan defines the policies, procedures, responsibilities and actions that the facility will take before, during and after any emergency situation. At a minimum the facility plan needs to address direction and control, notification, evacuation and sheltering.

_____A. **Direction and Control** - Define the management function for emergency operations. Direction and control provide a basis for decision-making and identifies who has the authority to make decisions for the facility.

_____1. Identify, by title who is in charge during an emergency, and one alternate, should that person be unable to service in that capacity.

_____2. Identify the chain of command to ensure continuous leadership and authority in key positions.

_____3. State the procedures to ensure timely activation and staffing of the facility in emergency functions.

_____4. State the operational and support roles for all facility staff. (Include Standard Operating Procedures to this Plan).

Appendix B: Emergency Management Guideline Cont'd

_____5. State the procedures to ensure the following needs are supplied:

_____a. Emergency power, natural gas or diesel. If natural gas, identify alternate means should loss of power occur which would effect the natural gas system. What is the capacity of emergency fuel system?

_____b. Transportation (may be covered in the evacuation section).

_____B. **Notification** - Procedures must be in place for the facility to receive timely information on impending threats and the alerting of facility decision makers, staff and clients of potential emergency conditions.

_____1. Define how the facility will receive warnings.

_____2. Define how key staff will be alerted.

_____3. Define the procedures and policy for reporting to work for key workers.

_____4. Define how clients will be alerted and the precautionary measures that will be taken.

_____5. Identify alternative means of notification should the primary system fail.

_____6. Identify procedures for notifying those facilities to which facility clients will be evacuated.

_____7. Identify procedures for notifying families of clients that facility is being evacuated or closed.

_____C. **Evacuation** - Describe polices, roles, responsibilities, and procedures for the evacuation of clients from the facility.

_____1. Identify the individual responsible for implementing facility evacuation procedures.

_____2. Identify transportation arrangements made through mutual aid agreements or understandings that will be used to evacuate clients (copies of the agreements should be attached). (A mutual aid agreement is a document that demonstrates that you have made arrangements with another organization such as another facility or transportation company to assist you in your evacuation plan)

Appendix B: Emergency Management Guideline Cont'd

_____3. Describe transportation arrangements for logistical support to include moving records, medications, food, water and other necessities.

_____4. Identify the pre-determined locations where clients will evacuate.

_____5. Provide a copy of the mutual aid agreement that has been entered into with a facility to receive clients (copies should be current, signed each year).

_____6. Identify evacuation routes that will be used and secondary routes that would be used should the primary route be impassable.

_____7. Specify the amount of time it will take to successfully evacuate all clients to the receiving facility.

_____8. What are the procedures to ensure facility staff will accompany evacuating clients.

_____9. Identify procedures that will be used to keep track of clients once they have been evacuated (to include a log system).

_____10. Determine what belongings and how much should each client take.

_____11. Establish procedures for responding to family inquiries about clients who have been evacuated.

_____12. Establish procedures for ensuring all clients are accounted for and are out of the facility.

_____13. Determine at what point to begin the pre-positioning of necessary medical supplies and provisions.

_____14. Specify at what point the mutual aid agreements for transportation and the notification of alternate facilities will begin.

_____D. **Re-Entry -** Once a facility has been evacuated, procedures need to be in place for allowing clients to re-enter the facility once authorized to do so by the appropriate emergency services agency.

_____1. Identify who is the responsible person(s) for authorizing re-entry to occur. (Director, Owner, staff, etc.)

_____2. Identify procedures for inspection of the facility to ensure it is structurally sound.

Appendix B: Emergency Management Guideline Cont'd

V. INFORMATION, TRAINING AND EXERCISES

This section shall identify the procedures for increasing employee and clients and their families awareness of possible emergency situations and providing training on their emergency roles before, during and after a disaster.

_____A. Identify how key workers will be instructed in their emergency roles during non-emergency times.

_____B. Identify a training schedule for all employees and identify the provider of the training.

_____C. Identify the provision for training new employees regarding their disaster related role(s).

_____D. Identify a schedule for exercising all or portions of the disaster plan on at least an annual basis.

_____E. Establish procedures for correcting deficiencies noted during training exercises.

VI. APPENDICES

The following information is recommended to improve the effectiveness of your emergency operation plan. They may be included as appendices.

_____A. Roster of employee and companies with key disaster related roles.

_____1. List the names, addresses, and telephone numbers of all staff with disaster related roles.

_____2. List the name of the company, contact person, telephone number and address of emergency service providers such as transportation, emergency power, fuel, water, police, fire, emergency medical services, etc.

_____B. Agreements and Understandings

_____1. Provide copies of any mutual aid agreement entered into pursuant to the fulfillment of this plan. This is to include reciprocal host facility agreements, transportation agreements, current vendor agreements or any other agreement needed to ensure the operational integrity of this plan.

_____2. If you are a MassMAP member, include regional contact information.

_____C. Evacuation Route Map

_____1. A map of the evacuation routes and description of how to get to a receiving facility for drivers.

_____D. Support Material

_____1. Copy of the facility's fire safety plan that is approved by

Appendix B: Emergency Management Guideline Cont'd

the Town of Chelmsford Fire Prevention Office.

AUTHENTICATION

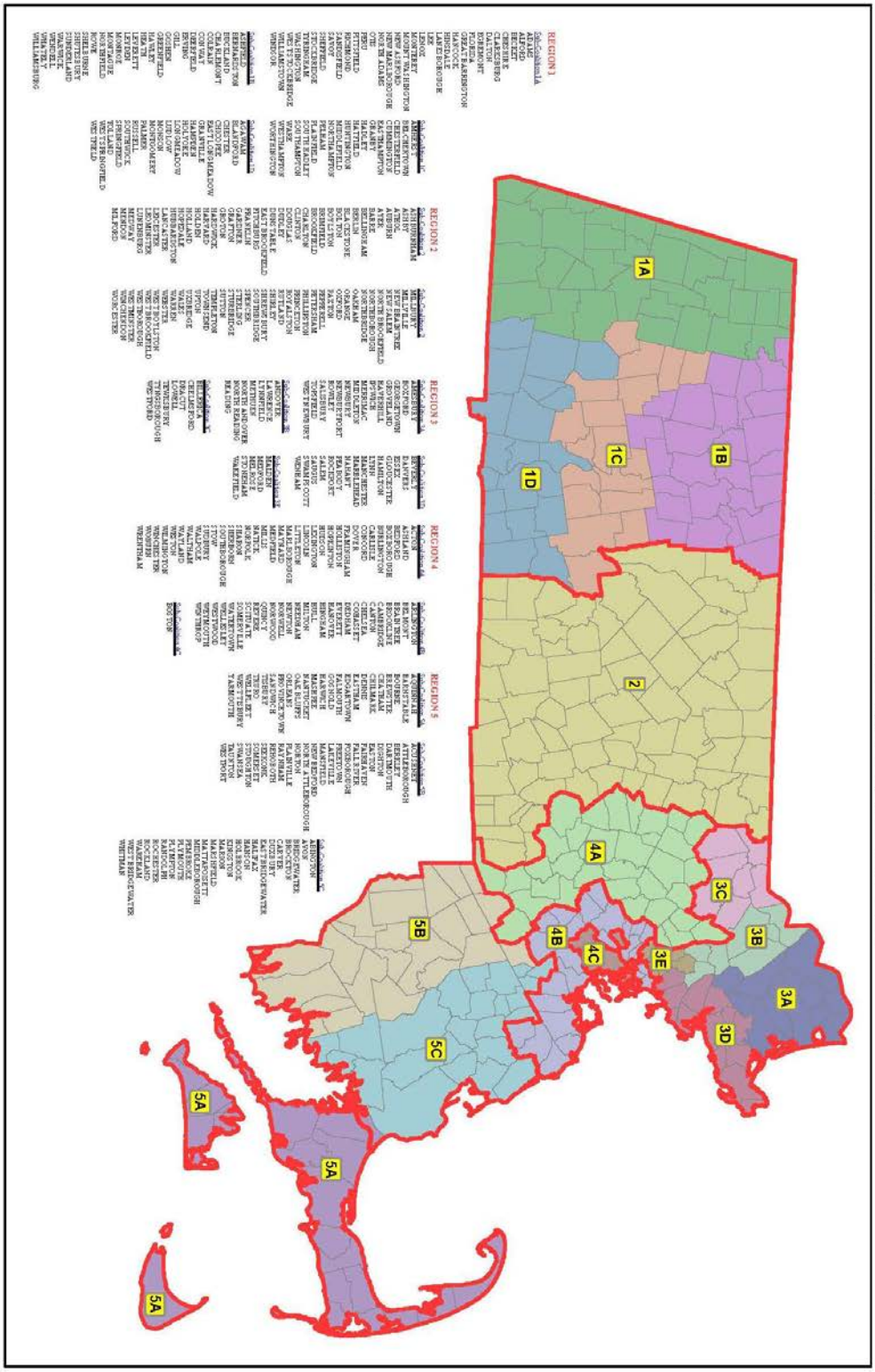
This Emergency Operations Plan provides the operational procedures that this facility will follow during emergency events. This plan supersedes any previous emergency operations plans promulgated for this purpose.

Facility Name

Effective Date

Facility Owner/Administrator's Signature

Appendix C: MassMAP Regional Map



Appendix D-Dale Thompson Interview, July 23, 2013

Interview Questions -

1. What are the four phases of the emergency management cycle?
2. Can you explain each phase of the cycle?
3. Do the phases run independently or do they depend on each other?
4. What is a hazard vulnerability analysis?
5. How do you conduct a hazard vulnerability analysis?
6. What are the benefits of conducting a hazard vulnerability analysis?
7. Who should conduct a hazard vulnerability analysis?
8. How often should a hazard vulnerability analysis be reviewed?

Interview Summary -

- The four phases of emergency management are: mitigation, preparation, response, and recovery.
- These four phases are the foundational elements of an emergency management plan.
- Each phase in the cycle addresses critical emergency management components.
- The four phases will often overlap and augment one another.
- The cycle will address both natural and non-natural hazards.
- Recovery efforts are concerned about getting back to a normal state.
- Recovery phase provides an opportunity to review the effectiveness of the emergency plan.
- Hazard Vulnerability analysis provides an assisted living facility the opportunity to prioritize and quantify risks.
- The process of undergoing an hazard vulnerability analysis is a time consuming process.
- The analysis should be conducted by a diverse group of people who are knowledgeable to identify potential hazards.
- The hazard vulnerability analysis is a systematic approach to recognizing potential hazards and determining their probability of occurrence.
- The hazard vulnerability group can identify the top 3 risks in order to develop a mitigation plan.
- The analysis allows an assisted living facility to take critical resources and allocate them to their top risks.
- A hazard vulnerability is not a one- time process and should be reviewed annually as needed.

Curriculum Vitae -

- National Threat Assessment Manager for Kaiser Permanente.
- Responsible for oversight of emergency management plans, training, and response for 35 hospitals, 454 clinics, 164,000 staff, and 15,000 physicians.
- Former environmental health and safety director for Kaiser Permanente in San Diego. Responsible for emergency planning 45 clinics.
- Served over 20 years in the U.S. Coast Guard in marine science and disaster planning. Graduated with degrees in Oceanography and Marine Science.

Appendix E-Harold Hicks Interview August 26, 2013

Interview Questions -

1. How is structural mitigation measures applied to an assisted living facility?
2. How do non-structural mitigation measures reduce risk in assisted living facilities?
3. What common life safety codes are utilized for both structural and non-structural mitigation measures?
4. What recommendations do you have for emergency management planning?

Interview Summary -

- Nearly 52% of assisted living residents have a cognitive impairment of some type.
- Age, size, and pre-existing conditions impact ability of residents to respond.
- NFPA 101-The Life Safety Code, Chapter 32-Residential Board and Care Occupancies. An occupancy used occupancy used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services.
- Small facilities - residential board and care occupancies providing sleeping accommodations for not more than 16 residents.
- Large Facilities-sleeping accommodations for more than 16 residents.
- Structural Mitigation utilizes engineering mechanisms to reduce hazards.
- Interior Stairs used for primary means of escape shall be arranged so occupants are not required to pass through a lower story, unless constructed by a minimum 1/2 hour fire resistance. NFPA 101 32.2.2.4.3
- Vertical openings shall be separated by smoke partitions that resist the passage of smoke from one story to another.
- All assisted living facilities serving 9 or more residents shall be protected by an automatic sprinkler protection system, using quick response or residential sprinklers.
- The separation walls of sleeping quarters shall be capable of resisting fire for not less 1/2 hour.
- Hazardous Areas include boiler rooms, laundry facilities, soiled linen rooms, trash collection rooms, and storage rooms greater than 100 square feet.
- Doors protecting corridor openings, in sprinkled facilities, shall not be required to have a fire protection rating, but shall be constructed to resist the passage of smoke.
- Sprinkler systems in accordance with NFPA 13D and NFPA 13R- 13 R system is a life safety sprinkler system that is intended to prevent a room of fire origin from flashing over for 10 minutes. This system has a low water flow design, doesn't cover all areas - i.e. attics, between floor spaces, closets, overhangs, etc.
- NFPA 13R systems are aimed more at saving lives than protecting property
- Although NFPA 13R systems inherently provide a certain level of property protection, they are not intended to save the building. They are intended to allow occupants sufficient time to escape.

Appendix E-Harold Hicks Interview August 26, 2013 Cont'd

NFPA 13R also allows the omission of sprinklers from attics and certain bathrooms and closets. A NFPA 13R system can lower the overall sprinkler costs but the lack of coverage in attics was a factor in at least one devastating fire that resulted by a lightning strike at an assisted living facility that didn't extend the sprinkler coverage to the attic area where the fire originated.

- Non-structural mitigation measures will use education and community awareness to reduce risks**.**
- Residents should be educated about the leading causes of fire: candles, smoking, heating equipment, cooking, electrical cords and outlets.
- NFPA 101 classifies assisted living facilities as Residential Board and Care occupancies.
- Typically, assisted living facilities are considered large residential board and care occupancy having an evacuation capability considered "slow evacuation capability".
- Slow evacuation capability (NFPA 101, sec 3.3.65.3) is the ability of a group to move reliably to a point of safety in a timely manner, but not as rapidly as members of a household in the general population.
- Every residential board and care facility shall have written copies of a plan for protecting all residents.
- All employees shall be periodically instructed about their responsibilities under the plan.
- All residents shall be trained in the proper actions to take in the event of an emergency. Emergency drills shall be conducted and can be announced in advanced.
  Emergency plans and guidelines are great to have in place but they are not a substitute to common sense and the human element. Public safety officials and assisted living officials must work together and communicate in order for a plan to work.

Curriculum Vitae -

- President of Atlantic Code Consultants, greater Pittsburg area.
- Graduated from the University of Maryland College Park with a Bachelor of Science in Fire Protection Engineering.
- Fellow, Society of Fire Protection Engineers.
- Member of the National Fire Protection Association of Fire Protection Engineers.
- Member of the International Code Council.
- Instructor of Basic Fire Protection Engineering for the US Army Corps of Engineers for the past 21 years.

Appendix F -Michael Banville Interview, August 28, 2013

Interview Questions -

1. How was the MassMap system created?
2. What are the benefits of being a MassMap member?
3. How important are the annual preparedness drills?
4. What is your opinion of the MassMap system?

Interview Summary -

- The MassMap System was created to make long term care facilities more self sufficient in the event of an emergency.
- Previous multi day events have brought about an understanding that a system needs to be put into place for facilities to assist one another.
- The MassMap system creates a state wide system to replace individualized mutual aid agreements.
- Members of the MassMap system participate in an annual preparedness drill.
- Benefits of the preparedness drill include reviewing evacuation and relocation plans and to address any areas of the plan that need improvement.
- Nursing homes are required to participate in preparedness drills but assisted living facilities can drill using "table-top" exercises.
- Currently 34% of assisted living facilities are members of the MassMap system. This is expected to grow as the benefits of the system become more evident to the Department of Elder Services.

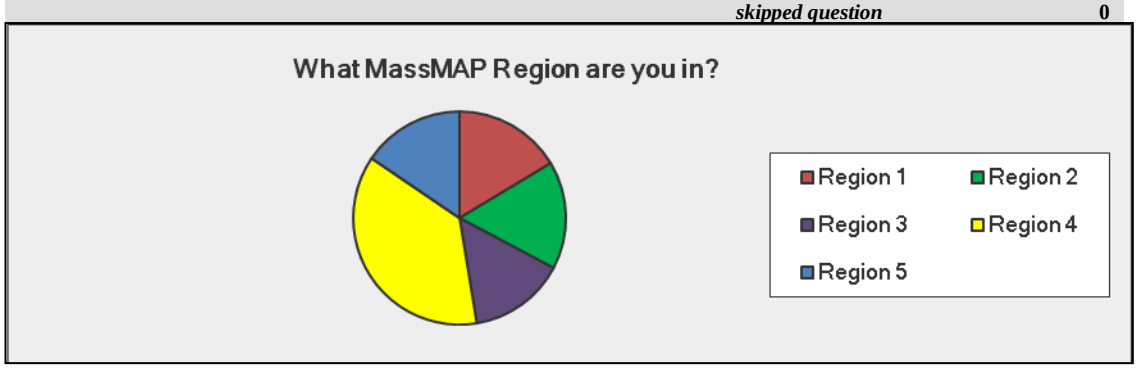
Curriculum Vitae -

- Vice President, Massachusetts Assisted Living Facilities Association (Mass-ALFA) 2003- Present.
- Program Coordinator, Executive Office of Elder Affairs. 2001-2003
- Program Coordinator, Massachusetts Rehabilitation Center. 1998-2001
- Graduated from Simmons College with a degree in Health Care Administration. 2007-2010.
- Awarded Commonwealth Citation for Outstanding Performance in October 2010. Nominated for Governor's Award for Excellence in Public Service in 2000.

Appendix G: MassMAP Survey (www.surveymonkey.com)

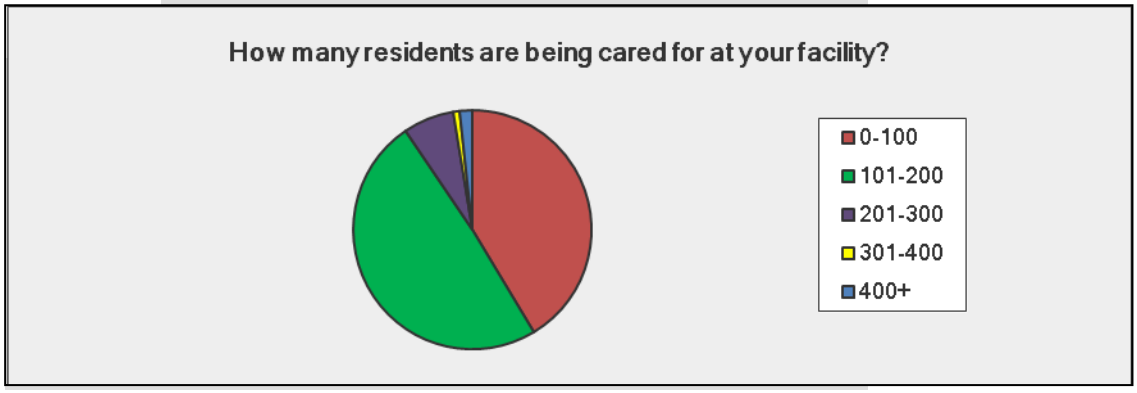
Question 1: What MassMAP region you are in?

Answer Options	Response Percent	Response Count
Region 1	16.38%	19
Region 2	16.38%	19
Region 3	14.66%	17
Region 4	37.07%	43
Region 5	15.52%	18
	answered question	**116**
	skipped question	**0**



Question 2: How many residents are being cared for at your facility?

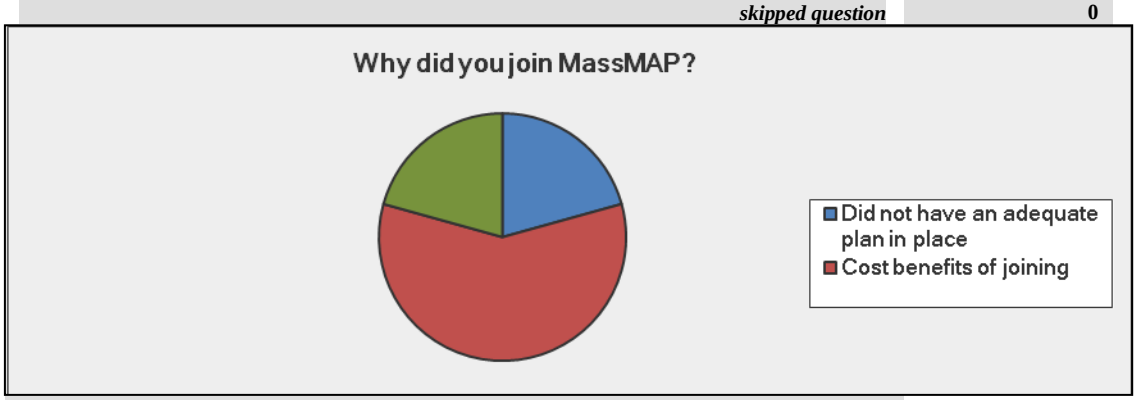
Answer Options	Response Percent	Response Count
0-100	41.38%	48
101-200	49.14%	57
201-300	6.90%	8
301-400	0.86%	1
400+	1.72%	2
	answered question	**116**
	skipped question	**0**



Appendix G: MassMAP Survey (www.surveymonkey.com) CONT'D

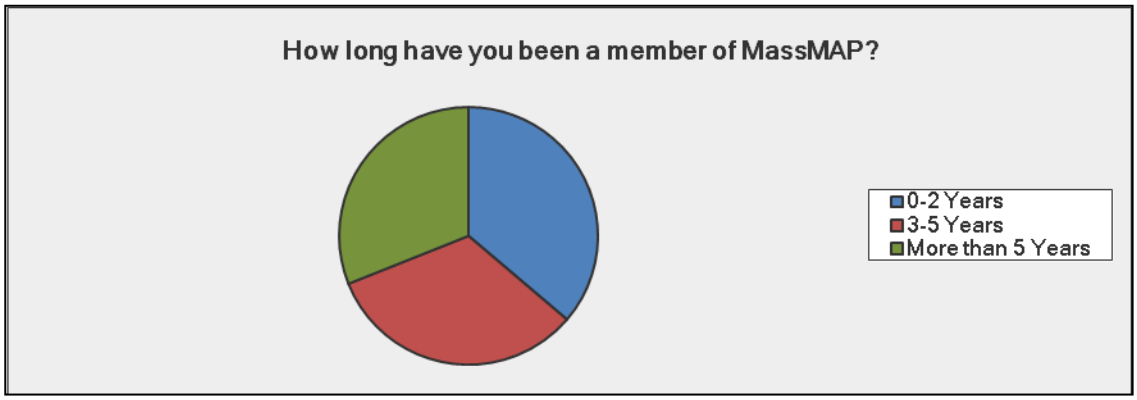
Question 3: Why did you join MassMAP?

Answer Options	Response Percent	Response Count
Did not have an adequate plan in place	20.7%	24
Cost benefits of joining	58.6%	68
Security of having mutual aid coverage	20.7%	24
answered question		**116**
skipped question		**0**



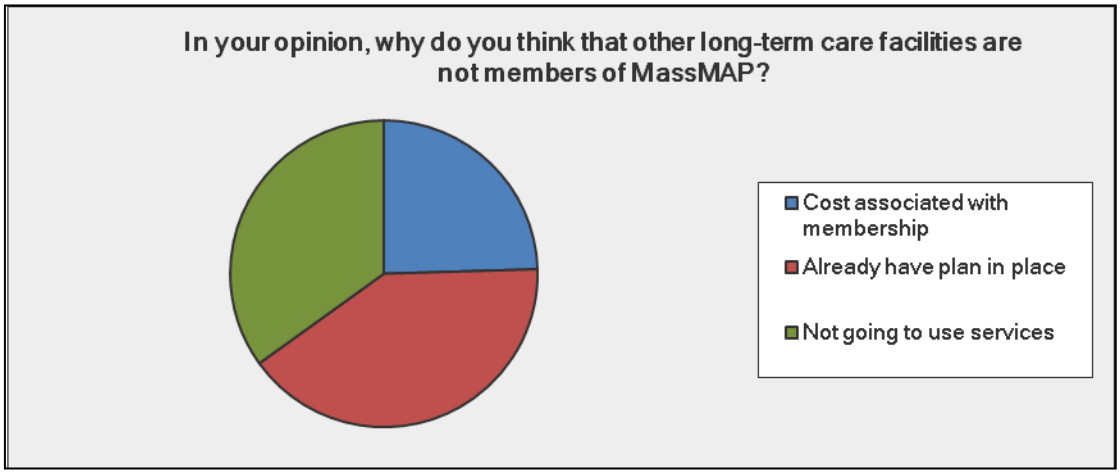
Question 4: How long have you been a member of MassMAP?

Answer Options	Response Percent	Response Count
0-2 Years	36.2%	42
3-5 Years	32.8%	38
More than 5 Years	31.0%	36
answered question		**116**
skipped question		**0**

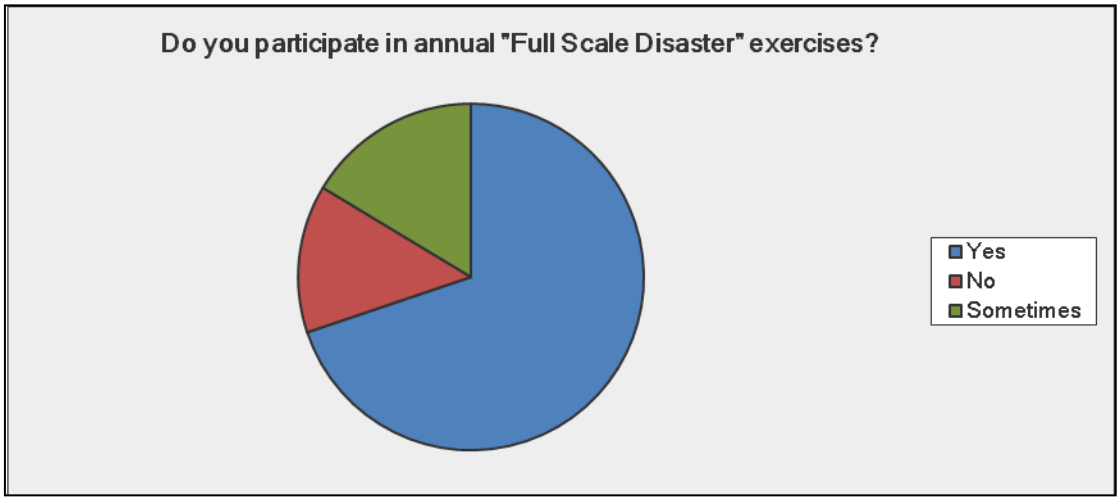


Appendix G: MassMAP Survey (www.surveymonkey.com) CONT'D

Question 5: In your opinion, why do you think that other long-term care facilities are not members of MassMAP?		
Answer Options	**Response Percent**	**Response Count**
Cost associated with membership	24.5%	26
Already have plan in place	40.6%	43
Not going to use services	34.9%	37
	answered question	**106**
	skipped question	**10**



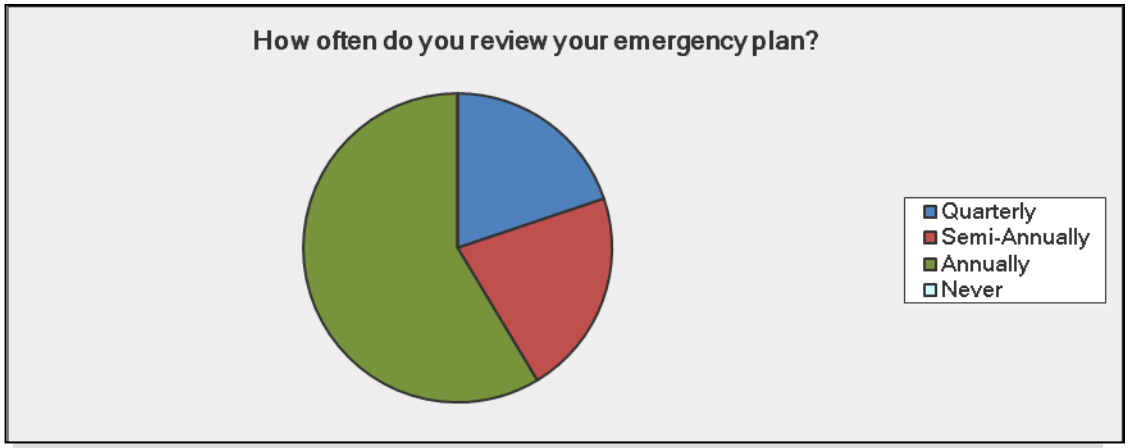
Question 6: Do you participate in annual "Full Scale Disaster" exercises?		
Answer Options	**Response Percent**	**Response Count**
Yes	69.8%	81
No	13.8%	16
Sometimes	16.4%	19
	answered question	**116**
	skipped question	**0**



Appendix G: MassMAP Survey (www.surveymonkey.com) CONT'D

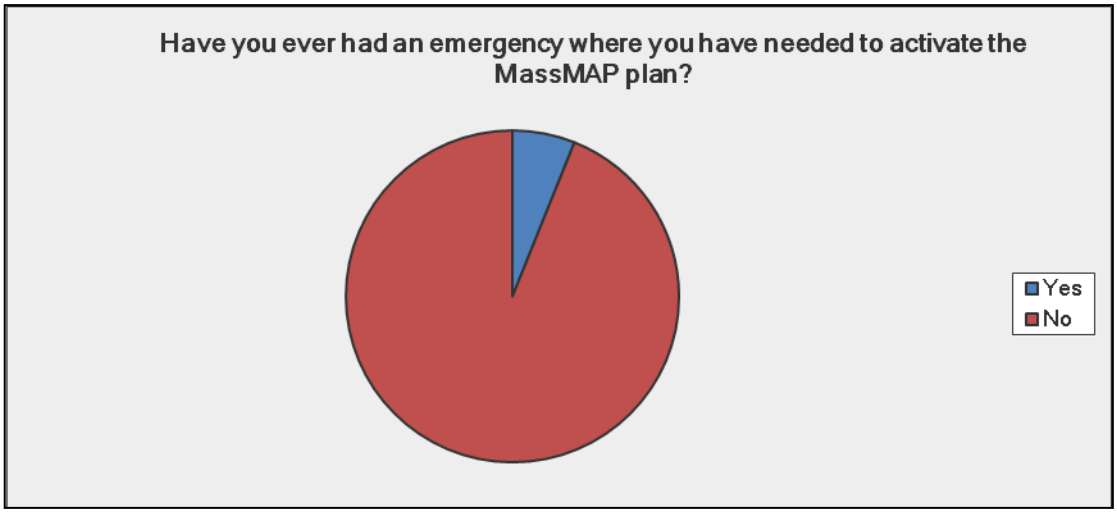
Question 7: How often do you review your emergency plan?

Answer Options	Response Percent	Response Count
Quarterly	19.8%	23
Semi-Annually	21.6%	25
Annually	58.6%	68
Never	0.0%	0
	answered question	**116**
	skipped question	**0**



Question 8: Have you ever had an emergency where you have needed to activate the MassMAP plan?

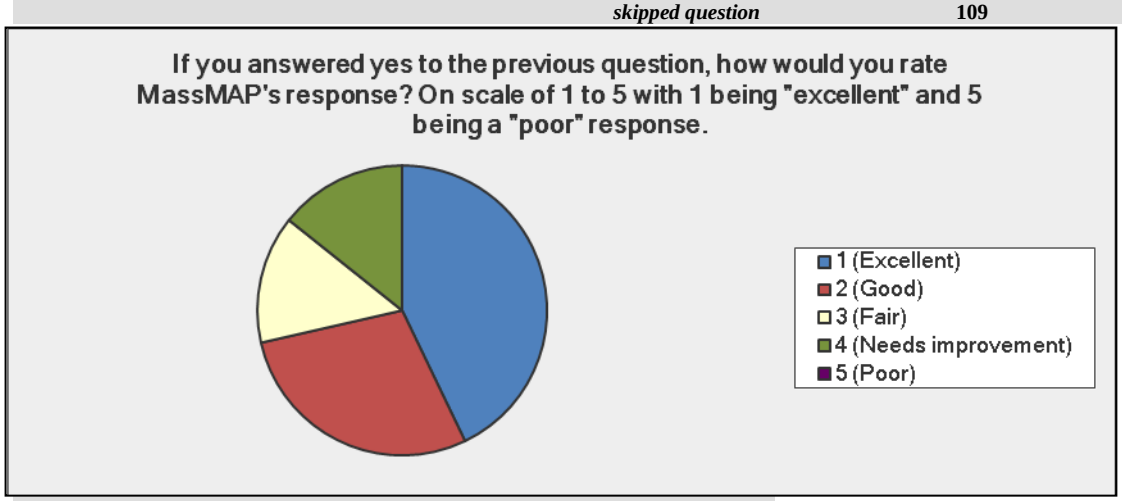
Answer Options	Response Percent	Response Count
Yes	6.1%	7
No	93.9%	108
	answered question	**115**
	skipped question	**1**



Appendix G: MassMAP Survey (www.surveymonkey.com) CONT'D

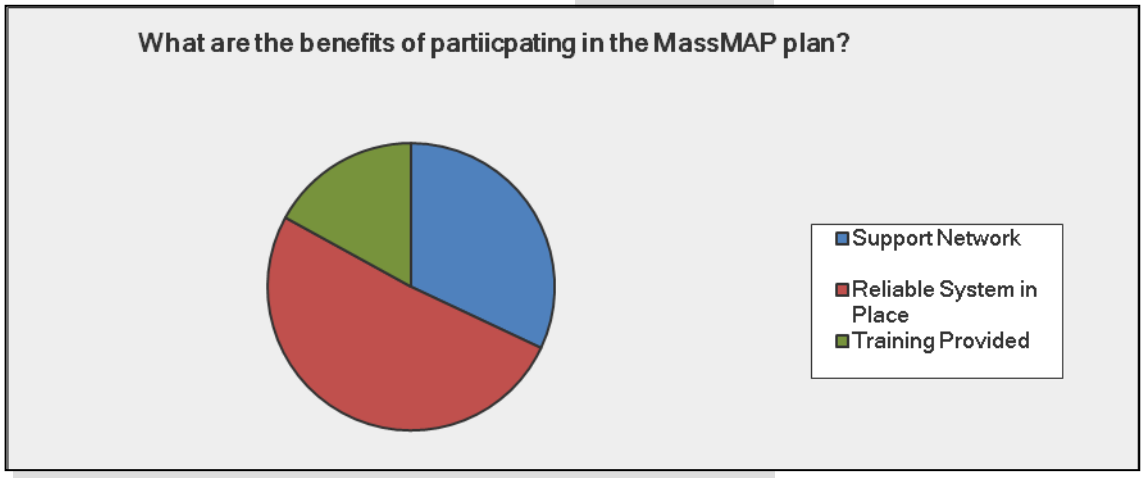
Question 9: If you answered yes to the previous question, how would you rate MassMAP's response?

Answer Options	Response Percent	Response Count
1 (Excellent)	42.9%	3
2 (Good)	28.6%	2
3 (Fair)	14.3%	1
4 (Needs improvement)	14.3%	1
5 (Poor)	0.0%	0
	answered question	7
	skipped question	109



Question 10: What are the benefits of participating in the MassMAP plan?

Answer Options	Response Percent	Response Count
Support Network	32.0%	37
Reliable System in Place	51.0%	59
Training Provided	17.0%	20
	answered question	116
	skipped question	0



Appendix H-Frank Lowman Interview, September 23, 2013

Interview Questions-

1. What components should be included in an emergency management plan for an assisted living facility?
2. What type of emergency training should a long term care facility perform?
3. For sheltering-in-place, how many hours/days should a facility plan for?
4. What agencies should be involved in developing an assisted living facilities emergency plan?
5. Who is responsible for determining whether to shelter-in-place or evacuate an assisted living facility?
6. Who should be involved in conducting a hazard vulnerability analysis?
7. When should recovery planning begin?
8. How often should an assisted living facility review its' emergency plans?

Interview Summary-

- Components included in an emergency plan include the purpose, scope, and authority.
- The Concept of Operations includes the evacuation plan, transportation guidelines, training, exercises and drills, and employee responsibilities.
- Training should include general training for all employees.
- Training should emphasize individual roles and responsibilities.
- Sheltering in place and evacuation from the facility should be included in the training.
- Emergency training should include emergency shutdown procedures and family notification.
- Accountability procedures need to be practiced.
- Informational awareness should include hazards, threats, and protective actions.
- Emergency plans for sheltering in place should plan on the longest scenario to ensure adequate supplies and personnel are available for the duration.
- All local, state, and FEMA representatives should be involved in developing an assisted living facilities emergency plan.
- The assisted living facilities administration shall provide the hierarchy within the emergency operations plan to determine whether to shelter in place or evacuate.
- A hazard vulnerability analysis should involved members of the facility, local public safety officials, and members with certain expertise (engineers, meteorologists etc).
- Disaster recovery planning is about defining consistent, pre-planned actions that will react to various disaster scenarios.
- A review of an assisted living facilities emergency plan should occur whenever there is a change of operations or procedures.

Curriculum Vitae-

- Fire Marshal at Palm Harbor Fire Rescue.
- 34 Years of Service at Palm Harbor Fire Rescue.
- 22 years service as the Palm Harbor Fire Marshal.
- Emergency Management working experience working with the Florida Agency for Health Care Administration (AHCA).

Appendix I-Lindsey Greenbaum Interview, September 20, 2013

Interview Questions-

1. What components should be included in an emergency management plan for an assisted living facility?
2. What type of emergency training should a long term care facility perform?
3. For sheltering-in-place, how many hours/days should a facility plan for?
4. What agencies should be involved in developing an assisted living facilities emergency plan?
5. Who is responsible for determining whether to shelter-in-place or evacuate an assisted living facility?
6. Who should be involved in conducting a hazard vulnerability analysis?
7. When should recovery planning begin?
8. How often should an assisted living facility review its' emergency plans?

Interview Summary-

- The National Incident Management System (NIMS) should be utilized to manage and assign roles for an emergency.
- Components should include legal authority, training, exercises, communication, and role responsibilities.
- Annual full evacuation drills should be conducted. Floor wardens should be included for accountability. Tracking procedures must be in place and should be included within the training.
- To maintain an adequate span of control, NIMS training must take place. Be prepared to expand the organizational chart to decentralize authority.
- An assisted living facility should be prepared to be self sufficient for 72 hours. However, each facility should draw upon recent experiences to determine an adequate time frame.
- A collaborative effort is needed to develop an emergency management plan among local public safety officials, facility staff, and state emergency management officials.
- To conduct a hazard vulnerability analysis, a diverse group including staff, local public safety officials, meteorologists, and other areas of expertise are needed.
- Recovery planning never ends. Once an incident starts, recovery planning must take place to aide in demobilization and to help ensure a smoother transition.
- An annual review of the assisted living facility's emergency management plans should take place. In addition, a more in-depth review should take place every couple of years involving more evaluators. The plan should also be reviewed after any major event or major changes in personnel.

Curriculum Vitae-

- Emergency Planner for the University of South Carolina.
- Graduated from the University of Colorado at Boulder, B.A. Environmental Studies..
- Emergency Management Intern At the University of Colorado at Boulder.
- Science Education Specialist at the Discovery Science Center in 2008.
- Assistant Coordinator for Kirkwood Assisted Living Facility-2007.