

EMERGENCY PREPAREDNESS IN PERSONAL CARE HOMES

by

Alexa Joyce Hussar

BS, Slippery Rock University, 2002

Submitted to the Graduate Faculty of
The Graduate School of Public Health in partial fulfillment
of the requirements for the degree of
Master of Public Health

University of Pittsburgh

2006

UNIVERSITY OF PITTSBURGH
GRADUATE SCHOOL OF PUBLIC HEALTH

This thesis was presented

by

Alexa Joyce Hussar

It was defended on

December 6, 2006

and approved by

Thesis Advisor

Gail Cairns, MA, MPH

Professor

Department of Behavioral and Community Health Sciences

Graduate School of Public Health

University of Pittsburgh

Joseph Schwerha, MD, MPH

Professor

Department of Environmental and Occupational Health

Graduate School of Public Health

University of Pittsburgh

Louise Comfort, PhD

Professor

Department of Public Administration

Graduate School of Public and International Affairs

University of Pittsburgh

Copyright © by Alexa Joyce Hussar

2006

EMERGENCY PREPAREDNESS IN PERSONAL CARE HOME

Alexa Joyce Hussar, MPH

University of Pittsburgh, 2006

This thesis is of public health significance because it examines the level of preparedness in personal care homes in Allegheny County and helps to obtain a better understanding of whether disaster preparedness education and training is sufficient for the residents and employees of personal care homes. Emergency preparedness education and training, in particular special populations, have been getting more attention since Hurricane Katrina in August 2005 and other recent disasters. This project questions if Personal Care Homes receive proper emergency preparedness education and training for both residents and employees. The Personal Care Home Facility Preparedness Education and Training Survey investigates the level of preparedness of the Personal Care Homes by assessing preparedness factors. There are factors that are required for compliance and there are factors that in past disasters have been found to decrease vulnerability. The survey includes questions about the emergency preparedness plan, financial plans of the facilities and training requirements. Demographic information was collected along with the number of residents in the facilities with disabilities. A correlation was found between the percentage of residents with a hearing impairment and the total number of residents in the facility. The level of preparedness is determined by the sum of preparedness factors that were analyzed. The Preparedness factors were analyzed by required, non-required and a combined analysis was also completed. The required preparedness factors were established by using the PA Title 55 Licensing Requirements for the Personal Care Homes. The

required preparedness factor analysis discovered that 48% of the Personal Care Homes surveyed were not compliant with state of Pennsylvania state regulations. The non-required preparedness factor analysis showed a lack of preparedness and the combined analysis had only 2 Personal Care Homes in the 95 percentile. In conclusion, residents of personal care homes in Allegheny County are more vulnerable during a disaster due to the lack of education and training of the staff and volunteers and the training and education requirements should be assessed by the Department of Public Welfare to improve preparedness.

TABLE OF CONTENTS

PREFACE.....	X
1.0 INTRODUCTION.....	1
1.1 DISASTER PREPAREDNESS.....	2
1.1.1 Phases of disaster and the health effects of each phase	3
1.1.2 What is preparedness and why prepare	4
1.2 DISASTER PREPAREDNESS EDUCATION AND TRAINING	6
2.0 CONDITIONS CONTRIBUTING TO VULNERABILITY OF ELDERLY PERSONS	8
2.1 BASIC NEEDS OF PEOPLE	9
2.2 CAUSES OF VULNERABILITY IN PERSONAL CARE HOMES.....	10
2.2.1 Definition of vulnerability in disasters.....	10
2.2.2 Health and physical needs associated with vulnerability	11
2.3 ELDERLY VULNERABILITY	15
2.3.1 Health status and needs of elderly persons.....	15
2.3.2 Risk factors of health needs	16
2.3.3 Measurement of health needs or special concerns	18
2.4 THEORY CONNECTION TO VULNERABILITY	19
2.4.1 Causes of vulnerability linked to networks	19

2.4.2	Social support and networks linked to vulnerability.....	21
3.0	PERSONAL CARE HOMES PREPAREDNESS EDUCATION AND TRAINING	23
3.1	DEPARTMENT OF PUBLIC WELFARE TITLE 55 CHAPTER 2600	24
4.0	PERSONAL CARE HOME FACILITY PREPAREDNESS EDUCATION AND TRAINING SURVEY.....	26
4.1	SURVEY	26
4.1.1	Methodology	27
4.1.2	Results	29
4.2	PERSONAL CARE HOME CHARACTERISTICS.....	29
4.2.1	Personal care home emergency preparedness.....	30
4.2.2	Personal care home finance and billing	32
4.2.3	Personal care home emergency plan	32
4.3	EMPLOYEE AND RESIDENT EMERGENCY PREPAREDNESS EDUCATION AND TRAINING.....	33
4.3.1	Employee education	33
4.3.2	Employee and resident training.....	34
4.3.3	Employee and resident preparedness.....	34
5.0	DEMOGRAPHIC INFORMATION.....	37
5.1	RESIDENTS WITH DISABILITIES	37
5.2	LEVEL OF PREPAREDNESS OF PERSONAL CARE HOMES.....	40
5.2.1	Level of preparedness based on required preparedness factors	40
5.2.2	Level of preparedness based on non-required preparedness factors.....	42

5.2.3	Level of preparedness based on required and non-required preparedness factors	45
5.3	DISCUSSION.....	47
5.4	CONCLUSIONS.....	50
APPENDIX A. COVER LETTER FOR PERSONAL CARE HOME FACILITY EMERGENCY PREPAREDNESS EDUCATION AND TRAINING SURVEY		52
APPENDIX B. PERSONAL CARE HOME FACILITY PREPAREDNESS EDUCATION AND TRAINING SURVEY.....		54
APPENDIX C. SECOND COVER LETTER FOR PERSONAL CARE HOME FACILITY EMERGENCY PREPAREDNESS EDUCATION AND TRAINING SURVEY		59
BIBLIOGRAPHY.....		61

LIST OF TABLES

Table 1. Correlation of total number of residents and the percentage that have hearing impairments.....	39
---	----

LIST OF FIGURES

Figure 1. The 5-Point Likert Scale used in response to the feeling and belief questions	34
Figure 2. Administrators view on facility employee preparedness for a disaster	35
Figure 3. Administrators view on facility residents preparedness for a disaster	36
Figure 4. Number of residents with disabilities	38
Figure 5. Total score for required preparedness factors	42
Figure 6. Total score for non-required preparedness factors	45
Figure 7. Total score for required and non-required preparedness factors	46

PREFACE

Emergency preparedness is beneficial in educating and training populations to respond during disasters. The question that arises is if people are prepared, especially people with special needs or disabilities. The need for emergency preparedness education and training has become a popular issue in lieu of recent disasters. The elderly populations that live in personal care homes depend on the employees that are caring for them to be educated and trained to respond during an emergency. The elderly populations that live personal care homes have a higher vulnerability to disasters due to lack of preparedness education and training of residents and staff. Only a small amount of research has been done in regards to this topic. This study evaluates the need to improve emergency preparedness by changing the policies that standardize these requirements. A survey was used to assess the preparedness level of the personal care homes or PCHs. This study informs you if PCHs are prepared to respond to emergencies.

To start the acknowledgments I would like to say that my parents were understanding and supportive of this project. They provided me with the education and tools necessary to complete this research project. I would like to recognize my boyfriend who has been very considerate and has put up with the stress of the loss of time to the writing process. I would also like to recognize my committee members, Gail Cairns, MA, MPH, Joseph Schwerha, MD, MPH, and Louise Comfort, PhD for bearing with me during this long research process. And last but certainly one of the most appreciated is David E. A. Johnson, PhD, who had been a supervisor, a

coworkers and a friend. He has taught me professionally, academically, and personally. He told me in the beginning that it took tenacity and he was right.

1.0 INTRODUCTION

Disasters occur daily in all regions of the world. While a *disaster* can be defined in many ways for the purposes of this paper it is a singular event that results in widespread losses to people, infrastructure, or the environment. Disasters originate from many sources, just as hazards do (natural systems, social systems, technology failures) (Cutter 2001). In the United States during 2005, billions of dollars in damage occurred and thousands of deaths resulted from a lack of preparedness. Severe weather such as flooding, tornadoes and even droughts cause the majority of damage. Floods are not only one of the most widespread of natural hazards; they are destructive of life not only through drowning and direct injury, but also because of secondary impacts such as disease and famine (Blaikie et al 1997). Floods destroy agriculture; infrastructure and have an impact on the general economy and social groups.

Tornadoes are violent and form during thunderstorms. These storms can occur anytime of the year but are most common in the spring and summer in the Midwest southeast and southwest (Mileti 1999). Droughts are caused by a natural reduction in precipitation over an extended period of time (Mileti 1999). Droughts can also burden the economy and environment by causing the loss of property, income and death. Some such as the “Dust Bowl” during the depression caused the relocation of thousands of people similar to that experienced during Hurricane Katrina.

Many disasters have a varying warning time. During incidents with short warning times, preparedness becomes even more important. During events with a longer warning time, communities have time to either evacuate or shelter at home. Despite this lead time it is usually insufficient if unprepared. Hurricane Katrina appears, final costs are still being totaled, to be the most costly natural disaster to strike the United States, the deadliest since the Lake Okeechobee disaster (hurricane) of September, 1928 (Graumann 2005). Hurricane Katrina caused major disruption to several states. The hurricane was watched for days coming from southern Florida into the Gulf of Mexico and then into the eastern United States. During this time people should have been preparing and evacuating. Instead of preparing for the “big one”, people were out celebrating as if it was not going to cause disruption. As we have all seen, the lack of preparation cost human and animal lives to be lost and homes to be destroyed. Many people will never be able to return to the lives they had before Hurricane Katrina hit land.

1.1 DISASTER PREPAREDNESS

An ounce of prevention is worth a pound of cure (Ammer 1997). This ancient proverb is first recorded in Latin in Henry de Bracton's *De Legibus* (Encyclopædia Britannica 2006). The proverb applied to disasters means to anticipate a disaster and to prepare for its arrival. Preparing for disasters can help save lives, property and the environment. Disaster preparedness education and training provides individuals and communities with education about disasters and protection to decrease the loss of life. Preparedness education is acquiring knowledge to be ready for a disaster and preparedness training is actually learning the hands on skills that will be needed to properly respond to a disaster. Worldwide, a major disaster occurs almost daily and

natural disasters that require international assistance for affected populations occur daily (Noji 1997). The best way to prepare for a disaster is to understand what occurs before, during and after a disaster. These are called the phases of disaster.

1.1.1 Phases of disaster and the health effects of each phase

Disasters originate because all societies regularly face geophysical, climatological, and technological events that result from their physical and social vulnerabilities (Tierney et al 2001). Disasters are dissected into four stages that are known as the hazard cycle; mitigation, preparedness, response and recovery. Hazard mitigation involves action taken before a disaster to decrease vulnerability or the likelihood of occurrence, primarily through measures that reduce casualties and exposure to damage and destruction or that provide passive protection during disaster impact (Tierney 2001). Mitigation is based mainly on engineered solutions such as infrastructure improvement, land-use changes, and improved building construction. These are determined through comparison of existing conditions and expected post-change conditions using hazard analysis outcomes. Hazard analysis is an essential aspect of emergency management and it leads to better emergency preparedness.

Emergency preparedness encompasses actions, primarily training, education and exercises, undertaken before a disaster enabling social units to respond more efficiently and effectively when a disaster does strike (Tierney 2001). Writing emergency response plans, preparing emergency supplies and training the people who will respond and the general public during an emergency is only a portion of the preventive ways to increase safety and decrease death and illness.

Emergency response consists of actions taken during and after a disaster impacts to reduce casualties, damage, and disruption and to respond to the immediate needs of disaster victims (Tierney 2001). Emergency response procedures include publicizing warnings, evacuating endangered populations, search and rescue, emergency medical care and food and shelter for displaced populations. After the disaster, the recovery stage of the disaster cycle occurs.

Post-disaster recovery comprises actions taken to repair, rebuild, and reconstruct damaged properties and to restore disrupted community social routines and economic activities (Tierney 2001). Recovery can take weeks, months or even years to complete and at the time that recovery is completed is when the mitigation stage begins.

1.1.2 What is preparedness and why prepare

Emergency preparedness encompasses actions undertaken before disaster impact that enable social units to respond actively when a disaster does strike (Tierney 2001). Emergency preparedness actions are based on what the public, response agencies and even fiduciary organizations perceives to be a risk. The public, including fiduciary organizations such as personal care homes, need to understand what the hazards are and how the hazards can determine the impact of a disaster, and the need to take appropriate action to prepare for it. Clearly, one of the most significant impediments to enhancing emergency preparedness among households is the low salience of disasters in most people's lives. Members of the public may not receive preparedness information, fail to act or delay taking action, or lack the resources to prepare (Tierney 2001). An alternative formulation drawn from research on persuasive communications by Lindell and his colleagues (Lindell and Barnes, 1986; Lindell and Perry, 1992) characterizes

emergency preparedness decision making as comprising of five stages: attention, comprehension, acceptance, retention, and action (Tierney 2001). Attention is the stage that brings preparedness to a person's mind. Comprehension is the stage where a person is informed about preparedness such as why one should be prepared and how to be prepared. Acceptance is when the information is received and the person perceives there is risk. The Acceptance and Retention stages are when a person decides to take part in preparedness. Retention is also the stage that a person decides to maintain preparedness information. The last stage or the Action Stage is when a person takes initiative to make necessary plans and accomplishes preparedness activities. These stages must be achieved by the public to induce action and take emergency preparedness seriously. Without these steps the public will not understand the need to prepare or take the necessary actions.

Since September 11, 2001 improvements have been made for preparedness for terrorist incidents, in some cases using an all-hazards approach, but it is not perfect and individuals still may not know why and how they should prepare. By preparing for a disaster we can not change all of the factors that cause vulnerability during and after a disaster but we can decrease the total vulnerability to disasters by preparing. Risk and vulnerability are often used interchangeably but they do not have the same definition. Risk means the probability of an event or condition occurring. Exposure is the measure of people, property, or other interests that would be subject to a given risk (Mileti 1999). A person's risk is related to factors that can not be controlled whereas a person's vulnerability is a compilation of risks that can be mitigated by preparedness. Factors that can increase someone's risk include age, gender, income and the overall socioeconomic status of a family. In general, a single parent household has an increased risk as

compared to a two-parent family because of household income. Another example is a household that has multiple generations living together.

These risks will generate a larger need for first responder assistance during and after a disaster. Decreasing the vulnerability of those families will improve the response and recovery and decrease the need of assistance from first responders. Vulnerability is the measure of the capacity to weather, resist, or recover from the impacts of a hazard in the long term as well as the short term (Mileti 1999). By ‘vulnerability’ we mean the characteristics of a person or group in terms of their capability to anticipate, cope with, resist, and recover from the impact of a natural hazard (Blaikie 1997). A person’s vulnerability can be altered by increasing the knowledge of disasters and preparing them to better respond and recover. Preparing a family or a person who lives alone will ameliorate their chance of survival and recovery.

1.2 DISASTER PREPAREDNESS EDUCATION AND TRAINING

After September 11, 2001, disaster preparedness, education and training have changed to an all-hazards approach. This expands public preparedness to more than a single type of disaster. When preparing for disasters, multiple factors should be taken into consideration to best organize the required response needs. ‘Hazard’ refers to the extreme natural events which may affect different places singly or in combination (coastlines, hillsides, earthquakes, faults, savannas, rainforest, etc) at different times (seasons of the year, time of day, over varying return periods , of different duration) (Blaikie et al 1997). Hazards are continually changing and therefore, preparedness must be adapted accordingly. In history, society was told to prepare differently for each disaster. This is reflected in the bomb shelters, air raids, tornado drills and others. Today,

after recent disaster experiences it is necessary to take an all-hazards approach to make certain that we can handle anything from a small storm to a large terrorist attack.

Emergency preparedness education levels can depend on access to information, understanding the information and using it for training. Risk communication can play a vital role in preparedness because different channels provide information and warning. The selection of these channels can be influenced by social factors and/or community interactions. Research has documented various ways in which sociodemographic and sociocultural factors affect both the receipt of risk information and what people ultimately do with the information (Tierney 2001). Research shows that there are three conditions that preparedness depends on. First, the threat of disaster must be seen as high, for example, when a specific warning or hazard advisory has been issued for a given community. Secondly, the source of disseminating the hazard and preparedness information must be seen as credible. And third, the preparedness information must be provided repeatedly through different channels and in a form that it easy to recall and use (e.g., in a printed brochure) (Tierney 2001).

2.0 CONDITIONS CONTRIBUTING TO VULNERABILITY OF ELDERLY PERSONS

Friedsam (1960, 1962) suggests that older persons constitute a special risk group in times of disaster because they may be less likely to receive warning, more reluctant to evacuate, and more disturbed by altered patterns of life. Kilijanek and Drabek (1979) concluded from their review of the literature that relative to younger persons, elderly disaster victims are at a greater risk for substantial economic loss, interruption of employment, and injured family members, and are more likely to be uninsured and to incur large debts. (Phifer et al 1988). Vulnerability fluctuates depending on a multitude of factors. The factors are based on variables that may or may not be capable of modification. Vulnerability can fluctuate depending on the variables that exist. Key characteristics of these variations of impact include class, caste, ethnicity, gender, disability, age, or seniority (Blaikie 1997). The focus of this paper is based on changing the vulnerability of an aging and disabled population that live in personal care homes. The elderly population is generally vulnerable because of physical mobility and health factors. They are vulnerable to the primary and secondary results of disasters. For example, disasters can cause infrastructure damage that can stop electricity, water and sewage. They are also vulnerable to lose support functions such as hospitals, Emergency Medical Services (EMS) and other outside agencies that the elderly depend on for survival.

2.1 BASIC NEEDS OF PEOPLE

As humans, we need basic necessities for survival. As we all know we depend on water, food, and shelter. Once these are met there are other things that we require. This information is presented from Maslow's Hierarchy of Needs. Abraham Maslow (1908-1970) studied psychology and is famous for writing *Motivation and Personality* (1954) and for developing the theory of hierarchy of needs. Maslow's hierarchy of needs is often depicted as a pyramid consisting of five levels. He describes motivation as starting from what he calls a 'hierarchy of needs'. The 'hierarchy of needs' consists of five categories. These categories are physiological needs, safety needs, belongingness and love needs, esteem needs and self-actualization needs (Maslow 1970). The upper point is termed growth needs and represents the need for self-actualization; however this paper will only focus on the four lower categories. The four lower levels are grouped together as *deficiency needs* associated with physiological needs. The hierarchic theory is often represented as a pyramid, with the lower levels representing the first levels to be achieved before moving toward the upper point. Maslow believes that the only reason that people would not move well in the direction of self-actualization is because of hindrances placed in their way by society (Simons et al 1987). The deficiency levels include physiological needs, safety needs, love/belonging level and their esteem level.

The physiological level of deficiency needs is the need to support homeostasis. This level includes the need to breathe, the need for water, the need to eat, the need to dispose of bodily wastes, the need for sleep, the need to regulate body temperature and the need for hygiene. The above listed needs are required for survival and no other level will be reached if this one is not. The next level is the safety level. This level is based on the understanding of security such as, security of employment, revenue and resources, physical security, moral and

physiological security, familial and health security. The love and belonging level involves relationships such as friendships and family. As humans, we have a need to belong, be loved and accepted. Without these needs fulfilled one may feel lonely, anxious and depressed. The esteem need is the last level that will be discussed. Humans also have a need to respect themselves, others and be respected. Without respect one may feel that they lack a sense of involvement and may experiences low self-esteem (Maslow 1970).

2.2 CAUSES OF VULNERABILITY IN PERSONAL CARE HOMES

The causes of vulnerability in personal care homes can be decreased with proper emergency preparedness education and training.

2.2.1 Definition of vulnerability in disasters

Only emergency preparedness built in at an early stage can establish the structures and processes necessary to utilize relief aid in this way. Unfortunately, the large amount of money invested in relief assistance is not mirrored in the funds provided for vulnerability reduction or mitigation (Yahmed and Koob 1996). Vulnerability reduction is essential in disaster preparedness planning. What is also needed is a coordinated effort to stop emergencies and disasters at the source: the hazards that may harm communities, the deteriorating environment, and the vulnerability of communities to hazards. These measures, when taken together, are called vulnerability reduction (Yahmed and Koob 1996). Mitigation is considered to be vulnerability reduction. Mitigation is the activities designed to reduce or eliminate risks to persons or property, lessen the actual or

potential effects and the likelihood of the incident occurring. Mitigation involves ongoing actions to reduce exposure to, probability of, or potential loss from hazards (National Incident Management System 2004). The vulnerabilities vary depending on the community. In this paper, the community is the residents and employees of the personal care homes. Personal Care Homes (PCHs) provide lodging, food and some support services for people who are elderly or who have mental or physical disabilities; who are unable to care for themselves but who do not require 24 hour nursing services in a licensed nursing care facility. Typically, residents of PCHs need help with dressing, feeding, taking medications, mobility issues and finances (Services for Pennsylvanians with Disabilities 2006). For the purpose of this paper, the elderly population that resides in a personal care home requires assistance for Activities of Daily Living and is considered to be dependent upon the employees of the personal care home to provide this assistance including assistance with medical needs.

2.2.2 Health and physical needs associated with vulnerability

The main vulnerabilities in the personal care homes are based on the health and physical needs and disabilities that the residents have. These concerns vary depending on the time of the incident, the number and type of residents in the home and the disaster preparedness education and training of the residents and employees. The age factor and physical dependence of the residents are major vulnerabilities of a personal care home. The vulnerability of the residents is dependent on the disaster preparedness education and training of the personal care home employees on how to manage and care for the residents.

A special concern is the delayed response syndrome which means that elderly people will not respond as quickly as younger people and this may cause problems with immediate danger and it may also be a problem when applying for special benefits from the Disaster Recovery Center. Another concern is sensory deprivation. Older persons' sense of smell, touch, vision and hearing may be less acute than that of the general population (Emergency Preparedness Manual for the Aging Network 1995). Older persons may become confused when conditions are different than their normal environment. This puts them at increased risk of making bad decisions such as not taking protective actions or eating or drinking something that is spoiled. Memory disorders can also cause confusion, scare older people and exacerbate pre-existing illnesses.

Mobility impairments or limitation is a physical problem that should to be addressed during planning. Transportation during evacuation and/or the lack of public transportation during a time of disaster can cause frustration and chaos. Illness and medication is a special concern for all of the population not just the elderly. A number of illnesses require medications that must be taken daily. Disasters disrupt normally daily activities and may cause the person to miss medication times, miss doses altogether or make medications inaccessible. Assistance is necessary for some elderly people to make sure medications are taken. Assistance whether it is physical, financial or emotional is important for people that are dislocated. The term "frail elderly", is often used to distinguish the elderly who have serious health problems, and as a result, may be more vulnerable during disasters (Fernandez et al 2002). Frail elder persons who are dislocated without use of the proper procedures may suffer illness and even death (Emergency Preparedness Manual for the Aging Network 1995).

For this article, an elderly person is typically defined as a person who is ≥ 65 years of age (Fernandez et al 2002). The elderly population is usually less stable than the age group 18-64 years old and can suffer more losses because of the increased vulnerability. The stability of the elderly population can be based on the size, mobility and resiliency of the individuals. The elderly population is continually growing in size and the decrease in mobility that elderly individuals may have makes the entire population more vulnerable. Resilience is the ability to recover from or adjust easily to misfortune or change (Merriam-Webster Online 2006). A decrease in resilience can be caused by a multitude of things in a person's lifetime. The multiple loss effect is when many older persons have lost a combination of a spouse, income, home, and/or physical capabilities (Emergency Preparedness Manual for the Aging Network 1995).

Weather related problems and crime victimization can also make the elderly more vulnerable in crisis times. Crime victimization is when criminals target senior citizens with tricks to make money. Literacy levels, language and cultural barriers play a role in disasters due to the need to understand and read instructions and complete necessary paperwork. An example of a catastrophic weather-related disaster that affected the elderly is Hurricane Katrina. Many evacuees lacked access to their regular medications. The region suffers a high incidence of chronic disease, including diabetes, hypertension, and cardiovascular illness as compared to individuals who were not victims of Hurricane Katrina. Caring for these conditions in the aftermath of the disaster created immense problems (Levine 2005). Problems occurred during the storm but a continuing problem will be the long-term health effects. For this article "long-term health effects" will be defined as those occurring or remaining more than one year after the incident (Phifer et al 1988). Professor Sandy Cairncross of the London School of Hygiene and Tropical Medicine told the British newspaper the *Guardian*, "After an incident like this people

get run down, their immune systems are compromised, they get gastric and respiratory infections, and particularly old people can go into a terminal decline.” He continued, “A large number of the elderly people who have been bussed out of New Orleans after this storm will die of pneumonia in the coming year, but that won’t get counted in the official disaster statistics” (Levine 2005). The victims of disasters need to be followed carefully and examined in a complete health and well-being approach to ensure that individuals return to normal status. A person’s physical status may remain the same but the disasters may change a person’s mental status. A different vulnerability after the storm is an increase in suicide rates along with other mental illnesses. A 1998 paper in the *New England Journal of Medicine* revealed that flooding leads to a 14 percent increase in the suicide rate and hurricanes lead to a 19 percent increase. Such increases can be explained only within the context of a society that provides no safety net to its most vulnerable members. People are affected by different outcomes from disasters and close monitoring is necessary.

Vulnerabilities can be based on negative thoughts about appearance such as welfare and mental health stigma. Many older persons will not use services that have the connotation of being “welfare” (Emergency Preparedness Manual for the Aging Network 1995). Mental health is viewed by many elderly as not pertaining to themselves. They may feel embarrassed of the situation and will not seek mental health assistance. The feeling of a loss of independence may also be an embarrassment that they feel. Being placed in a nursing home or other type of facility may increase the risk of mental health problems.

2.3 ELDERLY VULNERABILITY

The vulnerability of the elderly population can be based on multiple factors. The vulnerability of the elderly varies significantly with age, health, family and economic circumstances. As a group, however, it is safe to assume that older residents are more apt to lack the physical and economic resources necessary for effective response, are more likely to suffer health-related consequences and be slower to recover (Morrow 1999). These factors vary depending on health needs and status or other special concerns of the population. There are many external factors that can manipulate the vulnerability of elderly populations. This paper will focus on living in an institution or personal care home as vulnerability. Residents of a personal care home are more vulnerable because of the needed assistance of Activities of Daily Living are required making the residents less capable of caring for themselves during an emergency. Another factor is that the staff is not a 1:1 ratio making it more difficult on the employees of the home to properly evacuate the building and or shelter in place. There is a possibility of the employees are trained properly that the evacuation and shelter in places processes may make the residents less vulnerable. This however, may not to be the case of personal care home training. The personal care home has regulations that must be complied with however, disaster preparedness training and education is not a regulation but a recommendation that has been given due to the latest natural disasters that have been catastrophic.

2.3.1 Health status and needs of elderly persons

The definition of an elderly person varies. Being elderly does not necessarily mean that a person is vulnerable during a disaster. Rather, the correlation is between advancing age and the

likelihood of having special needs that increase frailty (Fernandez et al 2002). Factors exist for the elderly that non-elderly persons may or may not experience. The elderly can not change their risk but they can decrease their vulnerability. Vulnerability is the compilation of risk factors which can be mitigated by preparedness. People with disabilities have factors that make them vulnerable but aging has an increased risk because of the synergy of factors. The ability of a disaster victim to prepare for, respond to, and recover from a disaster depends on a variety of factors that often are beyond the individual's immediate control. The severity and longevity of the event, the efficiency of the warning systems, the victim's health status, and his or her resources are a few of the factors influencing an individual's response and recovery capacity (Fernandez et al 2002).

2.3.2 Risk factors of health needs

Elderly individuals are not a population that can be categorized in one group. Elderly individuals become more different as they age. The level of special needs differ from individual to individual. In responding to disasters, there is a definite need to establish and maintain an effort to meet the needs of older persons who require special help as well as make an effort to utilize the strengths and skills of many older persons who can contribute (Emergency Preparedness Manual for the Aging Network 1995). The special needs that should be accommodated are based mainly on three factors; pre-existing conditions, medication dependency and the lack of physical resiliency.

The elderly population suffers from a higher percentage of illness and disease than other age groups. The elderly suffer from a number of common ailments, including heart disease, cancer, stroke, arthritis, poor vision and hearing, depression and dementia. Physical

impairments, such as hearing-and vision-loss, increase an older person's proneness to depression and anxiety (Emergency Preparedness Manual for the Aging Network 1995). These pre-existing conditions can greatly affect the response and recovery phases of disaster. The elderly will have more difficulty hearing warnings and may suffer an increase in side effects from the pre-existing conditions. Many of the pre-existing conditions require daily medications.

The elderly population relies on physicians and pharmacists to control the pre-existing conditions with medications. Pharmacy and physician services need to be available since older persons will likely be on medications, and may need supplies of medications, or medical advice to deal with medications issues. Elderly that are medicated may need monitoring for disaster induced medicinal side effects (Emergency Preparedness Manual for the Aging Network 1995). Medications may need to be adjusted during and after a disaster due to environmental changes such as an increase in stress level or an issue that is related to sheltering needs.

Physical resiliency may also be based on a pre-existing medical condition or be a result of an injury during or after the disaster. Lack of physical mobility or a disability is a problem for elderly because of the increase of physical disabilities that may come with age. People with special needs include a wide variety of individuals who are identified by a variety of names – people who use wheel chairs, people who are blind or visually impaired, people who are deaf or severely hard of hearing, people with severe emotional impairments, people with severe intellectual impairments, people with medically related needs such as diabetes, individuals with seizure disorders, and many others who require individualized assistance (Cameron 2005). The elderly population with physical mobility impairments will need assistance during evacuation, relocations and even need different accommodations in a shelter facility due to a problem sleeping on the shelter cots and using the restroom and bathing facilities.

2.3.3 Measurement of health needs or special concerns

The Current Population Report: Special Studies reports that in July 2003, 35.9 million people were aged 65 and older in the United States, 12 percent of the total population (He et al 2005). This is a small amount of the population but it is the part of the population that will require most of the assistance before, during and after a disaster. This percentage is continually growing because of the age of the baby boomers. According to U.S. Census Bureau projections, a substantial increase in the number of older people will occur during the 2010 to 2030 period, after the first Baby Boomers turn 65 in 2011. The older population in 2030 is projected to be twice as large as in 2000, growing from 35 million to 72 million and representing nearly 20 percent of the total U.S. population (He et al 2005). The measurement of health needs and special concerns will vary depending on the disaster and the population composition.

Many elderly people have health problems that result in an increased need for assistance during disasters. Disabilities and illness can make it difficult for this population to prepare, evacuate and recover. Preparedness becomes extremely important in these circumstances because of the special planning that must be done to compensate for the health problems. Planning allows the healthcare systems and emergency management to address these issues and arrange special transportation, medical attention and mental health personnel for the elderly victims of a disaster. Planning can decrease vulnerability.

2.4 THEORY CONNECTION TO VULNERABILITY

Decreasing vulnerability is essential to improve response to and recovery from a disaster. It is apparent that the needs of human beings go far beyond water and food. It can be shown that social interactions or networks must accompany the basic needs of humans, especially the elderly populations because of the special needs that are required. Level of social support is also considered to be an important mediating factor, although few studies have investigated this following an earthquake. Lima et al (1989) found that subjects who were alone (e.g. single, widowed) were more likely to be emotionally distressed. In the context of other disasters, the findings with respect to social support are variable (Carr et al 1995). Social interaction or networks are imperative before, during and after emergencies. These interactions can help elderly individuals to recover from disasters by allowing them to return to pre-disaster conditions more quickly because of the education and assistance that the individuals in the network have received. An impact may include the personal care home staff becoming educated in each resident's medications and special needs.

2.4.1 Causes of vulnerability linked to networks

Vulnerability can be determined by multiple factors. For the purpose of this essay, risk factors such as the health needs and concerns of the elderly population in personal care homes can increase vulnerability. The basis for vulnerability can be partially determined by the elderly individual and the networks that the individual may have. An example would be family, friends and even employees of the personal care home. As Green (1985) notes, while most disaster response models view the 'objective external stressor' as the primary determinant of an

individual's psychological response, the important contributions of 'aspects of the individual' (e.g. coping techniques, prior psychological adaptation) and 'aspects of the recovery environment' (e.g. continued disruptions, social supports) need to be acknowledged (Carr et al 1995). Social support or networks are a portion of the determinants during the recovery phase but the networks need to be established during the mitigation and emergency preparedness phases to improve the safety and security of the elderly individual. Traumatic experiences are particularly difficult for the elderly. With respect to age, the findings may reflect a difficulty of other wise healthy older age groups in dealing psychologically with traumatic events, particularly events which involve a sudden and devastating alteration in surroundings that had long been familiar and associated with safety and security (Carr et al 1995).

A network is an interconnected or interrelated chain, group, or system (Merriam-Webster Online 2006). A human network is a group of people who interact and this generally forms a support mechanism which generates a support network. It is these networks that can provide an elderly person with the proper means of disaster preparedness, evacuation or in-home sheltering during a disaster and the recovery after the disaster. These networks can be internal in a personal care home or they can extend to external persons who regularly interact with the elderly residents.

The primary network of elderly residents in a personal care home is an internal network that involves the personal care home facility and its personnel. The personnel of the home include the employees or that are present 24 hours a day. The elderly residents interact with these people on a regular basis. The residents depend on the primary networks to deal with activities of daily living such as bathing, feeding, and grooming. The inability of the elderly

residents to perform activities of daily living is a measure of disability. This can make the resident more dependent on the personnel to provide assistance in time of a disaster.

The secondary network of elderly residents in a personal care home is based on the services required outside of the personnel and staff in the facility. The external or secondary network for elderly residents varies depending on the special needs that are required. The secondary network is comprised of family, the Emergency Medical Service (EMS), dialysis and social services. Services that may be primary or secondary are transportation, physical therapy, and rehabilitation.

2.4.2 Social support and networks linked to vulnerability

The primary and secondary networks are support mechanisms for the elderly residents of the personal care home. Vulnerability of the resident can be partially determined by the internal and external services that must be provided on a daily basis and necessary during a disaster. Medications can be directly related as a function that must be completed by the personnel of the home or by the family. Transportation to doctor appointments and even to the hospital can determine the vulnerability in a disaster.

There are two models that depict social support and have an influence on post-disaster outcomes. The buffering model suggests that social support benefits individuals in crisis whom it can protect from the negative consequences of stressful conditions. This implies that in the absence of stress the beneficial effect of support is not expected. Alternatively, the main effects model suggests that social support has salutary effects on physical and psychological health that are independent of the stress process. This latter model emerged when many studies testing for interactive effects of stress and support on well-being showed instead a main effect of social

support (Kaniasty & Norris 1993). The issue to be resolved is the discrepancy between the two models that state stress and social support are unrelated. This discrepancy can alter the way the variables of stress and social support interact. Several writers have noted that many important stressful life events involve dramatic changes in social support. Stressors often mobilize the support network (Kaniasty & Norris 1993). Disasters can be stressful and cause support networks to be torn apart by devastation and illness.

Family members, friends and personnel caring for the elderly play an important role in the support mechanism. Elderly population may lack the support network from the family. This may be why the individual is in the personal care home because of the assistance of daily living required can not be met by the family. Because social support is communicated through ordinary day-to-day interactions the stigma and uncertainty associated with many diseases, disabilities, or victimizations may be the grounds for victims' feelings of isolation or actual neglect (Kaniasty & Norris 1993). Personal care home employees need to be trained in disaster psychology to understand how residents may feel after the disaster occurs. Consequently, at the time when they are especially needed, expected providers are affected themselves and unable to fulfill their obligation (Kaniasty & Norris 1993). The expected providers in the personal care homes are the employees. The education and training is important to try and educate them to improve the care and decrease the neglect that may occur after a disaster

An elderly person's vulnerability can be determined by the fact that they live in a personal care home. Many personal care homes have a higher ratio than one staff per elderly person. This is one of the main reasons why the elderly in personal care homes are vulnerable. The vulnerability of an elderly person in a personal care home can be modified by the amount of preparedness education and training of the personal care home staff and residents.

3.0 PERSONAL CARE HOMES PREPAREDNESS EDUCATION AND TRAINING

During 2003-2004, Ohio Valley Appalachia Regional Geriatric Education Center (OVAR/GEC) faculty and staff conducted nine focus groups throughout the region with 82 older persons and health care providers from 20 counties across Kentucky, Ohio, and Tennessee (Johnson 2004). The outcomes were pertinent to preparedness education and training for elderly residents and professionals. One of the outcomes was that they were unaware of community preparedness plans specifically addressing the needs of older persons, and if such plans were in place, neither older people nor agency personnel who worked with older people were involved in the development. Elders felt they would feel more secure if they had more information and requested guidelines for preparing for emergencies, for managing themselves, for helping others during emergencies and recovering following emergencies. Elders and professionals agreed there is a need for better communication among community planners, bioterrorism and emergency preparedness leaders, and older persons and the aging services network providers (Johnson 2004). The previous information provides answers to whether personal care home residents and personnel receive enough preparedness education and training. They are not comfortable with their knowledge and they are interested in learning more.

Personal home facility nurses must also be educated and trained in disaster preparedness. Elderly adults are at a higher risk to have increased needs for care after disasters. Nurses need to be prepared to render increased levels of care for elderly patients after a disaster; this can be

accomplished by making them aware of the changes that may occur with their patients after a disaster. Studies indicate that older adults are at greater risk during and after disasters, and attention needs to be paid to supporting them during these times. Steinberg et al found an increase in serious ventricular arrhythmias among older patients in New York during the 3 months following September 11, 2001 attack, compared to the prior 3 months (Lach et al 2005). In another disaster situation, the Centers for Disease Control and Prevention (CDC) (2004) conducted an assessment 2 weeks after Hurricane Charley in August 2004. They found that one-third of respondents who had an older individual in the home reported problems with medical conditions and difficulty getting routine care (Lach et al 2005). The after affects of a disaster may depend on the type of disaster and the condition of the elderly victim. Elderly victims may experience changes in pharmacokinetics or the process at which a drug is absorbed, metabolized or eliminated from the body. This can cause side effects to regular medications if a biological or chemical agent has been introduced. Dehydration, electrolyte imbalance and the efficiency of oxygen are also large risks for elderly victims after an agent has been initiated in the victim. Nurses are likely to be called on to participate in a disaster situation to some degree. As patient advocates, nurses have an obligation to assure that older adults' needs are addressed during a disaster (Lach et al 2005).

3.1 DEPARTMENT OF PUBLIC WELFARE TITLE 55 CHAPTER 2600

The Pennsylvania Department of Public Welfare Title 55 Chapter 2600 regulates the health, safety, and well-being of personal care home residents. Personal care homes are designed to provide safe, humane, comfortable, and supportive residential settings for adults who do not

require the service of licensed long-term care facility, but who do require assistance or supervision with activities of daily living, instrumental activities of daily living, or both (PA CODE Title 55). The PA CODE Title 55 Chapter 2600 that the survey focuses on is the PA Code Title 55 Chapter 2600.107, PA Code Title 55 Chapter 2600.123, and PA Code Title 55 Chapter 2600.124.

Chapter 2600.107 is titled Emergency Preparedness and is the regulation of the physical site. This regulation pertains to the emergency preparedness plans for the home. The subchapter manages that the administrator has a copy and is familiar with the emergency preparedness plan of the municipality or has an emergency preparedness plan of their own. It standardizes that the plan include the contact information of each resident's designated person, the home's plan to give emergency medical information that ensures confidentiality, the contact information for local resources, local and state emergency management agencies in case of emergency. Along with the resources contact information is the plan for transportation of all residents during an emergency and the duties and responsibilities of staff during an emergency. The duties and responsibilities of the staff should be based on the needs of the residents and alternative plans in cases of a utility outage. The subchapter also regulates that the home have a 3-day of water and non-perishable food for the residents. The last regulation of that subchapter is that the emergency procedures of the home be reviewed, updated, and submitted annually to the local emergency management agency.

4.0 PERSONAL CARE HOME FACILITY PREPAREDNESS EDUCATION AND TRAINING SURVEY

The Personal Care Home Facility Preparedness Education and Training Survey was completed during 2006 and the results have provided a better understanding of whether PCHs are compliant with the PA Title 55 Chapter 2600 and prepared for an emergency. The survey is located in Appendix B.

4.1 SURVEY

The purpose of the research study was to describe the level of preparedness in personal care homes in Allegheny County and to obtain a better understanding of whether disaster preparedness education and training is sufficient for the residents and employees of personal care homes. Do the personal care homes supply enough information and instruction to decrease the vulnerability of personal care home residents and employees before, during and after a disaster? Do the personal care homes provide the residents with the necessary means to survive during a disaster and for at least three days after the disaster? Will the networks that are established provide necessary assistance during and after a disaster? The survey asked questions that pertained to the emergency preparedness plan and used criteria to compare the perceived preparedness and the actual preparedness of the facility. It was then determined, based on these

criteria, whether the employees and residents of the home are prepared to respond during an emergency. Hurricane Katrina showed the outcome of not being prepared for disasters. Hurricane Katrina affected many states and showed that the response and recovery for a disaster depends on factors. These factors range from public preparedness to emergency response. One main factor is the emergency preparedness education and training of the public, private, military and government.

Emergency preparedness education and training, in particular special populations, have been getting more attention since September 11, 2001, the Anthrax attacks in 2001 and Hurricane Katrina in August 2005. The conducting of research about emergency preparedness in personal care homes is important because of the issues that arose in hospitals, nursing homes and other facilities that deal with special populations. By preparing personal care homes, there will be a decreased need of first responders to evacuate and shelter locations for special populations.

4.1.1 Methodology

There are 197 personal care homes in Allegheny County that serve approximately 9,318 residents according to the Pennsylvania Department of Public Welfare (DPW), Office of Social Programs (OSP). The 50 personal care homes with the highest number of residents were chosen for inclusion in the sample. Selected PCHs received a cover letter and the survey. The personal care homes that were chosen serve approximately 5,500 of the residents, which is about 59 percent of the total residents who reside in personal care homes in Allegheny County. The subjects are the administrators of the 50 personal care homes that had the highest number of residents. The administrator of the facility was the only employee of each home asked to

complete the survey. No residents were asked to participate. The cover letter explained the research that was being conducted, the risks and benefits of the survey and when the survey was to take place. The cover letter (APPENDIX A) was used to inform the administrators of the personal care homes of the survey. The telephone script included their rights as a research subject. It was stated in the telephone script that the participant had a right to withdraw at any time.

The survey was completed by one person, the information was not to be shared with any other people. This was an entirely anonymous questionnaire, and the responses are not identifiable in any way. The data following is in aggregate form. All responses of the questionnaire were and will continue to be confidential and kept under lock and key. Participation was voluntary, and the administrators were informed that they may withdraw from the project at any time. The potential subjects were phoned at the number listed on the website. The interviewer requested the administrator of the personal care home and asked if the administrator had time to complete a 15 minute survey about emergency preparedness. If the administrator agreed, the survey was conducted. If it was not convenient, the administrator was asked when it more convenient. The cover letter was to precede the telephone survey by a week. It explained the research being conducted, the risks and benefits of the survey and when the survey was to take place. The interview was scripted. It was read at the beginning of the telephone call to inform the administrator of the request to participate in the survey. The survey questions were designed to determine the PCH's level of disaster preparedness education and training and did not relate to regulations of the code.

4.1.2 Results

The 50 cover letters were sent September 15, 2006 and the surveys began on September 21, 2006. On September 21st and September 22nd there were 7 surveys completed. Between the dates of September 21st and October 5th, 2006 thirteen more surveys were completed. The total number of surveys completed from September 21st through October 5th, 2006 was 20 and three administrators replied that they had no interest in completing the survey.

The principal investigator made a decision to mail the 30 remaining surveys to the personal care homes that had not returned a call after from the any of the two or three messages were left for the administrators. On October 11, 2006 the 30 surveys were mailed to administrators of the personal care homes including the three who had informed the interviewer that there was no interesting completing a telephone survey. Thirty surveys were sent out with a new cover letter (APPENDIX C) between October 16, 2006 and November 2, 2006 with only seven being completed and returned. The total number of surveys completed for this research study was 27 out of the 50 personal care homes chosen for a 54% return rate.

4.2 PERSONAL CARE HOME CHARACTERISTICS

The PCH characteristics varied. The first section of the survey contains questions regarding the facility and administrator of the facility. The Personal Care Home Facility Preparedness Education and Training Surveys that were completed and/or returned are not geographically

isolated to any specific location in Allegheny County but represent Allegheny County through an even geographic distribution.

The number floors that each Personal Care Home had varied with one floor being the least 10 floors being the most and some included more than one building with multiple floors. The average number of floors is 3.3, which provides a better understanding the need to exercise the fire and emergency evacuation plans to ensure quick and calm evacuations from the building. The length of time that the current administrator has held the position varies from 2 months to over 35 years with an average of 6 years; providing an equal representation of experience. The questions pertaining to the number of staff in the building varies according to the number of residents in the facility and by each shift. In all cases the daylight shift is the shift with the highest number of employees. The evening shift was usually lighter because the administrative personnel worked an average worked day. The lightest shift was as expected the night shift. The night shift was always the lowest of the shifts due to the fact that the food service staff and administration staff is not a 24 hour shift. The number of employees on the night shift allows the statement to be made that the night shift is when the personal care homes are most vulnerable to emergencies and other events that would require a large amount of employees to assist the patients. Not only is the shift the lightest but the residents are asleep. It is difficult to arouse them in the event of an incident, they are less likely to be oriented and therefore able to find their way out.

4.2.1 Personal care home emergency preparedness

The second section of the survey asked questions pertaining to emergency preparedness. The personal care homes were asked if they had worked with any public safety agency that would

respond during and emergency to their facility. Twenty-five out of 27 (92.6%) of the facilities responded yes that they had worked with the local fire department, police, emergency management and the American Red Cross. The next sets of questions provided information about whether the personal care homes had received training from the Federal Emergency Management Agency (FEMA) and the Emergency Management Institute (EMI). One questions asked if any of the employees had taken the Incident Command System (ICS) training. The responses were mainly no with 20 out of the 27 (74.1%). The second of the questions concerned their having taken the National Incident Management System (NIMS) training course. The results were close with 23 out of 27 (85.1%) responding that none of their employees had taken the course. Although when asked if there was a Facility Emergency Response Team (FERT) only 3 said no, 2 were unsure and 22 answered yes. The number of members depended on the size of the facility; one of the administrators included all of their employees in the FERT because of the training that is received. The training mainly included fire prevention, evacuation drills and CPR/First Aid.

The number of days supply of non-perishable food and drinking water was mainly the required 3 days for residents and employees but ranged from 3 to 14 days. However some answers did not include the employees when stocking food and water and were unsure if there would be enough for both employees and residents. . The length of time that the administrators reported being capable of sustaining normal activity depended on the electrical generator for the facility. Many said 3-7 days and some of the generators ran on natural gas so as long as the infrastructure was in place and there was uninterrupted supply the generators would be capable of providing power to the facilities. Most of the personal care homes had alternative plans if Emergency Medical Services (EMS) were not available during an emergency. The amount of

resident's medications that were stocked in the facility depended on the time of the current cycle. The agencies reported that the prescriptions were filled with a 30 days supply.

4.2.2 Personal care home finance and billing

The Finance and Billings section of the survey provided results pertained to maintaining the facility, which includes billing activities. Over 50 percent of the agencies reported that during a major disaster they would be able to maintain daily billing activities and had financial reserve to maintain the facility. However, 66.6% reported that they did not have financial reserve to pay the employees in a major disaster. How are you defining "maintaining the facility"? Not having the money to compensate employees may discourage the employees from assisting during a disaster.

4.2.3 Personal care home emergency plan

The Emergency Preparedness Plan section was based on the PA Code Title 55 Chapter 2600 requirements for licensing. The majority of personal care homes had reviewed (96%) and updated the plan (78%) and had been involved in an emergency drill or exercise (89%) within the past year which is mandatory for licensing. The agencies also believed that their employees were familiar with the facility plan.

4.3 EMPLOYEE AND RESIDENT EMERGENCY PREPAREDNESS EDUCATION AND TRAINING

Emergency Preparedness must be preceded by disaster education that bestows a better understanding for the employees and the residents of the facility. The education is a piece making sure the employees and residents are prepared, training is a part that must take place along with education. Training is an essential part to emergency preparedness so that the employees and residents to put into action the information that was learned. It is important that both the employees and residents have education and training to assist the aid in the response efforts that will be needed during an emergency.

4.3.1 Employee education

The Education section of the survey started with inquiring about the number of courses that were taken by the administrator in preparedness and management. Eighteen of the 27 administrators (67%) reported have taken 1-3 courses and 3 reported not having taken any in the past year. The courses consisted mainly of fire prevention, evacuation drills and CPR/First Aid. The other courses taken include emergency preparedness, emergency planning and crisis management. The course taken by the employees were the same as above although the number of employees who had taken the courses is unknown. The administrators reported over 50 percent of the employees had received information about family preparedness.

4.3.2 Employee and resident training

The Training section of the survey was based on the PA Code Title 55 Chapter 2600 requirements for licensing. All of the administrators related that the employees have received training on evacuation procedures and that both employees and residents had been involved a fire and/or evacuation drill in the past year. When the administrators were asked of the facility employees had been trained to execute in-home sheltering many were unaware of the term. After receiving a definition, 50% of the administrators stated that the employees had not received training or that they were unsure if they had received training. The administrators were asked if the facility employees had received training in disaster psychology, 74% said no.

4.3.3 Employee and resident preparedness

The next section of the survey was based on a 5-point Likert Scale with answers ranging from strongly disagree to strongly agree. Response options are listed as in Figure 1.

Strongly Disagree Disagree Neither Agree Nor Disagree Agree Strongly Agree

Figure 1. The 5-Point Likert Scale used in response to the feeling and belief questions

The first question in this series was if the administrators believed that the facility employees are prepared for a disaster. Twenty of the administrator agreed or strongly agreed that the employees are prepared because of the training and education that they received or because they had recently had an emergency. A small number (3) of the administrators disagreed with the statement and 4 stated that they neither agreed nor disagreed.

The administrators view on facility employee preparedness for a disaster pie chart is shown in Figure 2.

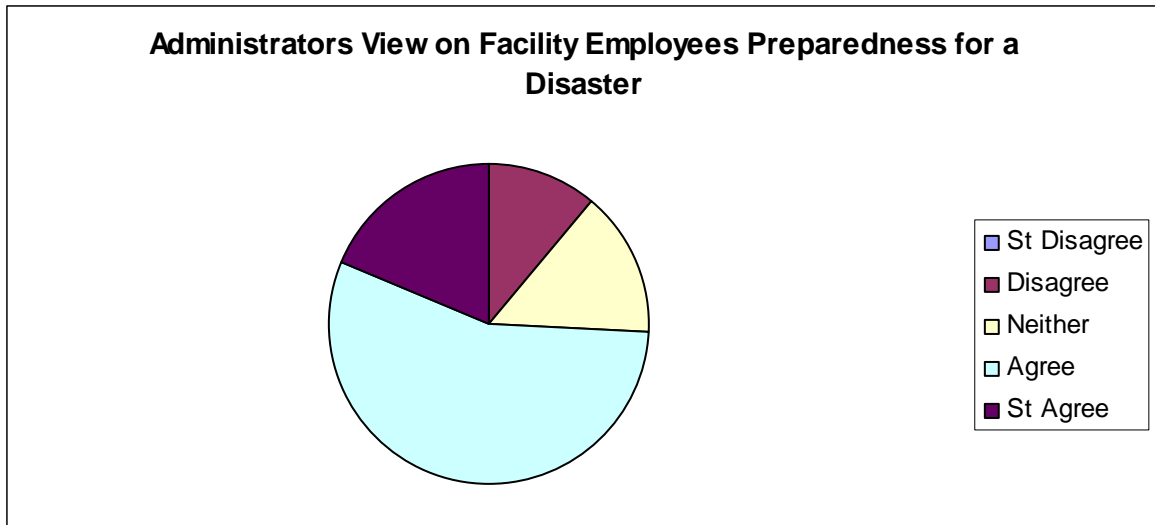


Figure 2. Administrators view on facility employee preparedness for a disaster

The next question was if the administrator believed that the residents of the facility were prepared for a disaster, 14 agreed or strongly agreed that the residents were prepared. The reasons of being prepared were because of training and education but some stated that due to memory problems some of the residents will never be prepared. The last question about preparedness was if they believe that the alternative plans that are in place if external agencies or networks are unavailable are sufficient. Many of the administrators (16) agree or strongly agreed that the plans are sufficient, 8 neither agreed nor disagreed and 3 disagreed.

The administrators view on facility residents preparedness for a disaster pie chart is shown in Figure 3.

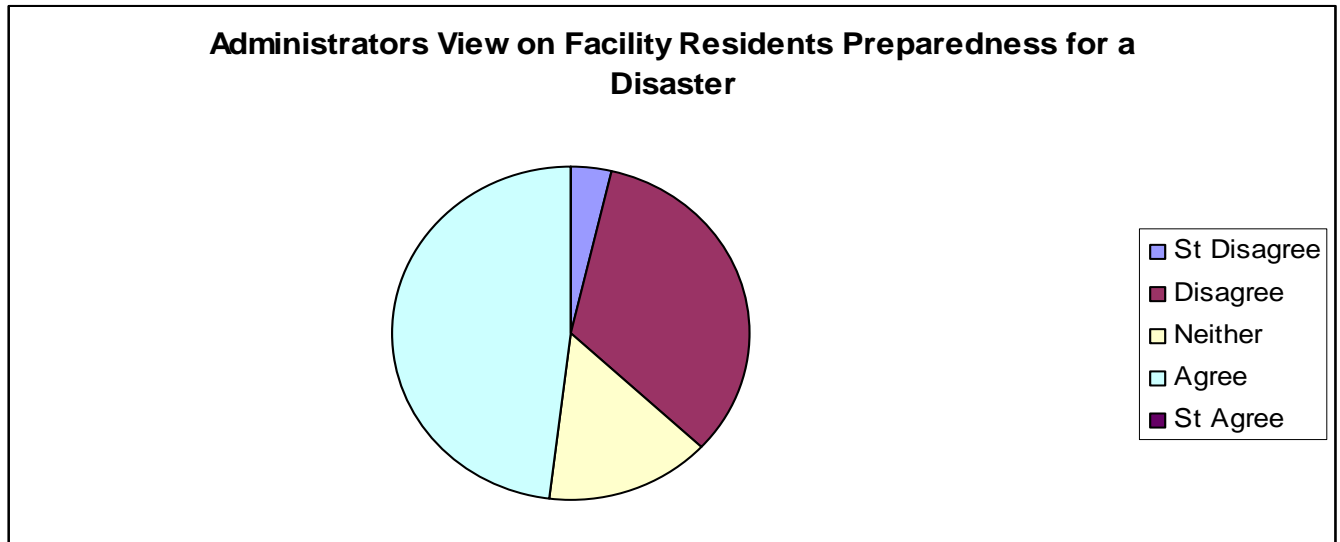


Figure 3. Administrators view on facility residents preparedness for a disaster

5.0 DEMOGRAPHIC INFORMATION

The last section of the survey was Demographic Information. The number of residents in the facilities that completed the survey varied from 23 to 188. The totals are based on the number of residents reported not the number of licensed beds. The total number of residents that are in the PCH's in Allegheny County is about 9300. The PCHs that completed surveys represented just under 2500 residents which is 26.9% of the total residents in PCH in Allegheny County.

5.1 RESIDENTS WITH DISABILITIES

The number of residents who have hearing impairments was reported as over 824 out of the 2500 residents from the PCHs surveyed or 33%. The number of residents who were reported to have vision impairments was approximately 29.8% or 746 out of the 2500 residents from the PCHs surveyed. The number of residents reported that have some type of mobility impairment in the personal care homes surveyed was 575 out of the 2500 residents from the PCHs surveyed. One of the personal care homes did not report the number of residents that had hearing impairments, vision impairments or the number who had mobility needs. One of the personal care homes reported unsure for the number of hearing impaired. The graph in Figure 4 shows the information on the total number of resident, the number with hearing impairments, vision impairments and mobility needs, including not reporting information or an unsure answer.

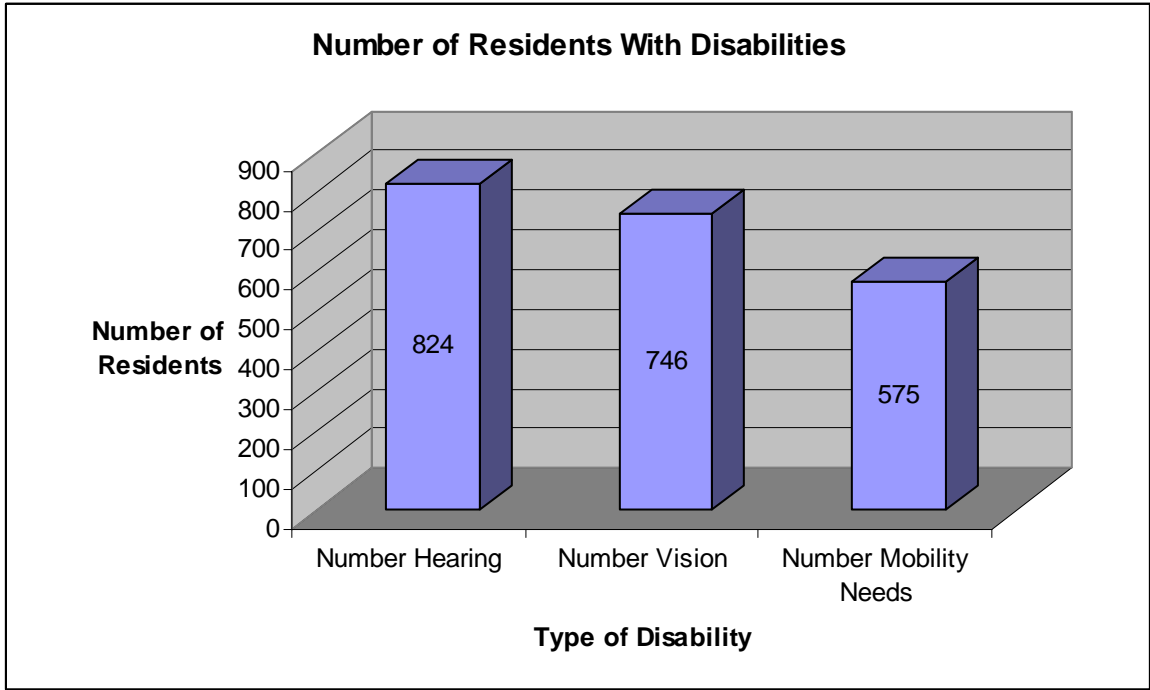


Figure 4. Number of residents with disabilities

The concern that arises is if the larger personal care homes have a higher concentration of residents with disabilities. The correlation between the percentage of residents with hearing impairments, vision impairments and mobility needs was analyzed. The percentage of residents who have a hearing impairment was calculated by taking the number of residents in a facility with a hearing impairment dividing that by the total number of residents in the facility. The percentage was then correlated with the total number of residents. The analysis showed a statistical significance of the percentage of hearing impaired residents was correlated with the total number of residents in the facility. The importance of this analysis is that the larger facilities have a higher portion of hearing impaired residents as compared to the smaller PCHs. This shows the need to focus on the large facilities to improve response to a disaster because of the higher number of residents with hearing impairments.

The percentage of residents with vision impairments and mobility needs was also analyzed and was not found to be statistically significant. However, there were a small number of surveys completed and if more of the larger facilities complete the surveys it may be found that these facilities have a higher population of residents with vision impairments and mobility needs. The correlation of total number of residents and the percentage that has hearing impairments is shown in Table 1.

Table 1. Correlation of total number of residents and the percentage that has hearing impairments

		Number of residents in facility	Number of resident with hearing impairments/total number of residents in facility
Number of residents in facility	Pearson Correlation	1	.587(**)
	Sig. (2-tailed)		.001
	N	27	27
Number of resident with hearing impairments/total number of residents in facility	Pearson Correlation	.587(**)	1
	Sig. (2-tailed)	.001	
	N	27	27

** Correlation is significant at the 0.01 level (2-tailed).

The results of the survey offer a better understanding of whether the Personal Care Homes in Allegheny County are prepared for a disaster. The discussion will present some of the issues that exist and make recommendations.

5.2 LEVEL OF PREPAREDNESS OF PERSONAL CARE HOMES

The level of preparedness of PCHs was separated by two categories. The reason for the separation was based on the factors that were required by PA Title 55 and the factors that are not listed as requirements in PA Title 55 but demonstrate importance considering the lessons that have been learned from Katrina and other recent disasters.

5.2.1 Level of preparedness based on required preparedness factors

There were a total of eight factors that were analyzed as required for preparedness. The factors based on the questions in the survey and are as follows:

1. Does your facility have alternative plans in case EMS providers or ambulances are not available during a disaster?
2. If there is a power outage does your facility have a back up generator to sustain power to maintain a normal environment for the residents?
3. Has the facility's emergency preparedness plan has been reviewed within the past year?
4. Has the facility's emergency preparedness plan has been updated within the past year?
5. Are your facility employees familiar with the emergency preparedness plan?
6. Has your facility participated in any emergency drills, tabletops, or exercises in the past year?
7. Have the facility employees received training on evacuation procedures?
8. Have the facility employees been involved in at least one fire and/or evacuation drill within the past year?

9. Have the residents of the facility been involved in at least one fire and/or evacuation drill within the past year?

The possible range of sums was 0-18. An answer of yes was 2, unsure was 1, and no was 0. The sum of all of the factors was calculated and ranged from 12-18. This allowed a frequency to be calculated according to the sum for each facility. The mean of these factors was 16.59 and the Standard Deviation was 1.716. The result of the level of personal care home facility preparedness for required factors was 13 out of the 27 PCHs surveyed. The outcomes of this analysis shows that only 48% of the PCHs surveyed were compliant with PA Title 55. The total score for required preparedness factors is shown in Figure 5.

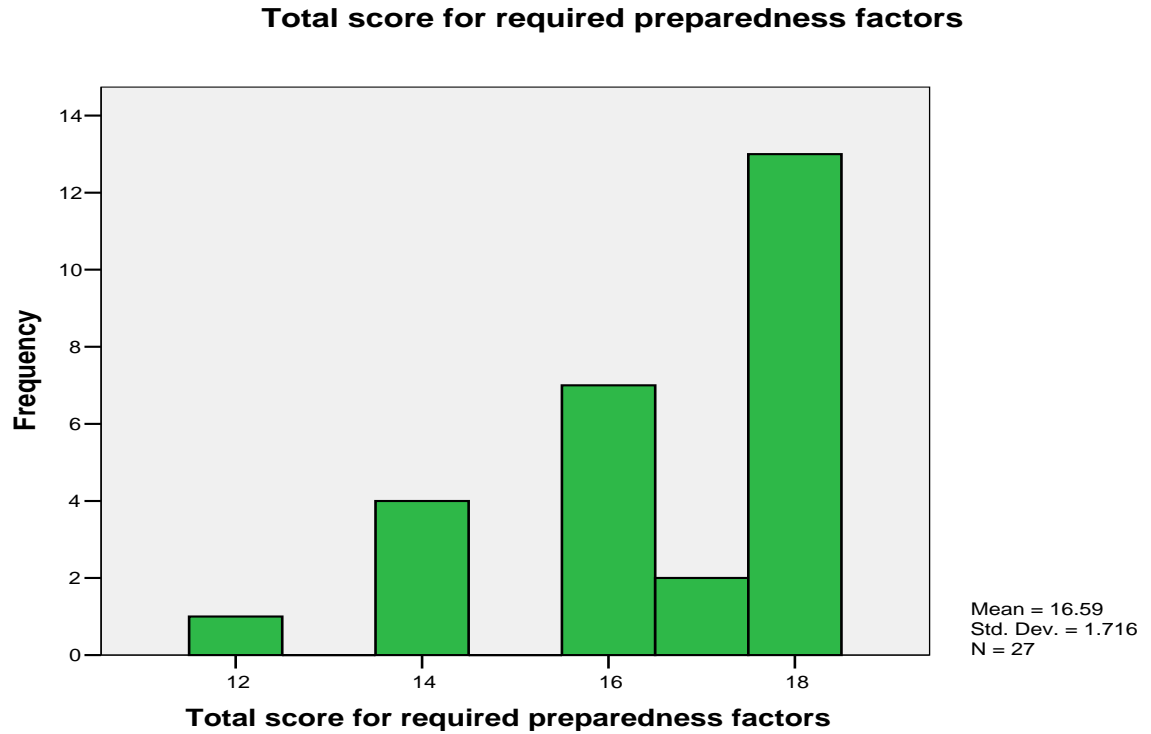


Figure 5. Total score for required preparedness factors

5.2.2 Level of preparedness based on non-required preparedness factors

There were a total of 12 factors that were analyzed for non-required factors. They factors are based on information from reviewing lessons learned from recent disasters and general preparedness guidelines. The factors based of the questions in the survey and are as follows:

1. Has your facility worked to prepare for emergencies with any of the public safety agencies that would respond to your facility?

2. Have any of the employees of your agency taken the online training course for the Incident Command System (ICS) offered by the Federal Emergency Management Agency (FEMA) and the Emergency Management Institute (EMI)?
3. Have any of the employees of your agency taken the online training course for the National Incident Management System (NIMS) offered by the Federal Emergency Management Agency (FEMA) and the Emergency Management Institute (EMI)?
4. Is there an Emergency Response Team for your facility?
5. If there was a power outage for an unknown amount of time are you able to complete daily billing activities?
6. If there was a major disaster that closed down the banks, do you have a financial reserve such as cash on hand to maintain your facility?
7. If there was a major disaster that closed down the banks, do you have a financial reserve such as enough money to pay your employees?
8. Have the facility employees been offered education courses in emergency management.
9. Have the facility employees received information regarding personal and/or family preparedness within the past year?
10. Have the facility employees been trained to execute in-home sheltering.
11. The facility employees have been trained in disaster psychology?
12. Are there additional measures taken to assure the safety of the special needs population?

The possible sum of non-required factors was 0-24. An answer of yes was 2, unsure was 1, and no was 0. The sum of all of the factors was calculated and ranged from 6-22. This allowed a frequency to be calculated according to the sum for each facility. The mean of the factors was 13.12 and the Standard Deviation was 3.713. In the range from 10-15 is where 58% (15/26) falls, taking into consideration that there was only 26 PCHs that reported. The results are based on the fact that the facilities are not required to have these factors in place but it shows the need to increase education for employees and for residents in the facilities. The total score for non-required preparedness factors is shown in Figure 6.

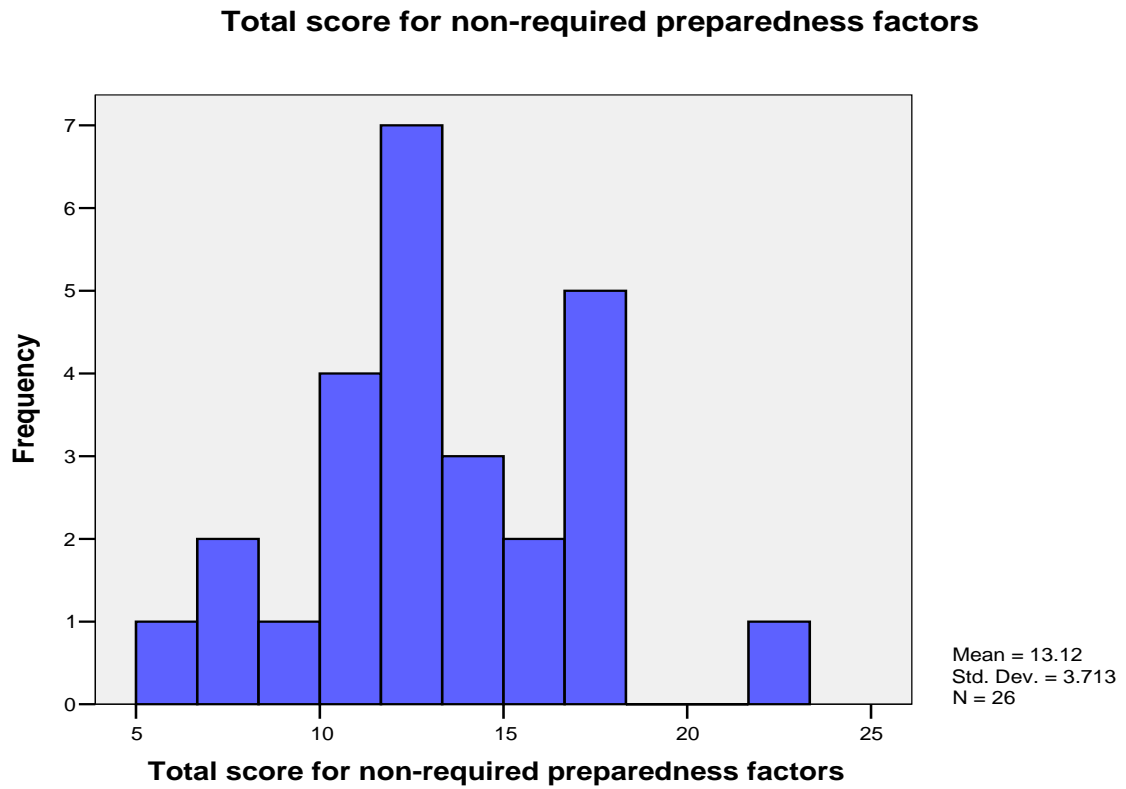


Figure 6. Total score for non-required preparedness factors

5.2.3 Level of preparedness based on required and non-required preparedness factors

The final analysis of the preparedness factors combines both required and non-required preparedness factors. The sums of the two were compiled to calculate an overall level of preparedness of the PCHs that were surveyed. The range of the combined factors was 22-38, the 22 meaning that this PCH falls in the lower quadrant of both required and non-required preparedness factors. The mean of the combined factors was 29.73 and the Standard Deviation

was 4.468. As stated earlier there was a facility that did not report and therefore the N=26. The mean was 29.73, splitting the level of preparedness in half at the 50 percentile of the combined factors. There is however a peak at the 34 score or 84.6%. There are 2 PCHs that fall into the 95% and above level of preparedness. The total score for required and non-required preparedness factors is shown in Figure 7.

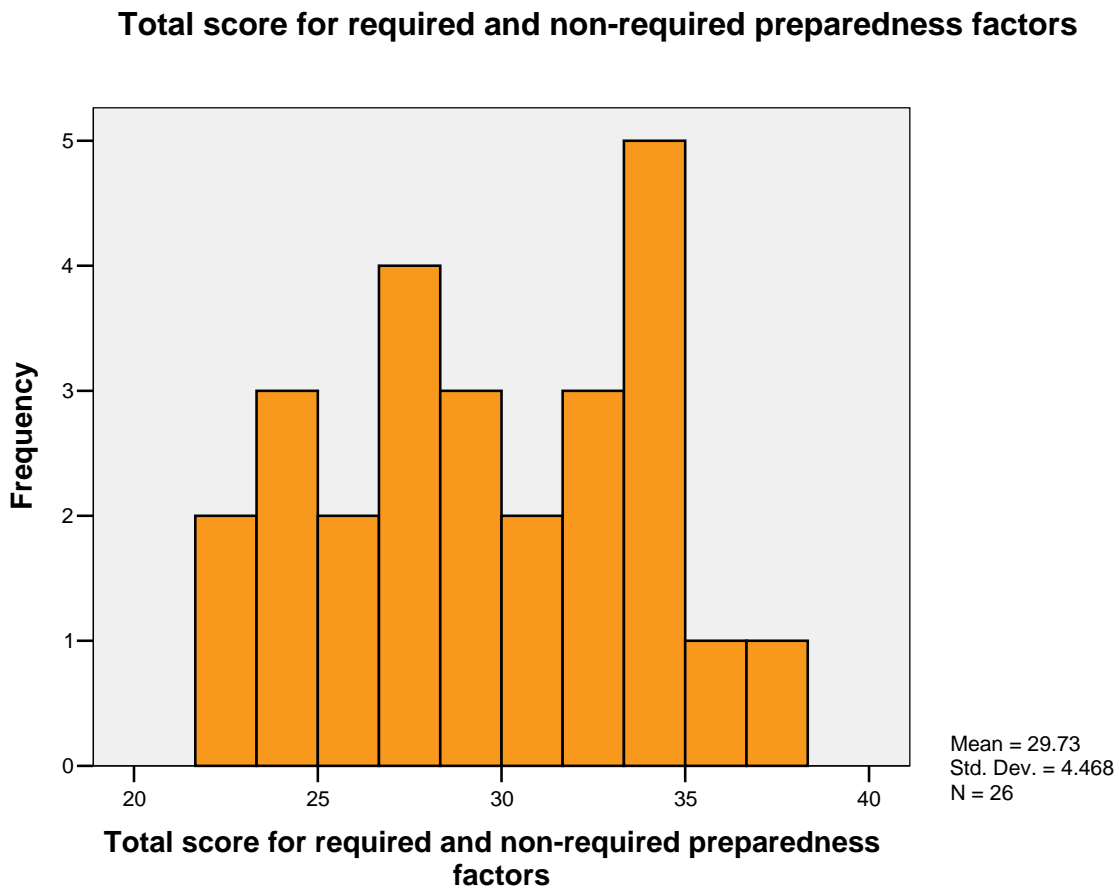


Figure 7. Total score for required and non-required preparedness factors

5.3 DISCUSSION

The results of the survey show that the elderly residents of a personal care homes are vulnerable during disasters because for a variety of reasons. The amount of times that the residents of a personal care home receive education materials may not be enough to place the information in long term memory. A main piece to effective disaster response includes the repetition that is required for a human to recall and use the information that is given. The PA Code Title 55 Chapter 2600 requires that the PCHs review and update the plan along with completing a drill or exercise. So if the residents do not receive the information more regularly or more than once a year it is unlikely that they will know what to do when a disaster occurs. The elderly population has a lack of sensory skills and is vulnerable daily. During an emergency or disaster the vulnerability increases based on the fact that a disaster disrupts daily activities, including the basic needs of the residents of the personal care home. The interruption of water, electricity and even the number of staff that is assigned to assist the residents daily can present problems both physically and mentally. The required assistance of each resident can differ by health need requirement, assistance with Activities of Daily Living (ADLs) to assistance with mobility which may be a result of a loss in sensory functions. Residents may also require daily medications that during a disaster may not be accessible. The results of the surveys presented a concern of the amount of medications that the personal care homes stock. The amount of medications stocked depends on the time of the disaster in relation to the shipping cycle. Another problem with

assistance from the employee of the personal care home is the resident to staff ratio. During the night shift the ratio of the personal care homes that were surveyed fluctuates from a ratio of 1:5 to a 1:35 ratio. During an emergency the employees of the personal care home with the ratio of 1:35 will not be capable of assuring the safety of the residents. The ratio of staff to residents will be important due to limited amount of employees and the number of residents who will need assistance. The employees will not be able to effectively manage an emergency involving an evacuation. The PA Code Title 55 Chapter 2600 does not address the employee to resident ratio, however it does address the need to review and update the plan. The administrators believed that the employees of the facility were prepared for an emergency, but very few reported that the employees were trained in disaster psychology to prepare the employee on how to conduct themselves around the residents and manage the emotions of the residents during and after a disaster. A main piece of Maslow's Hierarchy of Needs is the feeling of belonging therefore making is important to offer uninterrupted networks that the residents are a part of and that include can include internal and external networks.

A main concern that is evident after reviewing the results of the surveys is a lack of training in Incident Command System and National Incident Management System. The administrators conveyed that very few of the employees had taken these courses which present information regarding response to emergencies. The amount of emergency preparedness and response courses taken by the administrator and the employees is low compared to other agency personnel who will respond during an emergency. Although it is important that all employees and residents are involved in an evacuation drill there are other possible outcomes of a disaster that will not require evacuation of the personal care home. The lack of education and training on executing in-home sheltering presents a concern with the training requirements for the

Department of Public Welfare licensing. Education and training are important when preparing for a disaster.

Emergency preparedness plans are also a major piece of planning for a disaster. The administrators reported that the emergency preparedness plans of the facility were reviewed and updated on an annual basis and that the employees were familiar with the plan. A concern that arose after the analysis of the surveys was that the facility was stocking food and water for the residents but some had overlooked the food and water that would be needed for the employees of the facility. Many of the administrators were not capable of paying their employees if a major disaster occurred and the banks were not open, therefore many employees may not go to work because they will not receive a paycheck. The majority of the administrators believed that both the employees and the residents are prepared for a disaster because of the education and training that they have received along with the experiences of a small number of facilities that have had incidents that have tested the employees and residents of the facility. The personal care homes have also taken additional measures to assure the safety of the special needs population by placing these residents on the first floor or assigning staff to those individuals. Most of the administrators did not believe that they had unmet needs that would be detrimental to their facility during a disaster. The administrators that believed there were unmet needs gave reasons such as lack of transportation plans and a lack of medical supplies. One administrator reported the concerns of employees not reporting to work and another reported the concern for the mental status of the residents.

5.4 CONCLUSIONS

In conclusion, the residents of personal care homes in Allegheny County are more vulnerable during a disaster due to the lack of education and training of the staff and volunteers. However, education and training is only a small reason for the increased vulnerability of these residents. The age of the residents along with physical disabilities increases the vulnerability of the residents but the ratio of employees to residents provides another factor that contributes to their vulnerability.

The increase of education and training should be assessed by the Department of Public Welfare (DPW). The DPW should also consider the need to require ICS and NIMS for all employees in the personal care homes. The 3 day supply of non-perishable food and water is not sufficient for a major disaster and should be evaluated. The additional measures that should be taken for the special needs population should be improved to assure the safety of the residents and staff. Overall the DPW should review the PA Code Title 55 Chapter 2600 to better try and improve the health and safety of the personal care home residents.

A recommendation for the personal care homes is to increase education and training of residents and employees including all administrative, janitorial and food service staff to decrease the vulnerability of the residents. It is also suggested that the education and training be reviewed to encompass more information on response to disasters. It is also recommended that the personal care homes evaluate the procedures for ordering and stocking prescriptions that residents depend upon. It is suggested that the personal care homes also review the amount of non-perishable food and water that is kept on hand for both residents and employees.

Recommendations for future research would include a benefit/cost analysis of increasing the number of employees on night shift. Increase the number of administrators to complete the

survey and increasing the sample size. Further investigation of information on the types of non-perishable food and water that is stored for each resident and employee and applicable quantities. Additional information and investigation of personal care home emergency plans, specifically concerning additional staff and outside assistance from doctors and other health care personnel in case the disaster disrupted a large number of the current employees.

APPENDIX A

COVER LETTER FOR PERSONAL CARE HOME FACILITY EMERGENCY PREPAREDNESS EDUCATION AND TRAINING SURVEY

September 13, 2006

Administrator

Dear Administrator of :

This letter is in regards to a telephone survey that you will be asked to participate in within the next week. My name is Alexa Hussar. I am a graduate student at the University of Pittsburgh. I am pursuing my Master's in Public Health from the Graduate School of Public Health in Behavioral and Community Health Sciences. I have also completed a Certificate in Emergency Response and Disaster Preparedness. I am conducting a research study in collaboration with Gail Cairns, the Co-Director for Academic Programs at the University of Pittsburgh Center for Public Health Practice and Assistant Professor of Public Health Preparedness at the University of Pittsburgh Graduate School of Public Health.

The purpose of this research study is to describe the issues with the level of preparedness in personal care homes in Allegheny County. For this reason I will be surveying the directors of the 50 personal care homes with the highest number of residents as my sample size to receive the survey. The survey of the personal care homes in Allegheny County will take approximately 15 minutes to complete. This letter is to inform you that I will be making contact with you in the next week asking you to complete the survey of the research study. If you are willing to participate, my questionnaire will ask about background information about your facility, your emergency preparedness plan as well as your feelings about emergency preparedness. There are no foreseeable risks with this project, because none of the information that you provide me with will be linked back to you or your facility.

The benefit of participating in the survey is receiving a summary report of the aggregate information which may give you a better understanding of the level of preparedness in your personal care home. The research study will raise issues about the current level of emergency preparedness and education and the additional education and training that may be needed. The results will be addressed to the directors and mailed to the personal care homes. All responses of the questionnaire are confidential

and will be kept under lock and key. Your participation is voluntary, and you may withdraw from this project at any time. I would appreciate your time and cooperation in completing this project.

Thank you,

Alexa J. Hussar

Thank you,

Gail S. Cairns

APPENDIX B

**PERSONAL CARE HOME FACILITY PREPAREDNESS EDUCATION AND
TRAINING SURVEY**

Please answer the following questions accordingly.

Date of Interview: _____ Time of the Interview: _____

Facility/Director

What municipality is your facility located in? _____

How many floors or stories does your facility have? _____

How long have you been in your current position? _____

What is the range of employees that is in your facility at one time (ex: night shift =10, evening shift=15, daylight shift=20)?

Daylight shift= _____

Evening shift= _____

Night shift= _____

Emergency Preparedness

Has your facility worked to prepare for emergencies with any of the public safety agencies that would respond to your facility? YES NO UNSURE

If yes, which agencies and how often:

Have any of the employees of your agency taken the online training course for the Incident Command System (ICS) offered by the Federal Emergency Management Agency (FEMA) and the Emergency Management Institute (EMI)?

YES NO UNSURE

If yes, how many? _____

Have any of the employees of your agency taken the online training course for the National Incident Management System (NIMS) offered by the Federal Emergency Management Agency (FEMA) and the Emergency Management Institute (EMI)?

YES NO UNSURE

If yes, how many? _____

Is there an Emergency Response Team for your facility?

YES NO UNSURE

If yes, how many members on are it? _____ Members

If yes, what positions do they have and what training courses have they taken to prepare to respond to an emergency?

How many days supply of non-perishable food and drinking water do you have for your residents? _____ Days UNSURE

How many days supply of non-perishable food and drinking water do you have for your employees? _____ Days UNSURE

How many hours/days do you believe that you facility will be capable of sustaining normal activity after a disaster that disrupts communication and transportation in your area? _____ Hours/Days UNSURE

Does your facility have alternative plans in case EMS providers or ambulances are not available during a disaster? YES NO UNSURE

If there is a power outage does your facility have a back up generator to sustain power to maintain a normal environment for the residents?

YES NO UNSURE

If yes, for how long will the generator provide power to your facility? _____ Hours/Days

On average, how many days of each resident's prescriptions and/or medications do you stock? _____ Days UNSURE

Finance/Billing

If there was a power outage for an unknown amount of time are you able to complete daily billing activities? YES NO UNSURE

If there was a major disaster that closed down the banks, do you have a financial reserve such as cash on hand to maintain your facility? YES NO UNSURE

If there was a major disaster that closed down the banks, do you have a financial reserve such as enough money to pay your employees? YES NO UNSURE

Emergency Preparedness Plan

Has the facility's emergency preparedness plan has been reviewed within the past year? YES NO UNSURE

Has the facility's emergency preparedness plan has been updated within the past year? YES NO UNSURE

Are your facility employees familiar with the emergency preparedness plan? YES NO UNSURE

Has your facility participated in any emergency drills, tabletops, or exercises in the past year? YES NO UNSURE

Education

How many emergency management courses have you taken? 0 1-3 4-6 7-9 10 or more

If yes, what courses have you taken?

Have the facility employees been offered education courses in emergency management. YES NO UNSURE

If yes, what courses have been offered?

If yes, how many of the facility employees have taken the education courses in emergency management.

0 1-3 4-6 7-9 10 or more

Have the facility employees received information regarding personal and/or family preparedness within the past year?

YES NO UNSURE

Training

Have the facility employees received training on evacuation procedures?

YES NO UNSURE

Have the facility employees been involved in at least one fire and/or evacuation drill within the past year?

YES NO UNSURE

Have the residents of the facility been involved in at least one fire and/or evacuation drill within the past year?

YES NO UNSURE

Have the facility employees been trained to execute in-home sheltering.

YES NO UNSURE

The facility employees have been trained in disaster psychology?

YES NO UNSURE

Preparedness

Please rate your answers using a scale of 1-5, 1 - Strongly Disagree; 2 - Disagree; 3 - Neither Agree Nor Disagree; 4 - Agree; and 5 - Strongly Agree.

I believe that the facility employees are prepared for a disaster.

Strongly Disagree Disagree Neither Agree Nor Disagree Agree Strongly Agree

If you agree or strongly agree, why do you think that the employees are prepared?

APPENDIX C

SECOND COVER LETTER FOR PERSONAL CARE HOME FACILITY EMERGENCY PREPAREDNESS EDUCATION AND TRAINING SURVEY

October 11, 2006

Dear Administrator:

This letter is in regard to a telephone survey that you have been asked to participate in within the past few weeks. My name is Alexa Hussar. I am a graduate student at the University of Pittsburgh. I am pursuing my Master's degree in Public Health from the Graduate School of Public Health in Behavioral and Community Health Sciences. I have also completed a Certificate in Emergency Response and Disaster Preparedness. I am conducting a research study in collaboration with Gail Cairns, the Co-Director for Academic Programs at the University of Pittsburgh's Center for Public Health Practice and Assistant Professor of Public Health Preparedness at the University of Pittsburgh's Graduate School of Public Health.

The purpose of this research study is to describe the issues with the level of preparedness in personal care homes in Allegheny County. For this reason I will be surveying the directors of the 50 personal care homes with the highest number of residents as my sample size to receive the survey. The survey of the personal care homes in Allegheny County will take approximately 15 minutes to complete. I have contacted most of the facilities by telephone, but this written form will provide an alternative way to complete the survey. My telephone number is listed below, so that you may contact me when it is most suitable for you. I have also included the survey, with a self-addressed stamped envelope. I would be grateful if you would complete the survey and return it to me, within the next three weeks.

If you are willing to participate, my questionnaire will ask about background information about your facility, your emergency preparedness plan as well as your thoughts about emergency preparedness. All responses to the questionnaire will be kept in confidence, and will be used for scientific purposes only. Your participation is voluntary, and you may withdraw from this project at any time.

In return for your participation in the survey, I will be happy to send you a summary report of the aggregate information about the level of preparedness in personal care homes in Allegheny County. The research study will address issues regarding the current level of emergency preparedness and education and the additional education and training that may be needed. I would appreciate your time and cooperation in completing this project.

Thank you,

Alexa J. Hussar
724-816-7592

BIBLIOGRAPHY

- American Heritage® Dictionary of Idioms by Christine Ammer. Copyright © 1997 by The Christine Ammer 1992 Trust. Published by [Houghton Mifflin Company](#).
- Blaikie, Piers, Cannon, Terry, Davis, Ian, Wisner, Ben. (1997). *At Risk: Natural Hazards, People's Vulnerability, and Disasters*. London: Routledge.
- Bracton, Henry de. (2006). *Encyclopædia Britannica*. Retrieved February 14, 2006, from Encyclopædia Britannica Premium Service <http://www.britannica.com/eb/article-9016103>
- Cameron, Carl T., (2005). Emergency Preparedness for People with Disabilities and Other Special Needs: Another Look After Katrina. Retrieved on May 29, 2006 from the Disability Preparedness Center <http://disabilitypreparedness.com/new%20dpc%20web%20page/Emergency%20Planning%20for%20People%20With%20Disabilities%20and%20Other%20Special%20needs%20-%20article%20revised%209-19-05.rtf>
- Carr, V.J., Lewin, T.J., Webster, R.A., Hazell, P.L., Kenardy, J.A., Cater, G.I. (1995). Psychosocial Sequelae of the 1989 Newcastle Earthquake: I. Community Disaster Experiences and Psychological Morbidity 6 Months Post-Disaster. *Psychological Medicine* 25(3) 539-556.
- Cutter, S.L. (2001). *American Hazardscapes: The Regionalization of Hazards and Disasters*. Washington D.C.: Joseph Henry Press.
- Emergency Preparedness Manual for the Aging Network. (1995). Retrieved on April 11, 2006 from http://www.aoa.gov/prof/aoaprogram/disaster_assist/Disaster_Assist_Manual_Full.pdf
- Fernandez, Lauren S., Byard, Deana, Lin, Chien-Chih, Benson, Samuel, Barbera, Joseph A. (2002). Frail Elderly as Disaster Victims: Emergency Management Strategies. *Prehospital and Disaster Medicine*. 2002;17(2): 67-74.
- Graumann, Axel, Houston, Tamara, Lawrimore, Jay, Levinson, David, Lott, Neal, McCown, Sam, Stephens, Scott, & Wuertz, David. (2005). *Hurricane Katrina: A Climatological Perspective preliminary Report*. NOAA's National Climatic Data Center. Retrieved February 21, 2006 from <http://www.ncdc.noaa.gov/oa/reports/tech-report-200501z.pdf>

- He, Wan, Sengupta, Manisha, Velkoff, Victoria A., and DeBarros, Kimberly A. (2005). 65+ in the United States: 2005. *Current Populations Reports: Special Studies*. Retrieved on April 11, 2006 from <http://www.census.gov/prod/2006pubs/p23-209.pdf>
- Johnson, Arleen. (2004). Preparing for Bioterrorism and Emergencies: The Ohio Valley Appalachian Regional Geriatric Education Center Develops Rural Program. *Aging Successfully* 14(3) 5-6.
- Kaniasty, Krzysztof. Norris, Fran, H., (1993). A Test of the Social Support Deterioration Model in the Context of Natural Disaster. *Journal of Personality and Social Psychology* 64(3) 395-408.
- Lach, Helen W., Langan, Joanne C., James, Dottie C. (2005). Disaster Planning: Are Gerontological Nurses Prepared? *Journal of Gerontological Nursing* 31(11) 21-27.
- Levine, John. (2005). Hurricane Katrina: A Public Health and Environmental Disaster. Retrieved May 26, 2006, from the *World Socialist Web Site*. <http://www.wsws.org/articles/2005/sep2005/katr-s21.shtml>
- Maslow, Abraham Harold. (1954). *Motivation and Personality*. New York: Harper and Bros.
- Electronic References for PA Code Title 55 Chapter 2600 (2006, March 18) Retrieved March 18, 2006 from <http://www.pacode.com/secure/data/055/055toc.html>
- Mileti, Dennis. (1999). *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Washington D.C.: Joseph Henry Press.
- Morrow, Betty Hearn. (1999). Identifying and Mapping Community Vulnerability. *Disasters* 23(1) 1-18.
- National Incident Management System. (2004). Retrieved on May 22, 2006 from http://www.fema.gov/pdf/emergency/nims/nims_appendix.pdf
- Network. (2006). *Merriam-Webster Online Dictionary*. Retrieved May 22, 2006, from Merriam-Webster Online <http://www.m-w.com/dictionary/network>
- Noji, Eric K. (1997). *The Public Health Consequences of Disasters*. New York: Oxford University Press.
- Personal Care Homes. (2006). *Services for Pennsylvanians with Disabilities*. Retrieved June 16, 2006, from Pennsylvania Department of Public Welfare <http://www.dpw.state.pa.us/Disable/PersonalCareAssistedLiving/003670204.htm>
- Phifer, James F., Kaniasty, Krzysztof, Z., Norris, Fran H. (1988). The Impact of Natural Disaster on the Health of Older Adults: A Multiwave Prospective Study. *Journal of Health and Social Behavior*, 29(1): 65-78.
- Resilience. (2006). *Merriam-Webster Online Dictionary*. Retrieved May 22, 2006, from Merriam-Webster Online <http://www.m-w.com/dictionary/resilience>

- Simons, Janet A., Irwin, Donald B., and Drinnien, Beverly A. *The Search for Understanding. Psychology*. New York: West Publishing Company.
- Tierney, Kathleen J., Lindell, Michael K., and Perry, Ronald W. (2001). *Facing the Unexpected: Disaster Preparedness and Response in the United States*. Washington D.C.: Joseph Henry Press.
- Yahmed, Samir Ben and Koob, Peter. (1996). Health Sector approach to vulnerability reduction and emergency preparedness. [*World Health Stat Q*](#) 49(3-4):172-8.