A Fire and Life Safety Awareness Program for the Elderly

Leading Community Risk Reduction

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An applied research project submitted to the National Fire Academy as part of the Executive Fire Officer Program

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Certification Statement

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

Signed: ________________________
Abstract

The problem is the Chili Fire Department (CFD) has not addressed the fire and life safety risks of the elderly population in the town of Chili. The purpose of this study was to identify the issues for the creation of a public education program focusing on the elderly in Chili. The descriptive research method was used to determine demographics, risks, issues, and intervention strategies for an elderly fire and life safety program.

Research procedures included multiple interviews with recognized authorities, personal observations of a fire drill in a senior assisted care facility, and an analysis of response data and census information.

Results show a rapidly increasing elderly population with high risk of death and injury from fires, falls, and motor vehicle accidents. Numerous national programs are available to address these risks. Developments of community partnerships are an ideal way to reach the greatest number of elderly.

Recommendations include instituting a fire prevention and life safety awareness program modeled after NFPA’s Remembering When and tailored to the needs of CFD. The program should include methods to ensure learning is occurring.
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A Fire and Life Safety Awareness Program for the Elderly

Introduction

“Approximately 1,200 elderly deaths and 3,000 elderly injuries occur due to fire each year, making fire the sixth leading cause of injury related death among older adults” (Jaslow, et al., 2004, p. 111). The United States Fire Administration (USFA) has addressed this growing problem by identifying the elderly population as a high-risk group. The elderly population is growing at a faster rate than the general population, and if left with no intervention, a significant public safety problem will develop (USFA, 1999). Organizations, therefore, must develop and provide fire and life safety public education that target the elderly population in communities across the United States (U.S.) (Smerz, 2003).

Many organizations have created programs that are designed for the elderly. The research problem is the Chili Fire Department (CFD) has not addressed the fire and life safety risks involving the increasing elderly population of the town of Chili. This problem may be cause for concern as this group has been identified as high-risk; it is only a matter of time before tragedy will occur.

This information is vital to enhancing the level of safety to the community. The purpose of this study is to identify the issues for the creation of a fire and life safety public education program focusing on the elderly in Chili. The descriptive research method will be used to answer the following questions:

1. What are the current and projected future demographics of the elderly population in the town of Chili?
2. What are the fire and life safety risks associated with an elderly population?
3. What issues must be addressed in creating an educational program for the elderly?
4. What intervention strategies can be employed to effectively focus on elderly fire and life safety risks?

Research procedures include multiple interviews with recognized authorities, personal observations of a fire drill in a senior assisted care facility, and an analysis of data gathered from Red Alert, a computer program for the responses of the CFD and census information. Literature was obtained from the National Fire Academy Learning Resource Center, the New York Office of Fire Prevention and Control, and the Internet.
Background and Significance

The Town of Chili is located 10 miles west of the City of Rochester in upstate New York. The Chili Fire Department, Inc. (CFD) provides fire suppression and emergency medical care to a community of 27,000 people spanning 31 square miles. The town is predominately a bedroom community with commercial occupancies and light industry throughout its suburban and rural base. The majority of the district includes single-family dwellings, some mercantile facilities and a few industrial plants. The southern portion of the town is more sparsely populated and includes agricultural areas.

The department was organized in 1931 as a volunteer organization and today has grown to 183 current volunteer members (P. Quinn, personal communication, April 15, 2004). The only paid employees of the CFD are four full time dispatchers (one per shift), four part time dispatchers who fill in as needed and one part time corporate secretary. The CFD is incorporated and managed by a Board of Directors. The town contracts with the fire department to provide fire protection and basic life support (BLS) transport services from four firehouses and an ambulance base. Fire and emergency medical services (EMS) are the primary functions of the fire department. The CFD responds to an average 1100 fire and 1600 ambulance incidents each year (C. Fish, personal communication, March 16, 2004). Secondary services of the organization include community fire prevention activities, currently only targeting primary schools.

Although the CFD continues to excel as a volunteer organization today, there are aspects that make management difficult. The members serve at their own free time. They are required to respond to a percentage of the fire incidents and to complete a designated number of training drills annually. There is a host of other activities that vie for the time of the members, including, truck checks, work details to keep the firehouse and apparatus in shape, outside training opportunities, as well as fire prevention details. All these exist and continue to grow as volunteerism declines.

The need to solicit for members, and as a way to get the fire prevention message out to the community, the CFD began Open House activities in the late 1960’s (CFD, 1981). This was a focus of the National Fire Protection Association (NFPA) initiative on Fire Prevention Week. One Sunday in October the community would be invited into the firehouse to view equipment, and watch demonstrations. In this manner, the community viewed the equipment and operations of the fire suppression forces; however, fire prevention was not the main message.
Open House continues to draw the community to the firehouse today; however, the fire department has taken the fire prevention message to the streets. The school fire prevention program of the CFD was developed by exempt member and past Deputy Chief Kurt Wehrmann. Wehrmann had a daughter in primary school in 1990 and she had asked him to come and speak to her class. Wehrmann was greeted with such a welcome that he expanded it to other primary schools in the town (K. Wehrmann, personal communications, May 12, 2005) bringing a fire prevention message to students in kindergarten through third grade.

While Wehrmann did an excellent job in establishing this program, it was taken over and expanded by Firefighter Terry Skelly in 2002. This mission was no easy task. Skelly had to plan and schedule each class, recruit firefighters to assist in the teaching, request fire apparatus, and perform the teaching of students. Each class consisted of instilling main points in students: stay low in smoke, stop, drop and roll, maintaining a smoke detector, and knowing two ways out (T. Skelly, personal communication, June 1, 2005). Students also would have an opportunity to see a firefighter dress in personal protective turnout gear, and get a tour of fire apparatus. In 2004, Skelly expanded the program to include a presentation for students in grades 4, 5, and 6. These students had an opportunity to practice their learned skills inside the Monroe County Fire Bureau’s Safety Trailer. This program has grown to more than nine schools and pre-schools throughout the town of Chili, with approximately 80 classes and visiting nearly 2,100 students on an annual basis.

It is difficult to measure the quantitative success of a fire prevention program, however, measuring in terms of marketing and approval, this program is a great achievement. Students and teachers alike are anxious for the arrival of the CFD during fire prevention week. Firefighters also are excited to share their knowledge and provide education to today’s young. The customers have an opportunity to view apparatus and ask questions pertaining to fire safety when the members have time for them, not at the scene of an emergency.

The town of Chili is rich in number of primary schools, pre-schools and day cares. There are no high schools in the town of Chili. There has been, however, an increase in the number of group elderly living facilities as a new senior apartment building opened in 2005. A discussion among chief officers concerning the expansion of the fire prevention program included comments on this increase in senior living facilities.
Questions were raised as to the training the staff received, as well as the training the residents receive with respect to fire. The officers determined the opportunity exists to expand the fire prevention program to include seniors. This would address a high-risk group at a time when national projections include a rapid growth of the elderly population. Unless educational measures are put in place to reduce death and injuries in this age group, the elderly will continue to disproportionately dominate the statistics in these areas.

This study is related to the USFA operational objectives. Their first objective is to reduce loss of life of those 65 and older. Research into providing fire prevention and life safety awareness for elderly will assist in achieving the USFA mission, while providing public education and fire prevention to the most vulnerable population. The second objective of the USFA is to develop a comprehensive multi-hazard risk reduction plan, led by the fire department. Development of this study shall be a component of the risk reduction plan for the CFD. The third mission of the USFA is to appropriately respond in a timely manner to emergent issues. Statistics throughout this report demonstrate the need for addressing the elderly, as they are the fastest growing population in the U.S. and have the highest risk of dying in a fire.

This applied research project on a fire and life safety awareness program for the elderly is directly related to the Executive Fire Officer Program course, **Leading Community Risk Reduction (LCRR)**. This relationship is demonstrated through compliance with the LCRR course’s community risk reduction model. This paper integrates the components of getting ready, the first step of the community risk reduction model (unit 1) with preparing the CFD to provide an elderly fire and life safety awareness program.

The investigation of the research questions will be performed by the descriptive research method. This method was selected because the research questions require the collection of data for present time conditions.

**Literature Review**

A review of literature was conducted to determine what other researchers encountering similar problems have found, with respect to the problem statement and research questions.

*What are the current and projected future demographics of the elderly population in the town of Chili?*

Demographics are the essential characteristics necessary to understand the high-risk audiences of the community as the organization plans its services. Many fire departments make the mistake of dismissing this step of the process for gaining an understanding of community (Federal Emergency Management
Elderly Fire/Life Safety

Agency [FEMA], 1998). “Knowing about how and where people live and work, how they organize their families, and how they spend their time at home is crucial to designing education programs that work” (Powell, 1997, p. 149).

In response to this research question, it is important to answer in terms of the elderly population in the U.S. and New York State to draw a comparison between the of the town of Chili and the remainder of the country. Throughout the twentieth century, the growth rate of the elderly population has far outpaced that of the general population as a whole (Leigh, 2004). Currently 36.3 million Americans are age 65 and older, accounting for 12.4 percent of the total population (U.S. Census Bureau, 2005). As indicated by demographic trends, the population of those individuals under 65 years of age has tripled from 1900 until 2000, while the elderly population of those 65 years of age and older, has increased 11 times (Hobbs & Stoops, 2002).

Projections indicate that by the year 2050, the elderly population of the U.S. will double, reaching 70 million persons, or more than 20 percent of the American population (FEMA, 1999). This is a 147 percent increase. By comparison, the population as a whole would have increased by only 49 percent over the same period (U.S. Census Bureau, 2005).

The fastest growing sub-group among the elderly is the 85 years of age and older group. During the 1990s this group, known as the “oldest of the old” increased by 38 percent, from 3.1 million to 4.2 million (Smerz, 2004). It is expected that this group will increase to 19 million in 2050, making them 24 percent of elderly Americans and five percent of the U.S. population (Hobbs & Stoops, 2002).

The proportion of the population age 65 and older varies among the states. The U.S. Census Bureau (2001) indicated that New York State was above the national average with the number of people age 65 at 12.9 percent.

Many older adults choose to remain in their homes, postponing institutional care, and supplementing home nursing. “From 1992 to 1995, the number of home health care patients over the age of 65 jumped by nearly 30%, and 73% of all home health care patients were over the age of 65 as of 1995” (USFA, 2001, p. 2). As a result of this shift, procedures once done in the hospital are performed at home as family, visiting nurses and other health care providers transform a bedroom into a mini-health care facility.

The U.S. has experienced an explosion of assisted living and non-assisted living or independent living
occupancies in recent years (Berner, 2004). This move from single family homes to group home living environments have approximately 1.5 million Americans in settings such as nursing homes or assisted living facilities. More than 90 percent of these people are over age 65, approximately 35 percent are over 85 years of age. Concerning those over age 85, nearly 25 percent live in group-living facilities (Jaslow, et al., 2004).

The growth of the population age 65 and older has affected every aspect of our society, presenting challenges to policymakers, families, businesses, health care providers, as well as, the fire service. These challenges will require the fire service to find new and innovative methods to reach each group with programs that will meet its particular needs. One program for all people will not work in the future.

*What are the fire and life safety risks associated with an elderly population?*

“Diminished abilities and senses associated with aging expose older adults to a multitude of fire risks” (USFA, 1999, p. 2). This population is limited in their ability to detect and escape a fire, and is more likely to sustain injury. This contributes to why older adults have significantly higher fire death rates than the rest of the national population. The fire death rate for people between the ages of 65 and 74 is nearly two times the remainder of the U.S. People between 75 and 84 are nearly four times as likely to die in a fire. People 85 and older have more than five times the chance of dying in a fire (FEMA 2004a). While age is an unmodifiable risk factor, disabilities in the elderly - vision and hearing loss - exacerbate the fire risk (USFA, 2001).

Older adults in New York State are at an increased risk of fire death as compared to the rest of the country. Adults 65 and older are 3.5 times as likely to die in a fire as the rest of the state’s population. This represents 34 percent of the residential fire deaths between 1989 and 1998 (FEMA, 2004b). Those adults 85 and older have six times the risk of fire death.

*Fire risks.*

As shown in Table 1, careless smoking is the leading cause of fire deaths and second leading cause of injuries among people ages 65 and older (FEMA 2004a). Careless handling of smoking materials has been the leading cause of fire in residential property, closely followed by falling asleep while smoking. In approximately 40 percent of the fire fatalities, the victim is asleep, and, in 20 percent, the victim is bedridden at the time the fire is ignited (USFA, 2001). Older adults over age 75 are six times more likely to
die in a smoking related fire than a person in the 20 to 29 age group. Important to note is that the percentage of people who smoke over the age of 65 is less than half the percentage for the 18 to 64 year olds (Hall, 1998).

Table 1

Leading Causes of Fire Related Casualties in Older Adults

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<th>Ranking</th>
<th>Injuries</th>
<th>Fatalities</th>
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<tr>
<td>1.</td>
<td>Cooking</td>
<td>Smoking</td>
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<td>2.</td>
<td>Smoking</td>
<td>Heating</td>
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<td>3.</td>
<td>Heating</td>
<td>Cooking</td>
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Heating is the second leading cause of fire death and third leading cause of injury to people ages 65 and older (FEMA, 2004a). Contributing factors include the use of space heaters, electric blankets and heating pads.

Older adults suffer most fire-related injuries when they are cooking. Common scenarios include accidentally igniting loose-fitting sleeves, forgetting to turn the burner off, and leaving food cooking on the stove. In fact, nearly 40 percent of residential fires involving older adults begin in the kitchen because of a pot left cooking on the stove (Florida Department of Financial Services, 2004). Cooking ranks third in cause of fire deaths among people ages 65 and older (FEMA, 2004a) and the number one cause of injuries.

Approximately 200 elderly die annually in clothing fires (National Commission of Fire Prevention and Control [NCFPC], 1973). The majority of incidents involve popular fabrics. Cotton and polyester are flammable materials and represent a large proportion of clothing used by the garment industry. “Older adults are predisposed to clothing fires as 6.9% of smoking related fire deaths involve the clothing worn by older adults over the age 65 compared to 2.0% of victims under age 65” (Fontana, 1999, p. 20). Cooking fire deaths involving clothing for those over age 65 were 44.9 percent, compared to 4.4 percent for those victims under age 65 (Fontana, 1999).

Most older adults live with family members. However, the incidence of living alone increases with age,
especially for women. Approximately 30 percent of non-institutionalized older adults live alone, placing them at higher risk for accidental injury (USFA, 1999). If stronger fire safety and prevention practices are integrated into their lives prior to entering the higher fire risk decades, there is a greater opportunity for them to live out their golden years.

Group-living facilities pose unique fire risks to the elderly that may be linked to specific fire safety processes. Fluctuations in staffing may leave a high resident-to-staff ratio during the night. In emergency situations, bedridden or severely disabled residents may be totally dependant on the staff, leaving those with milder disabilities unattended (Jaslow, et. al, 2004). Throughout the country, group living home fires are on the rise.

The construction of some of these nursing homes and assisted living facilities is cause for concern themselves, as they were often designed with large, open-air living spaces that facilitate the passage of smoke and toxic gases upward through several stories (USFA, 2001). “In a study of fires occurring in nursing home facilities, most of the injuries and deaths were attributed to relatively small fires that produced toxic fumes before detection or suppression devices were activated (USFA, 2001, p. 3).

Patients over the age of 65 receive 35 percent of all prescribed medication in this country (USFA, 2001). Moreover, older adults may be taking several prescribed medications simultaneously. These medications may cause drowsiness or impair judgment. The results of these effects may increase the chance of unintentionally setting a fire and decrease the possibility of escaping from it (USFA 2001). Similar affects occur from use of alcohol. The USFA (1999) reported that in a recent nationwide survey on alcohol use, one-quarter of the respondents over the age of 65 claimed to drink at least one alcoholic beverage nearly every day.

Poverty has long been associated with an increased fire risk. Individuals in this group are less likely to receive and comply with fire safety messages. Housing may not have smoke detectors, and there may be a reliance on alternative and unsafe heating sources. Nearly 20 percent of older adults live at or below the poverty line, and the relationship between fires and poverty is a compounding fire risk (USFA, 1999). Gamache (2003) reported that a study of house fires in Dallas from 1991 through 1997 showed the rate of injuries was highest among older adults, low income populations, minorities, and in houses without functioning smoke alarms.
The Center for Fire Research (1981) recommends the assessment of seven risk factors when evaluating an older adult’s risk of injury or death from fire. Those factors are listed in Table 2. The emphasis in determining the risk is based on performance rather than the person’s individual impairment to determine risk assessment (FEMA, 1999).

Table 2
Risk factors for injury or death by fire for older adults

- Risk that the individual will resist leaving the structure
- Individual’s response to fire drills
- Individual’s response to instructions
- Individual’s mobility impairments
- Need for extra help
- Individual’s waking response to alarms
- Probability that the individual will lose consciousness in an emergency (i.e. is life support equipment necessary?)


Life safety risks.

While older adults are twice as likely to be killed or injured by fire, they are equally at risk for falls, as compared to the general population. Among older adults in the U.S., falls are the leading cause of injury deaths and most common cause of injuries and hospital admissions from trauma. One in three adults experience a fall each year (“A Tool Kit,” 2005). Older adults are five times more likely to experience a fall-related injury than injuries from any other cause (“Cost of Fall Injuries,” 2005). The falls most frequently occur at home, 60 percent, followed by other places, 30 percent, and 10 percent occurring in health care settings (“Cost of Fall Injuries,” 2005).

Falls account for 87 percent of all fractures in the elderly. The most common fall related injury is an osteoporotic fracture. These include fractures of the hip, spine, or forearm. The hip fracture causes the greatest number of deaths and most severe health problems. Although a hospital stay for this injury averages two weeks, 50 percent of those people cannot return home or live independently any longer.
Falls and Hip Fractures,” 2005). The oldest of the old are most at risk of this injury, they are 10-15 times more likely to experience a hip fracture than those in the 60 – 65 age range.

Risk factors for falls involve personal factors, including having experienced a previous fall, gait or imbalance problems, physical limitations (visual impairments), taking more than four medications, and having more than one chronic disease, history of stroke, Parkinson’s disease, neuromuscular disease, urinary incontinence, or postural hypotension (“Falls Among Older Adults,” 2005). Home safety issues are of particular importance as most falls occur in the home during common everyday activities. “Improper lighting, floor coverings, stairs, entrances, bathroom fixtures and furniture placement can all create greater risks for falls and injuries” (“Home Safety,” 2005, para. 2).

LeMier (2002) reports that several studies have shown that the risk of falling increases dramatically as the number of risk factors increase.

For example, one study of community-dwelling seniors showed that the percentage of people falling increased from 27 percent for those with no or one risk factor to 78 percent for those with four or more risk factors. Another study used multivariate analysis to simplify risk factors so that maximum predictive accuracy could be obtained by using only three risk factors (e.g. hip weakness, unstable balance, taking four or more medications). With this model, the predicted one-year risk of falling ranged from 12 percent for people with none of the three risk factors to 100 percent for people with all three. (p. 11)

Second to falls (31 percent) are motor vehicle accidents (24 percent) that cause unintentional injury and death in elderly (Center for Disease Control and Prevention [CDC], 2001). An elderly individual is five times more likely to be fatally injured in a vehicle accident that a younger driver (Leigh, 2004). Risk factors for becoming injured or dying in a motor vehicle accident are similar to the factors contributing to fire causes: loss of hearing, loss of visual acuity, physical impairment or disabilities, and medications. “It is reported that on any given day, 20% of seniors are driving under the effects of benzodiazepines (Valium, Xanax, Ativan, Libruim, and others) (“Safe Senior Citizen Driving,” 2005). This is of importance when McGill University researchers found a 45 percent increase in injury causing car accidents in people taking the benzodiazepines after studying the driving records of nearly 225,000 people age 76 to 84 (Grohol, 2000).
Driving is an important part of a senior’s independence. The loss of driving is second only to the loss of a spouse or a job for causing stress and unhappiness (“Safe Senior Citizen Driving,” 2005). Yet, the need to stop driving could prevent the injury or death of a senior adult, or another.

**What issues must be addressed in creating an educational program for the elderly?**

The Learn Not to Burn Foundation and the American Association of Retired Persons (AARP) collaborated on instructing educators for the 1995 NFPA Fire Prevention Week kit. The results centered on the following basic principles for reaching older adults: presentations, printed material, home visits, and respect (Gamache, 2002).

Presentations should be interactive. Older adults have a lot of experience that they would like to share. Presenters should ask questions, invite input, and look to the older audience frequently for responses. “Demonstrations and interactive activities, such as, having participants design their own escape routes or discussions about real fire case studies are important” (Gamache, 2002, p. 5-49).

Printed materials should be at least 12 point. The use of large fonts will make reading easier for those with vision impairments. Background design may make the copy more difficult to read for an older adult. Designs and pictures are better kept separate from the actual print to differentiate them. Any illustrations should portray older adults in a positive fashion and active role. Stereotypes may cause the target audience to avoid the message altogether. The printed material may be used for hand out at presentations or for the purpose of public safety messages conspicuously posted where older adults may see them as reminders. Those used in public service messages should use what is important to older adults and grab their attention. It may be necessary to use market research to determine these sites.

Older adults want both group presentations and home visits. “Older adults thought visits in the home should be one-to-one and conducted by someone with whom older adults feel comfortable, such as a firefighter or someone who already visits the home” (Gamache, 2002, p. 5-49). The presentation can be used as an opportunity to establish a home visit.

Older groups of people are very skeptical, especially when it comes to advertising. The educator should remember this and provide respect for these people. The majority of senior citizens are not senile. They should be talked to the same way people in their 30’s and 40’s would be addressed. The adjustment that must be made is in the volume of the educator’s voice. Speak audibly and clearly to the group. More than
One-third of those elderly surveyed by Jaslow, et al. (2004) could not clearly hear the fire alarm. The educator must address this as well.

In 1996, the NFPA Center for High-Risk Outreach (CHRO) and the CDC conducted a focus group with older adults. Results concluded that a program should target key safety messages dealing with major causes of fires and falls and how to prevent them. The focus group felt that to encourage program attendance, transportation for those needing it should be available, food should be provided and it should be advertised that there would be food (Leitner, 1997). The group majority felt the ideal time for the presentation would be 10:00 a.m.

In constructing and delivering the educational program, do not isolate or single out older adults in fire safety programs; older adults prefer mainstream messages that apply to all sections of the population (USFA, 2002). This allows fire educators to piggyback on existing programs that have demonstrated their effectiveness. Utilizing established public education campaigns are helpful in that Jaslow, et al. (2004) reports no indifference in the fire safety preparedness of the elderly. They appear to possess the same attitudes as the general population.

Over three out of four structure fires and four out of five fire related deaths occur in the home, which are traditionally less regulated than commercial structures (Hall & Cote, 2003). It is therefore, imperative that people be educated about fire danger, how to recognize and correct potential hazards and how to respond appropriately in an emergency. The “Get Out Alive” message that the fire service has preached to the community are the same issues that should be addressed for seniors: maintain a working smoke detector, develop and practice a fire escape plan, and if at all possible, install home fire sprinklers (USFA, 2004).

Jaslow, et al. (2004), makes a point that there have been no studies to support how initial fire safety should be delivered to the elderly, nor are there studies on the retention of the material delivered. This can leave the educator to question how frequently the material should be presented in light of the forgetfulness that occurs with age.

The development of a program for the target group is important, however, the education may also be applicable to “outside” groups. “Working age adults who care for their parents, elder-care centers, directors of local senior citizen programs, physicians, and workers in retirement or nursing homes are examples of possible other target audiences” (Powell, 1997, p. 148). Target volunteer caregivers, in-home
nurses, those delivering meals-on-wheels, or anyone that may contact the older adults in their home.

“One common theme that has been seen in departments providing some type of injury reduction program is that they are beginning to partner with other agencies and to utilize volunteers who are peers to this growing segment of the population” (Miller, 2004, p. 23). Palm Beach County, Florida Fire-Rescue developed MATCH, or Mature Adults Teaching Community Helpers, to assist in program delivery. These adults administered cardio-pulmonary resuscitation, first aid, and fire and life safety classes to their own communities, clubhouses, and condominium associations (Miller, 2004). The St. Paul, Minnesota Fire Department formed a partnership with Red Cross volunteers to provide training to senior citizens living independently in the community. They jointly developed a slide program that could be presented at churches and community centers to teach seniors about fire safety. The department trained the Red Cross volunteers and they then took over the task of scheduling and presentations. This partnership was crucial to reaching a high-risk population. The fire department only had two public educators, and there were thousands of seniors, living independently in St. Paul who needed to be reached (FEMA, 1998).

*What intervention strategies can be employed to effectively focus on elderly fire and life safety risks?*

Fire safety education programs continue to be the backbone of the fire service in the campaign to reduce burn injury and the loss of life and property due to fire. “Fire safety education programs have evolved over the years due to persistent efforts of national fire safety organizations and individual fire departments that have recognized the value of such programs” (Smerz, 2003, p. 21). Nationally recognized programs have become the building blocks of the customized lesson plans for local fire prevention specialists routinely teaching community groups (Smerz, 2003).

Smerz (2003) conducted a survey of fire departments to determine their involvement in providing fire prevention and life safety education to their communities. He found that of the 26 departments that responded to the survey, 22 (85 percent) indicated they performed elderly fire education programs. Thirteen of the departments (50 percent) also indicated they provided life safety messages incorporated into the programs (Smerz, 2003).

Smerz (2003) also found the majority of the departments surveyed used a combination of nationally recognized programs and locally developed programs to provide fire prevention and life safety education. He found that the most popular national program used by fire department is the National Fire Protection
Elderly Fire/Life Safety

*Remembering When*, a fire and fall prevention program for older adults, was developed by NFPA CHRO and CDC to help older adults live safely at home as long as possible. The program is centered around 16 key safety messages—eight fire prevention and eight fall protection—developed by experts and practitioners from national and local safety organizations. *Remembering When* was designed utilizing a nostalgia theme and is presented through lesson plans that include discussion, trivia quizzes, colorful brochures, and scattered fun references to music, events, and personalities from days gone by. The program is to be implemented by a coalition comprised of the local fire department, service clubs, social and religious organizations, retirement communities and others with a vested interest in elderly safety (NFPA, 1999).

The USFA has published *Fire Risks for Older Adults*. This report is one in a series that were written to discuss the increased fire risk to four groups of the general population: older adults, mobility impaired, deaf or hard of hearing, and the blind or visually impaired. Typical mainstream fire safety education is designed primarily with the able-bodied person in mind (USFA, 1999). These reports attempt to educate specific groups in fire safety risks around the home. Many of the fire safety issues discussed in the reports are of concern to all four groups. The reports are organized into three sections: Before the Fire, During the Fire, and Fire Prevention.

The USFA have also created a *Campaign Guide: A Fire Safety Campaign for People 50-Plus*. “The campaign encourages people ages 50-plus to practice fire safe behaviors when smoking, cooking, and heating their homes” (FEMA, 2004a, p. 3). It also stresses the importance of maintaining a smoke alarm, designing and practicing a home fire escape plan and encourages installation of home fire sprinklers. The guide includes fact sheets in English and Spanish which can be copied and distributed, sample media materials including a news release and live-read radio script, a print public service ad, and tips on how to get the media to use the fire safety material and a presentation that can be used for community meeting and other events (FEMA, 2004a). The strategy is to inform and motivate adults as they enter their fifties so that stronger fire safety and prevention practices are integrated into their lives prior to entering the higher fire risk decades.

Another program that has been used with award winning results is the “Senior Fire and Life Safety
Program” developed by the Phoenix, Arizona Fire Department (PFD). The PFD formed a Senior Outreach Team, which included members of the fire department, and various public service and community outreach groups. Together they developed the program. A slide presentation was built around clichés focusing on fire safety. The opening slides for each topic show only the beginning of the cliché to grab the seniors attention. The audience then finishes the cliché. “Many old notions are dispelled, i.e., cooling a burn with butter, throwing salt on a cooking fire, etc.” (PFD, 2002, p. 3). The program includes safety information for the kitchen, bedroom, bathroom, living room, smoking and space heater safety. Since its development in 1996, the program has been presented to more than 4,000 seniors in the City of Phoenix.

One valuable tool for planning and administering programs for seniors includes West Metro, Colorado Fire-Rescue’s (“Safety for Seniors Citizens” CD-ROM (2003). The development of the CD-ROM as a resource for fire and life safety educators was made possible through Fire Act Grant funding provided to WMFR by FEMA and USFA. The CD-ROM contains information concerning home inspections, marketing and public relations, safety fair materials, train-the–trainer materials, and details on program management. The presentation material provides an awareness of increased fire and fall risks for older adults, appropriate actions to take during an emergency, identifying fall and fire risks, and motivational techniques for seniors to use in prevention of falls and fires in their residence. The presentation is an interactive activity involving discussion, handouts, a trivia game, question and answer session and an optional 18-minute video.

Senior Fire Safety with Jonathan Winters is a video produced by NFPA (1991). The video provides fire safety messages to its audience through use of a number of short stories delivered by elderly actors. “In addition to addressing fire risks, the actors in the course of their individual stories, demonstrate specific behaviors and techniques that reduce fire risks and injury” (Smerz, 2003, p. 22).

“In April of 1999, a group of North America’s foremost authorities on fire protection and prevention convened with experts who represent three sections of the population with abnormally high fire risks: young children under the age of five, older adults over the age of sixty-five, and people with disabilities” (USFA, 1999, p.1). The goal of the symposium, known as Solutions 2000, was to propose ideas and initiatives to reduce or eliminate fire-related casualties in the three high-risk groups. Participants used a system aimed at creating realistic solutions by developing effective strategies that target the fire problem
(USFA, 1999). Upon conclusion of the conference, each group had focused on education, engineering, and enforcement, and rendered a number of proposed solutions. These solutions, focused on older adults are contained in Appendix A.

The North American Coalition for Fire and Life Safety Education met again in April 2001. The intent of this meeting was to examine issues related to egress capability, early warning, and fire sprinkler protection for those who may not be able to take life-saving action in a timely manner in the event of a fire. “Building on the efforts and recommendations of the previous symposium, Beyond Solutions 2000 focused deliberations on universal recommendations from the earlier report, which addressed issues common to each of the targeted audiences” (USFA, 2002, p. 2). The applicable findings of this meeting are listed in Appendix B.

**Literature Review Summary**

The literature review provided direction and framework for the four research questions. This summary includes short answers obtained during the literature review stage of this report and how the answers affected the project.

The elderly population is growing at a faster rate than the population as a whole. Projections indicate that 70 million persons will be 65 years and older in the year 2050, representing 20 percent of the total U.S. population, up from the present 12.4 percent. Important to note, many older adults are choosing to remain in their homes, postponing institutional care. A large number of older adults living in single-family dwellings throughout a district affected the project in determining how the fire prevention message would reach them.

Americans over the age of 65 are one of the groups at highest risk of dying in a fire. People between 65 and 74 are nearly twice as likely to die in a fire as the rest of the population. This risk increases to more than five times for those 85 and older. The leading causes of fire death and injury include smoking, heating, and cooking. Some risk factors change with the living accommodations of the older adult; whether they are home or in a group living environment.

Poverty is a compounding risk factor, as it is with all age groups. Older adults are also at risk from falls. This is the leading cause of injury deaths and most common cause of injury. Motor vehicle accidents and persons struck by vehicles are second to falls in unintentional injuries and deaths. The causes of the fires
and falls are important, but it is even more important to determine factors that contribute to the fires and injuries in an effort to prevent them from occurring.

Research on issues for creating an elderly fire prevention program changed as information was reviewed concerning how to address seniors. It was important to ensure the program followed the principles of presentation, printed material, home visits, and respect. A change in any of the factors could possibly turn the subject off from hearing the fire prevention message. Older adults prefer mainstream messages applicable to the general population and do not want to be singled out (USFA, 2002).

There are numerous agencies, which provide some form of fire protection of life safety awareness program. Smerz (2003) found most agencies teach both fire protection and life safety in their messages and the majority uses a customized form of nationally recognized program. Solutions 2000 (1999) and Beyond Solutions 2000 (2002) provided a list of items that should be considered for inclusion in a fire prevention and life safety awareness course (Appendix B and C). Reviewing the programs provided an opportunity to find strategies that would be most suitable to the needs of the CFD.

Procedures

Definition of Terms

Assisted living facility. Also known as adult home. Often confused with nursing home. An assisted living facility has some similarities to a nursing home; however, a nursing home’s patients need more intensive care than assisted living residents. Rooms are typically a self-contained apartment without cooking facilities or the modern day medical monitoring equipment found in nursing homes.

Elopement. Term used to describe the serious risk many Alzheimer and other patients have of wandering away from their care facility.

Independent living. Older adult not requiring any assistance with cooking, lavatory needs, medication or personal care services.

Older adult. Persons age 65 and older.

Nursing home. Limited care occupancy used on 24-hour basis to house or treat persons incapable of self-preservation because of age or physical limitation due to accident, illness or mental limitations (Soloman, 2002). Place of residence for people requiring constant medical care, but at a lower level than a hospital.
Senior Apartment. Any building containing three or more living units with independent cooking facilities (Soloman, 2002). These are designed with senior residents or older adults in mind for independent living. The 1981 edition of the Life Safety Code contained requirements for buildings used as housing for the elderly. Editions of the Life Safety Code since 1991 no longer recognize the allowances in new construction (Soloman, 2002). All new apartment buildings are required to have fire sprinklers.

Smart stove. Also known as a fire safe stove. Stove designed to shut off before the food starts to burn and thus cause the potential for fire (USFA, 1999).

Research Methodology

The problem statement was developed from a discussion between chief officers of the CFD. Concern was expressed at an increase in the number of older adult living facilities in the fire protection district. At present a third facility has opened to house seniors. This has occurred at a time when CFD was looking to expand its fire prevention program and with the risk factors of elderly, appeared a natural progression. This information served as the background and significance for this paper.

This research project employed a descriptive research methodology to determine: (a) what are the current and projected future demographics of the elderly population in the town of Chili, (b) what are the fire and life safety risks associated with an elderly population, (c) what issues must be addressed in creating an educational program for the elderly, and (d) what intervention strategies can be employed to effectively focus on elderly fire and life safety risks.

Literature Review

Research was conducted at the Learning Resource Center (LRC) on the campus of the National Fire Academy (NFA) in Emmitsburg, Maryland. This research focused on information concerning elderly fire prevention education programs. Applicable textbooks, trade journals, technical reports, standards and applied research papers were reviewed. Content was paraphrased, and cited in the literature review section of this report.

The Internet provided valuable research information obtained through searching with the same keywords that were utilized at the LRC (older adults, elderly, fire prevention, injury reduction). Similar research was conducted through New York State Academy of Fire Science Library online. Web sites of fire trade journals were reviewed, and the sites of Center for Disease Control, the U.S. Census Bureau, and
the U.S. Fire Administration provided a substantial amount of data. The literature review concluded with reviewing the programs that have been established in other organizations.

**Interviews and Personal Communications**

Two interviews were conducted with members of the CFD for their expertise and relationship with the fire prevention program. The first was conducted with exempt member and past Deputy Chief Kurt Wehrmann. The interview took place at the Monroe Country Public Safety Facility on May 12, 2005. Only two questions were asked at the interview; (1) what was the inspiration of the fire prevention program of the CFD? and (2) When did the programs with schools begin? This interview lasted 15 minutes. The second interview was with Firefighter Terry Skelly. Skelly currently heads the school fire prevention program. This interview was conducted on June 1, 2005 at Chili Company 3. Skelly was asked; (1) When did you start teaching and then take over the fire prevention program? (2) What is taught in the program? (3) How is the training received by the school administration and students? (4) How many contacts have been made by the CFD? (5) What elements of the fire prevention program would be applicable to a elderly fire prevention program? This interview lasted one hour. These interviews were to determine how CFD began their fire prevention program, and how it is presented to compare establishing a program for seniors.

Lisa Coia, a public safety educator with the Ridge Road Fire District, was interviewed April 29, 2005 at the Greece Ridge firehouse. She was selected because of her experience in developing a similar program for the neighboring Greece Ridge Fire Department. Coia was asked the following questions during the one-hour interview: (1) How was your program developed? (2) What issues needed to be addressed for the target population in developing the program? (3) What recommendations would you have for other jurisdictions in creating such a program?

An interview was conducted with Fire Protection Consultant Bob Day. Day works for Russell Phillips and Associates, LLC, a fire protection consulting group specializing in health care facilities. This interview was conducted at Phillips and Associates in the City of Rochester on June 26, 2004. The interview continued for an hour and a half. Day was posed with the following questions: (1) What fire and life safety risks are associated with the elderly? (2) What changes in fire protection are seen in the differing senior occupancies? (3) What issues should be addressed in developing a fire prevention and life safety program for seniors? (4) Can you describe the program taught by Phillips and Associates to seniors living
Telephone interviews were conducted with administrators from the three older adult facilities in Chili. Each administrator was asked similar questions during the 15-minute interviews: (1) How is your facility classified (nursing home, adult home, assisted living, independent living)? (2) How many seniors live in your facility? (3) What is the age range of those living there? (4) How many staff are available at all times? (5) What fire training does the staff receive? (7) What fire and life safety risks do you see in your facility? (6) Would your facility be interested in a fire and life safety awareness program for the elderly provided by the CFD? Cheryl Labarr of College Greene was interviewed May 25, 2005. Rob Sharman of Union Park was interviewed May 28, 2005. Karen Schaffer of Westwood Commons (DePaul Adult Care Communities, Inc.) was interviewed June 2, 2005.

Ralph Dutcher, a Chili firefighter, and instructor for the City of Rochester Community Emergency Response Team (CERT) was interviewed for his experience with CERT classes. This interview took place at Chili Company 3 on May 15, 2005. Dutcher was asked: (1) Once a CERT team has been trained, what other activities do they participate in? (2) Has CERT been involved in teaching public education? (3) Would members of CERT be interested in providing this type of training to the community? This 15-minute interview was followed by Dutcher providing literature on CERT activities.

Development of this paper was performed while communicating with Deputy Chief Pat Quinn. Chief Quinn is charged with the responsibility for the fire prevention programs and several discussions were held concerning creation of a fire prevention and life safety awareness course for elderly. Discussions were held concerning budget constraints of the program, who would be selected to administer the course, and when the courses would be provided to the community.

**Personal Observations**

A full evacuation fire drill was observed at Westwood Commons on June 21, 2005. This drill was an opportunity for the fire department to interact with both the staff and residents at the assisted living facility. The observations began at the origin of the fire and then involved one wing of the facility, the reception area and the dining room. A data collection form utilized by Russell Phillips and Associates, LLC was used to evaluate staff and fire department actions (Appendix C).
Assumptions and Limitations

An assumption of this study was that all collected data retrieved from outside sources was accurate. Information was retrieved from numerous sources and through the use of the Internet. It is assumed that all the data is correct and determined from legitimate studies and surveys.

The study was limited to the main elements that could improve the prevention of a fire and/or injury to a senior. This research is not comprehensive in covering all methods to prevent fires or injuries. The data contained within is based on studies throughout the U.S. and data gathered for this project.

National Fire Incident Reporting System (NFIRS) does not specifically capture data on group living facilities or attempt to differentiate this category from nursing homes, boarding homes or other residential complexes for the elderly. Thus, there are no national estimates of fires in group-living facilities.

Data regarding ambulance responses to the three senior facilities in Chili was limited, as both Westwood Commons Assisted Living and Union Park Senior Apartments contract with Rural Metro Medical Services, a commercial ambulance company. The fire department serves as a first responder only to high priority (priority one and two) EMS incidents.

The time frame for gathering the data at these facilities was further limited by a change in reporting. In 2003, the reporting requirements with New York state changed and there was doubt to the accuracy in reporting incident information prior to this time.

What are the current and projected future demographics of the elderly population in the town of Chili?

The U.S. Census was utilized for gathering data on the elderly population. The question was also posed to Jenny Miller at the Town of Chili Assessor’s Office (May 28, 2005). She provided data to support the Census and provided projected statistics, as well as, providing information on the location of seniors in the town.

What are the fire and life safety risks associated with an elderly population?

The Red Alert computer program of the CFD was reviewed to track fire and emergency medical responses to the three senior facilities in the town of Chili. This would provide an idea of the types of responses to these locations during the years 2003 and 2004.

Data gathered at the personal observation of the fire drill at Westwood Commons provided guidance on the abilities of residents and an understanding of the facility layout in analyzing fire and life safety risks of
What issues must be addressed in creating an educational program for the elderly?

Having performed the observation of a fire drill, data concerning the staff, the residents, and the firefighters was developed and analyzed. This information will be of benefit for all parties involved. Interviews with fire prevention educators and staff administrators provided information on recommendations in creating a elderly fire prevention program and pitfalls to avoid in development. Finally, literature was reviewed to provide additional data to consider in creating the program.

What intervention strategies can be employed to effectively focus on elderly fire and life safety risks?

Literature review and information gathered from interviews as well as personal communications with department representatives was used to identify intervention strategies that may be of importance in creating a fire prevention program. A comprehensive review of all intervention strategies would be impossible; therefore, a focused approach was made. Information related to elderly fire prevention and life safety and recommendations from recognized experts provided guidance. Numerous programs were reviewed for applicable content. Eight programs and their intervention methods that would be applicable to the CFD were considered and are detailed in this report.

Results

What are the current and projected future demographics of the elderly population in the town of Chili?

The current population of those 65 years of age and older in the town of Chili is 3,338 persons. This is 12.1 percent of the town’s population. There are 1,895 individuals in the 65 – 74 age range (6.9 percent of the population), 1,149 people (4.2 percent of the population) are between 75 and 84 years of age, and of those that are 85 years and older, 294 persons (1.1 percent of the population) reside in the town.

The 2000 Census revealed in that 7.5 percent of the 10,159 households, there is someone residing there that is 65 years of age or older. Two and one-half percent of the 65 and older population are living below the poverty line.

There are currently three facilities in the town that house seniors outside of one and two family dwellings. Those include the following: College Greene Senior Apartments that presently has 100 people, however, are capable of housing 110, Union Park Senior Apartments which houses 50 residents,
and Westwood Commons, an assisted living facility, where 72 people reside, although they may take 120. This represents 222 people or 6.65 percent of the elderly population in multiple dwellings.

Chili has experienced steady and manageable growth in population and economic development during recent years (Jenny Miller, personal communication, May 22, 2005). From 1990 until 2000, the Chili population grew 10 percent. This growth is expected to continue, even among the elderly population, as housing tracts designed for seniors are becoming more prevalent in the area. The number of elderly in these and townhouses will continue to increase.

What are the fire and life safety risks associated with an elderly population?

Complications associated with aging increase the likelihood that an elderly person will accidentally start a fire and at the same time reduce his or her chances of surviving it (FEMA, 1999). It is because of this that a program be designed to help older adults and caregivers understand how they can prevent fires.

The CFD responded to each of the three senior facilities in the town of Chili as depicted in Table 3.

Table 3

Number of Fire/EMS responses for 2003-2004

<table>
<thead>
<tr>
<th>Facility</th>
<th>Classification</th>
<th>Fire Incidents</th>
<th>EMS Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westwood Commons</td>
<td>Assisted Living</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>College Greene</td>
<td>Independent</td>
<td>14</td>
<td>67</td>
</tr>
<tr>
<td>Union Park</td>
<td>Independent</td>
<td>6</td>
<td>16</td>
</tr>
</tbody>
</table>

Note. Union Park opened in 2005.

The fire responses were dominated by automatic alarms. There were 22 total responses between the three facilities, five of which were caused by burned food. Calls for trouble breathing constituted the category of most EMS responses. Emergency responses for falls numbered 14. It is noted that several calls for the fire department were for “forcible entry” into an apartment to assist someone who has fallen. There were three such calls in the time period.

In evaluating fire risks at each of the facilities, all three occupancies have automatic fire sprinklers and automatic fire detection. Westwood Commons require staff to perform quarterly fire training administered by Phillips and Associates, LLC, while the residents partake in an evacuation on an annual basis (K. Schaffer, personal communications, June 21, 2005). At both College Greene and Union Square,
there has not been any fire drill with residents. Union Square provides only a brochure on fire safety (R. Sharman, personal communications, May 28, 2005). College Greene has not performed training of staff in approximately five years (C. Labarr, personal communications, May 25, 2005).

Schaffer (personal communications, June 21, 2005) reported of Westwood Commons’ 72 residents, only one resident is a smoker. The only problem fire problem she had encountered was a resident placing a shirt on a lamp to dry, which began to smolder.

The fire and life safety risks of an elderly population include smoking, cooking, and electrical appliances (B. Day, personal communications, June 26, 2005). Elders are known to fall asleep while sitting in chairs that cause tragic fires. Older adults experience injuries, burns and death from cooking because of a number of factors; including leaving food unattended and forgetting about it, wearing loose fitting clothes that come in contact with the heat source, or the failure to use oven mitts when moving hot pots or pans. Coleman & Buxton (1991) reported on a study by the National Association of Home Builders that found, “misuse of equipment and lack of knowledge about fire safety procedures accounted for the majority of elder deaths and injuries and that most fire casualties occurred in homes without a smoke detector” (p.11).

Falls are a major contributing factor in deaths of elderly. While, the fall may not initially kill them, it may set in motion a decline in healthy activity as the adult tries to recover from the injury. The best way to deal with a fall, is to prevent it in the first place (L. Coia, personal communications, April 29, 2004).

Those living in group environments may, depending on circumstances, be at risk with the fire department. This is for several reasons. Seniors have an unrealistic view of the fire department and their capabilities. During the fire drill at Westwood Commons, several residents chose to remain in their rooms. Their reasoning was that the fire department would rescue them (K. Schaffer, personal communications, June 21, 2005). The fire department showed a misunderstanding of the procedures followed in this facility, further placing residents at risk.

**What issues must be addressed in creating an educational program for the elderly?**

“In targeting programs to reach older adults, it should be noted that older adults vary in their physical and mental abilities and probably in their risk of death from fires and burns” (Gamache, 2003, p. 5-84). As evidenced at the Westwood Commons fire drill, residents would be able bodied, some would walk with the assistance of a walker, and others would be in wheelchairs, while others may require the assistance of
others to ambulate. This is important to the educator in presenting a fire escape plan for older adults.

The classification of the facility should be addressed for the occupancy. Senior apartments, or independent living facilities may not have any staff available. This is the case at Union Park. No staff is on site. At College Greene, there are two full time unit supervisors and one part time cleaner present. This equates to a 50:1 ratio of residents to staff. As can be expected, there is more staff present at Westwood Commons, an assisted living facility. More than 20 employees were present during the daytime fire drill, however staffing could drop to 4-5 during the overnight, with an occupancy of 72 residents.

The ability to reach the target population plays a vital role in the effectiveness of the fire prevention program. Addressing the population in the three facilities is only accessing 6.65 percent of the older adults in Chili. Based on the difficulty of reaching seniors still residing at home, it may be helpful to pair up with community agencies to bring the fire prevention message to this group (USFA, 1999).

Many fire service educators are less knowledgeable about the correct way to address a group of senior citizens. (Smith, 2000) Seniors would prefer to be treated as the rest of the population, not spoken down to, or treated as a child. The presenter may, however, need to speak loud and clear to this group. Many have difficulty in hearing or seeing parts of the presentation (Smith, 2000). Smith (2000) found that morning programs are generally better for seniors. The delivery of the public education program, also, is sometimes better received when given by a peer (Gamache, 2002). In this manner, the audience may better relate to the presenter.

The creation of any fire prevention program will be more successful if done in accordance with recognized practices. Compliance with national programs may provide a model to begin development and can be easily adjusted to the needs of your jurisdiction (L. Coia, personal communication, April 29, 2005). A Five Step Process (FEMA,2004) offers the following guidance for the development of a quality public education program: conduct a community analysis, develop community partnerships, create an intervention strategy, implement the strategy, and evaluate the results.

*What intervention strategies can be employed to effectively focus on elderly fire and life safety risks?*

“Older people are more likely to die in the room where a fire originates, and experts say as many as 90 percent of elders’ injuries and death from fire are preventable” (Coleman & Buxton, 1991, p. 1). It is with this statistic in mind that an intervention strategy be developed and implemented. Educating the public
about the older adult’s risk of injuries and death has become the focus of several regional, national, and even some local organizations.

Coia and Day both recommended use of the NFPA *Remembering When* program for a fire and life safety intervention strategy. Coia uses a modified version of the program in her district. Day used a self-designed program by Phillips and Associates, however, reviewed and recommended *Remembering When* due to the ease and interactivities involved. The use of trivia games, hands on demonstrations, and a fall safety checklist, requiring participants to fill it out regarding the danger of falling in their homes are all components of the NFPA program.

Program evaluation is a critical phase of the fire and life safety educational process. “It is important to be able to demonstrate the effectiveness of the program in reaching the outlined objectives and ultimately impacting the risk in the community” (Smerz, 2003, p. 37). Powell (2002) identifies five components of the evaluation process that result in a reduction in fires and injuries: outreach activity, knowledge change, behavior change, environmental change, and end impact.

“One of the best ways that organizations can reduce fire deaths and injuries in high-risk communities is by implementing smoke alarm programs. Homes with smoke alarms typically have death rates about 40 to 50 percent less than the rate for homes without alarms” (Gamache, 2003, p. 5-59).

Discussion

This section shall be divided according to the research question. Each question will show a comparison of the literature and the results, provide the author’s interpretation of the results, and discuss the implications of the results in terms of benefits for the CFD.

*What are the current and projected future demographics of the elderly population in the town of Chili?*

The current population of the elderly in the town of Chili (12.1 percent) is nearly equal to the national average (12.4 percent) of elderly (U.S. Census Bureau, 2005). Jaslow, et al. (2004) has reported movement of 1.5 million elderly from their homes into a group environment throughout the country, contrasted with 222 seniors (6.65 percent) in Chili. Many older adults are choosing to remain home and utilizing home nursing for their needs. The future demographics include the anticipation of the elderly population nearly doubling to 20 percent by 2050 (USFA, 1999). Economic growth in Chili is expected to continue as the town grows and there is no reason not to believe that the elderly population will not continue to grow, in
It is a surprise to find the number of older adults living at home, both nationally and in Chili. One typically acquaints a senior nursing home with their place of residence, a dangerous stereotype. This is no longer the situation, as seniors are remaining active and living longer.

The implications of a growing elderly population include an increase in fire and medical responses to this community. Elderly will typically utilize medical services more than the average age adult. This increase will tax the call volume of the CFD. The fire department should maintain a constant review of the responses and properly manage this increase. Consideration may be given to having College Greene contract with a commercial ambulance for their EMS needs. The CFD is not alone in the need to plan to provide for the needs of this population.

*What are the fire and life safety risks associated with an elderly population?*

Research proves that as people age, there is a degeneration of cognitive and physical abilities (Fontana, 1999). This loss of abilities does not occur equally in all older adults, however, as time continues, the loss of some abilities becomes more apparent. Hearing loss, vision loss, and arthritis are among the more common afflictions. This limits the ability to detect and escape a fire, increasing the possibility of injury or death.

Statistics generated throughout the country were supported by local fire prevention and life safety educators. The common causes of fire death were cited as smoking, heating, and cooking and fire injuries. Causes of cooking, smoking and heating were cited in numerous studies by NFPA (1991, 1999), USFA (1999, 2001, 2002, 2004), FEMA (1999, 2004a, 2004b), Jaslow, et al. (2004). Even more research indicate falls as one of the highest risks associated with an older population. The numbers to support such a statement are carried by nearly every support agency dealing with seniors.

In analyzing the data of CFD fire responses to the three senior facilities, it is evident that the installation of automatic fire detection systems in each of the facilities has provided an assurance to those living there. In 22.7 percent of the fire responses, the cause was burned food. There were 17 other (77.27 percent) responses attributed to a smoke/heat detector in which it was not coded as burned food, however, there is a high probability that smoke from cooking may have set off the alarm and the condition dissipated prior to the fire department’s arrival in some of those incidents. The alarm system has alerted the fire department to
a minor problem, which, left without notification, could have resulted in larger or tragic loss.

The ambulance and EMS response (in cases where the facility has a contract with a commercial ambulance, the fire department will dispatch a first response vehicle for EMS only) to these facilities proved difficult in reviewing. Since two of the three have contracts with Rural Metro, CFD is not alerted to BLS criteria calls. It is also noted that on many of the EMS related calls, the dispatch may be for a fracture of a bone. This fracture may have occurred as a result of a fall, but the incident is not listed as such.

Westwood Commons has only the main kitchen where staff performs the cooking. Residents do not have kitchens in their apartments. This reduces the chances of cooking incidents significantly in this facility. Westwood Commons also reported that in the 72 residents present, only one of the residents smokes. This is a further reduction in fire risks to this population, however, a fatal fire can occur from just one cigarette.

Jaslow, et al. (2004) reported a relative indifference to fire safety preparedness in the elderly population, very similar to the general population and FEMA (1999) reported many seniors with unrealistic expectations of the fire department. This is supported in the observations of the fire drill at Westwood Commons. Some residents awaited rescue by the fire department in their rooms. This rescue is dependant upon many situations including, early arrival of the fire department, access to the victim, and adequate firefighters on scene. In another situation, a misunderstanding by firefighters on the fire plan at this particular facility may place them in peril as well. In a typical situation, residents evacuate to the outside of the fire building. This is not the case in most health care facilities, nor is it the case at Westwood Commons. During a fire, those in the immediate fire area, evacuate to the dining room. CFD firefighters have never experienced a situation where residents would remain inside the building during a fire (P. Quinn, personal communications, June 21, 2005).

The research found a few differing opinions in older adult fire safety. While generally thought of by the fire service as a method to prevent loss of life and reduce fire loss, the use of fire sprinklers was not rated as a high priority for health care professionals. They countered that sprinklers would save only three percent of the lives lost because of life safety issues commonly found in health care facilities. “It was identified that 55% of accidental deaths occur because of medication errors, 20% because of falls and another 17% as a result of elopement” (Berner, 2004, para. 2).
There also appeared to be controversy among which institution was rated with more risk, a nursing home, or one’s residence. Jaslow, et al. (2004) and FEMA (1999) believe that fire-safety practices and disabilities contribute to an increased risk of injury and death from fire among residents of group-living facilities because of fire safety practices and disabilities of residents. Meanwhile, USFA (1999) feel those at home are at higher risk because 30 percent of non-institutionalized older adults live alone. Results show risk of death larger at one’s residence.

Finally, Smith (2000) said,

It’s been my observation that seniors, compared to people in their 20’s are generally more fire safety aware. They didn’t live to be 70, 80, or 90 by being careless with fire—or anything else for that matter. Yes, it’s true that they are higher at risk for fire deaths and injuries, but much of this may be to slower reaction time, poor vision and similar factors, rather than lack of knowledge. (p. 28)

Knowledge of the risks associated and their causal factors are the basis for development of a fire prevention program for elderly. Once these are discovered, an applicable intervention plan can be devised to reduce and eliminate, if possible, the risks to the elderly population in the town of Chili.

What issues must be addressed in creating an educational program for the elderly??

There is a minority opinion that believe older adults should be targeted with their own special materials (USFA, 1999), however, it was found the majority focused on principles of fire protection utilized with the general population. These principles include use of smoke alarms, need to exit, stop, drop and roll, and promotion in the use of fire sprinklers (FEMA 1999).

It was agreed between literature and results that the program needs to address more than residents in group facilities. This is only a small portion of the elderly (6.65 percent). Enhancing the program to encompass working age adults who care for parents, elder care centers, church groups, and home nursing agencies are examples of target groups to reach out to with the fire prevention message (Powell, 1997). There was agreement in the need to develop community partnerships to effectively reach this high-risk audience and their caregivers. A common theme that was noticed was the importance of working together with community stakeholders. Those who did appeared to have a more successful prevention program.

Staff can play a vital role in assisting the evacuation of residents in a timely manner, in the event of a fire. Based on the results, staff at College Greene have little to no experience in these evacuations. There
are no staff at Union Park to affect evacuation. Those staff at Westwood Commons be tasked for this purpose have undergone training. During the day shift there may be more than 20 staff present to assist residents, however, during the evening shift, there may be as few as 4-5 employees with a much higher work load. This information can provide the CFD an idea of the rescue problem that may be encountered at each facility.

The opportunity to observe a fire drill provided information that was not expected. This included how the fire department approached operations at the fire drill. Members were not at all familiar with the protect-in-place philosophy or the need to prevent the total evacuation of the complete facility. It was apparent from the answers by firefighters that a program to provide them awareness of the fire drill plan of Westwood Commons will be helpful. Simply placing a map of the facility in a response vehicle will not suffice. Firefighters must be taught the Remove, Alarm, Confine, Evacuate (RACE) procedures.

The information contained in the issues section plays a vital role in developing a program for elderly in Chili. There are numerous items that should be followed for this high-risk group. For example, the delivery of the program by an 18 year old firefighter may not be as well received as coming from a 60 year old member of the fire department. In consideration of this, there are some older members (also exempt members) of the CFD that may be able to provide this class (P. Quinn, personal communications, June 21, 2005). It may also be feasible to use trained CERT members to assist in providing these classes (R. Dutcher, personal communication, May 15, 2005).

What intervention strategies can be employed to effectively focus on elderly fire and life safety risks?

There are a multitude of strategies that can be used to implement a fire prevention and life safety class for elderly. There did not appear to be much discrepancy between the literature review and the results of this report. Both revealed programs with the same intent: to reduce fire death and injuries and prevent falls.

A closer evaluation of the intervention strategies showed all eight with the same fundamental fire prevention messages. The life safety strategies, however, were only carried by half of the programs. The four including a life safety message all discussed the need to prevent falls. None of the programs mentioned the second leading cause of unintentional injury and death in older adults, motor vehicle accidents. While, performing research, it was noted that there many organizations have programs that address senior driving, although all are presented as stand alone courses. The failure to include motor
vehicle accidents dismisses 24 percent of unintentional deaths and injuries. A program that would address falls (31 percent) may have the greatest impact on 55 percent of unintentional deaths and injuries.

The awareness in elderly involved in motor vehicle and pedestrian accidents may provide a large return on the educational process once included in an elderly fire prevention and life safety course. A large number of the responses of the CFD are to motor vehicle accidents. Those residing at College Greene and Union Square are likely drivers, as are many of those older adults in Chili not living in one of these facilities.

Recommendations

The following recommendations stem from data analysis and literature research conducted for this project:

1. Prevention and education efforts have traditionally been targeted to reduce fire loss in the community, new emphasis should be employed to include injury reduction. The fire department will respond to all emergencies whether a building fire or a fall, and an attempt to reduce both could be valuable to both CFD and the community.

2. The Remembering When program should be purchased from NFPA and tailored to include motor vehicle safety and suit the needs of the CFD.

3. The CFD should ensure program effectiveness and community support, a program created through the process of: community analysis, developing community partnerships, creating an intervention strategy, implementing the strategy, and evaluating the results will yield an effective public education program.

4. The elderly fire prevention and life safety awareness program be taught on an annual basis to residents and staff of College Greene, Union Park, and Westwood Commons. Opportunities should be explored to present at Chili Senior Center, and local churches with elderly groups.

5. Community partnerships should be established between the CFD and agencies that may provide assistance to elderly in the town of Chili (home nursing, church groups, neighborhood groups). Consideration should be to partner with an organization, such as CERT to assist in providing instruction.
6. A program providing training to firefighters specific to minimizing risk factors in the homes of elderly should be developed. Once trained, the CFD may offer home inspections to older adults focusing on fire risks and fall prevention. This service needs to be advertised once in place (fund drive mailing, open house, Chili Senior Center, community organizations).

7. CFD should hold a training class to inform the firefighters of the fire plan used at Westwood Commons, to understand what is being done prior to their arrival at a fire. Pre-incident planning should be performed at each of these facilities.

The recommendations resulting from this report are not inclusive and the CFD should continually review methods aimed at reducing fire deaths and injuries. Future studies should review the data causing elderly fire deaths and injuries. As the fire service and technology address some of the risks, other issues may surface which will cause the fire prevention educator to alter the program, keeping the program up to date. The benefits of implementing the recommendations of this report include fewer responses to senior centers, a more responsive elderly population and a decreased fire and injury risk to those who have been educated.
References


Seniors are focus of a new fire safety program created by the state fire marshal’s office, elder affairs. Retrieved March 20, 2005 from http://www.fldfs.com/PressOffice/ViewMediaRelease.asp?ID=1814


Emmitsburg, MD: Author.


Appendix A

The following represent solutions developed by the older adult expert group at the Solutions 2000 Symposium:

- Promote life safety, not just fire safety, in programs addressing older adults.
- Identify areas in fire safety that are lacking specifics for older adults.
- Combine the expertise of the fire service industry and older adult advocacy groups (e.g. AARP) to develop fire prevention and education programs, in addition to an effective way to market new programs.
- Include life safety education in the materials and programs for fire safety.
- Encourage the fire service to collaborate with advocacy groups to expand the outreach of its message and promote the well-being of older adults.
- Do not isolate or single out older adults in fire safety programs; older adults prefer mainstream messages that apply to all sections of the population.
- Follow the advice of recent market research studies that shows older adults do not want to be singled out; many feel that it supports a stereotype that the elderly are frail and helpless, which is not their self-image and using that image may turn many off from the fire safety messages.
- Develop universal fire safety messages that pertain to all sections of the population.
- Solicit advocacy groups to add their own subtleties to universal fire safety messages for their older constituents. Test, market, and package these materials.
- Promote fire sprinkler systems for all homes and for all care institutions; fire sprinklers can help save older adults, who are the age group at highest risk.
- Expedite the development of smart stoves. Cooking has been identified at the leading cause of fire injuries to older adults.
- Seek funding to continue research and prototype development of the “smart stove.”
- Solicit support from agencies, such as NIST, Underwriter’s Laboratories, and CPSC to test and promote the safety and efficacy of the “smart stove.”
- Seek legislative backing that would involve the enforcement community; they should
participate in the widespread acceptance and installation of “smart stoves.”

- Work with the insurance industry to create financial incentives for homeowners who install “smart stoves” (USFA, 1999, pp.11-12).
Appendix B

The Older Adult focus group provided the following recommendations to achieve improved fire safety at the *Beyond Solutions 2000* Symposium:

1. Use social marketing techniques to develop and deliver targeted, culturally sensitive educational efforts that promote the installation of fire sprinklers and use of long-lasting batteries and/or hard-wired, battery back-up smoke alarms.

2. Support expanded research of human fire behavior, and continued surveillance of deaths, injuries, risks, and protective factors.

3. Identify, showcase, and recognize communities that have successfully promoted the installation of home fire sprinklers, made the costs more affordable, and educated the public on the benefits in general.

4. Advocate and propose legislation that all new structures be equipped with early warning, detection, and alarm, and fire sprinklers.

5. Establish a centralized clearinghouse to identify and disseminate fire safety information (USFA, 2002, pp. 11-12)
Appendix C

R. PHILLIPS & ASSOCIATES, LLC
ADULT HOME FIRE DRILL EVALUATION FORM

FACILITY: Westwood Commons
DATE: June 21, 2005
NUMBER OF STAFF: 20
LOCATION: Room 135
RESIDENTS IN BUILDING: 71
OBSERVER: Kevin Kolb
RESIDENTS EVACUATED: 67
TIME: 2:47 P.M.
FULL EVACUATION: Yes

FIRE AREA
At discovery of fire:

1. Was CODE WORD called? YES
2. Was fire room evacuated? NO*
   a. Was room checked thoroughly, including bathrooms, alcoves, etc? YES
   b. Was staff member familiar with handling of medical equipment? N/A
3. Were all doors to fire room closed? YES
   a. Was door marked to indicate evacuated room? YES
4. Was fire alarm activated or simulated? ACTIVATED
5. Was call placed to switchboard operator? N/A
   a. Was proper extension used?
   b. Was proper information used?

At sound of alarm:

1. Was overhead announcement of fire location made? YES
2. Was back-up call made (simulated) to Fire Department? SIMULATED
3. Were all doors in fire area closed? YES
   a. Were residents/patients in corridors placed in rooms? N/A
   b. Was equipment cleared from corridor? N/A
4. Were elevators recalled and locked? N/A
5. Did staff in the immediate area respond to the fire scene? YES
6. Did proper staff from the other areas respond to the fire area? YES
7. Was Control Station established in vicinity of fire area? YES
8. Was proper decision made regarding evacuation of fire/smoke compartment? YES
9. Was staff familiar with proper evacuation destination? YES
10. Was staff familiar with method to indicate evacuated rooms? YES
11. Did individual in charge of fire area provide adequate leadership? YES
12. Was staff member in place to meet the Fire Department? YES
    a. Was this staff member aware of fire location and appropriate entry point for Fire Department?
FACILITY:

OTHER AREAS:

1. Were all doors closed? YES
   a. Were residents/patients placed in rooms? N/A
   b. Was equipment cleared from corridor? N/A

2. Were elevators recalled and locked? N/A

3. Was other staff standing by for instructions? YES

4. Were residents/patients in rooms being checked by staff? NO*

5. Did person in charge of each area provide adequate leadership? YES

6. Were members prepared to receive evacuated residents/patients? YES

COMMENTS:

A staff member was told she saw smoke from under the door of room 135. She felt the door and was informed the door was hot. The code word was not immediately called out. The fire room was not entered because of the hot door. Fire room was marked with fire extinguisher. Fire discoverer needed encouragement to begin evacuating other rooms. In the immediate fire area, one resident did not want to leave and remained in the room throughout the drill. All other areas were evacuated and moved to the dining room.

Fire department members need better understanding of operation in this facility. Some of their recommendations concerning where to move residents – outside, is not conducive to their frail conditions.

The receptionist was questioned on her responsibilities. She would make a back up call to the fire dispatcher and show the fire department where the fire was located.

Those remaining in rooms do not have tags on their doors. They stay in the room with the door locked. This locked door causes additional work for the fire department to enter and there was no communication to firefighters informing them which residents remained in their rooms.

Fire drill was preceded by a tour of the facility for inspection purposes.