Reducing the Risks of Injuries from Falls to the Elderly Population

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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 the appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: ________________________________________________
Abstract

In 2009, the West Carrollton Fire Department (WCFD) was facing significant increases in adults ages 65 and older falling. The problem was that WCFD did not have a fall prevention plan for the elderly population. The purpose of this research was to develop a fall prevention program for the City of West Carrollton. Action research was used to answer the following questions: a) what are the most effective methods for the elderly population to learn; b) what strategies can be employed to reduce the amount of falls and injuries in the elderly population; c) what resources are available to implement the recommended strategies? Literature reviews and personal interviews with local advocacy agencies were conducted to obtain relevant criteria for reducing the risks associated with falling. Recommendations included developing a standard operating procedure using a fall assessment instrument on elderly patients that have fallen. Additionally, form partnerships with local advocacy organizations to better educate and prepare the elderly in strategies to prevent falls.
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Introduction

Falls are a significant risk to the health and freedom of adults ages 65 and older. In America, over one third of adult's ages 65 and older fall each year making it the most common cause of non-fatal injuries and hospital admissions. Regrettably, every 18 seconds an older adult is treated for their falls and every 35 minutes one of these adults succumb to death because of their injuries (Centers for Disease Control and Prevention [CDC], 2008). Among the elderly, falls are the ninth leading cause of death and the leading cause of fatal and non-fatal injuries. Financial costs for falls and injuries were about $19 billion and the trend is expected to increase (Centers for Disease Control and Prevention [CDC], 2006). Consequences of these injuries and deaths affect more then just the individual. They strain family members, friends, and place a burden on health care professionals and their resources. Pragmatically, not all falls and injuries are preventable. However, there are strategies that can be employed to reduce the number of falls and injuries and help older adults live longer and healthier.

Since fire and emergency medical organizations are a central part of any community, they must be able to respond to current and future needs. The problem is that the West Carrollton Fire Department (WCFD) does not have a fall prevention program for the elderly population. The purpose of the research is to develop a fall prevention program for the City of West Carrollton.

Action research will be used to answer the following questions: a) what are the most effective methods for the elderly population to learn; b) what strategies can be employed to reduce the amount of falls and injuries in the elderly population; c) what resources are available to implement the recommended strategies?
Background and Significance

The City of West Carrollton consists of approximately 13,800 residents in a suburban setting of 6.1 square miles in the Dayton, Ohio Metropolitan region (U.S. Census Bureau, 2001). Industry includes two large paper mills, tool and die manufacturing, and a hazardous waste recycling plant. West Carrollton is located among several transportation arteries that include a major interstate highway and two central railroad lines.

WCFD is a full service combination department providing fire suppression, prevention, EMS, and technical rescue services. Our annual budget is $1.5 million employing 3 full-time career firefighter/paramedics, 35 part-time firefighters, 3 full-time captains, 1 fire prevention officer, and 1 chief officer. The fire captains and career firefighters work on a 24/48 platoon, while the chief and fire prevention officer works a traditional 40-hour week. Each platoon consists of a career firefighter/paramedic, a shift captain, and a range of part-time personnel. Divided between the two fire stations is a combination of three engines, one ladder truck, and two medic units. Additional services provided by the department include fire prevention programs conducted for preschool to secondary education and home fire inspections.

In 2008, WCFD responded to nearly 1,900 calls with approximately 1,600 of those were medical calls. Out of the 1,600 medical calls, 143 were for falls and injuries for adults ages 65 and older (Appendix A). The number of falls and injuries for adults ages 65 and older requiring emergency medical treatment in 2009 (current data available) has increased by 29% in comparison to 2008 (Appendix A). Breathing difficulty was the most frequent reason for medical calls in the elderly population while falls ranked second. Though breathing difficulty was the most prominent calls for the elderly, the argument for the fire department choosing falls was based on the ability and success of the community to reduce the mitigating factors.
Adults ages 65 and older who experience falls and injuries undergo a more difficult time with daily activities, and have a reduced quality of life. Additionally, the estimated cost for falls and injuries to the elderly population in West Carrollton is $3.5 million (CDC, 2008). These losses will most likely continue to rise in the future unless a risk reduction plan is implemented.

Over half of U.S. population ages 65 years and older live in the nine most populous States: California, Florida, New York, Texas, Pennsylvania, Ohio, Illinois, Michigan, and New Jersey. These States account for over half the U.S. population (U.S. Fire Administration [USFA], 2006). In 1980, the average median age for West Carrollton was 28.5 and by 2007, it had increased to 36.2. Certainly, this upward trend in the median age is going to increase in time because almost 50% of the population in West Carrollton is between 25 and 54. Longer life spans and the retiring of baby boomers are the contributing dynamics that will double the population of adults ages 65 and older in the next 25 years (CDC, 2007). These changes in the aging population will result in an increase demand for emergency medical services in the City of West Carrollton (Grunkemeyer et al., 2009).

When considering educating the public, WCFD does a good job in reaching the youth of the community with a highly effective risk reduction program in the schools. All grades K-7 will receive a fire prevention topic each year. High-school grades 10-12 will have one prevention prom program each year involving safe principles including driving under the influence. Our prevention bureau reaches approximately seven thousand school aged children each year. According to Leanne Nash, Fire Prevention Officer, there have been at least four documented cases where children using the knowledge provided in these programs have saved lives at house fires (L. Nash, personal communication, May 18, 2009). Regrettably, we have not treated the elderly with the same level of passion about risk reduction programs.
The West Carrollton Fire Department’s current level of prevention activities related to the elderly consists of several visits each year to Canterbury Court, a retirement community. Residents receive blood pressures checks and general fire safety information during these visits. While both measures are admirable, there is a need to evaluate how successful these efforts are in reducing falls and injuries. Clearly, injuries and falls for the elderly in West Carrollton are increasing, (Appendix A) justifying an examination of the current strategy of risk reduction and its effectiveness.

The significance of this project is to develop a fall prevention program in West Carrollton for adults ages 65 and older. There are three principal reasons this research is important. First, this research may help explain the reasons why older adults are falling and how they are injured. Next, provide WCFD with a strategy that will lead to a safer environment for the elderly. Lastly, by using these strategies, the expectation is to decrease the amount falls that occur in the elderly population.

This research directly relates to the National Fire Academy’s [NFA] Executive Analysis of Community Risk Reduction [EACRR] course by developing a risk reduction model that focuses on the elderly population in the City of West Carrollton. The formation of this applied research satisfies the United States Fire Administration’s operational objective in reducing the loss of life for adults ages 65 and older by 25 percent.

Literature Review

To understand what others have researched and learned about fall prevention in the elderly population, a review of the literature was completed. Common practices, research, and essential concepts of what others have accomplished on reducing risks in the elderly population were acknowledged.
Reducing the Risks

Understanding how people naturally learn is the central theme for researchers, educators, and institutions. Meier (2000) discusses there has been more research into how the brain learns in the past 25 years than in all human history. This science has progressed due to the union of neuroscience, cognitive psychology and technology. While there is still much to learn about the brain, recent discoveries are now challenging conventional teaching methods and practices. The Triune Brain theory, discovered by Dr. Paul MacLean, is the most recent and popular view of how the brain functions. According to MacLean’s theory, the triune brain is like having three separate brains in one – the reptilian, mammalian and neo-cortex. The reptilian brain is the primal part and its major goal is survival. Functions such as heartbeat, respirations, and instincts are the responsibility for this function of the brain. He then discusses how the mammalian portion (midbrain) is responsible for social, emotional, and long-term memory. Lastly, the neo-cortex, commonly called the brain cap, makes up about 85% of the brain. Its responsibility is for thinking, learning and problem solving (MacLean, 1990). The importance of this theory is that traditional learning (passive learning) uses the reptilian part of the brain instead of using the power of the entire mind.

Until the 1970’s, many of the theories for learning came from psychology and typically were general in nature for both children and adults. The term pedagogy or teacher-directed style of education was used to fit both children and adults learners. The hypothesis of pedagogy is that adults and children have similar learning processes. In fact, this theory is the most common method of thinking about education until recently. For example, educators using the pedagogical model assumed that only learners needed to know what the teacher wanted them to know. They were simply carrying out the teacher’s directions on when, how, and what should be learned.
Finally, motivation to be successful came from external pressures such as parents, grades, and the consequences of failure (Knowles, 1984).

In contrast, andragogy consists of the learning strategy focused on adults and originally used by Alexander Kapp in 1833. Malcolm Knowles (1984) advanced the theory of adult education emphasizing that adults are self-directed and take responsibility for their learning. His assumption is that adults need to know the reason for learning something and that the topic has immediate value. Knowles discusses how adults approach learning as a problem-solving process that uses their experiences including mistakes. He concluded that case studies, role-playing, simulations, and self-evaluation are examples of what the adult learning process should include. Research by Davenport and Davenport (1985) agrees with Knowles hypothesis that andragogy is indeed a valid theory of how adults learn and that the process is more important than the content. Conversely, Hartee (1984) raises doubts whether adragogy was a theory, suggesting that these were just principles of good practice, or descriptions of what the adult learner should be like. Knowles later acknowledged that adragogy might be less a theory of adult learning and perhaps more a model of assumptions on how adults learn. Nevertheless, Knowles theory is still the foundation of adult education today.

Edgar Dale (1954) created the “learning pyramid” illustrating the effectiveness of various teaching methods and their relation on how people retain information. The pyramid shows (Appendix B) the percentage of information that an individual recalls through either passive or active learning experiences. Lecturing and reading or “passive learning” is shown to be the least effective learning method in the model. Conversely, learners who are actively practicing or teaching concepts show a higher level of information retained. That dynamic validates the
importance for learners to perform skills rather than just sit in a classroom and watch the instructor perform the tasks.

Research conducted by Robyn Rice (1999) in *Geriatric Nursing* explains how home health care nurses educate their elderly patients. She details how changes physically and psychologically can affect the learning process. The study discusses how older adult’s change little intellectually, but may take longer to learn a concept. Additionally, Rice explains that the aging process does have a physical component that can impede learning. Several recommendations are stated in addressing these teaching challenges. For example, slowing the pace of a presentation, allowing sufficient time for practice, and repeating information frequently are all methods on how to improve cognition in older adults. She also explains that vision and hearing impairments can be a challenge in learning. When speaking, face the audience in a slightly louder tone. Typed or printed material should be on glossy white paper using large print that is at least 12 font or larger.

Ostwald and Williams (1986) studied how older adults learn and agree with Rice’s approach to teaching older adults. They also assert that a successful learning environment should include an atmosphere that is warm, convenient, and familiar to the participants. Lastly, the study discusses the advantage of should occur in the morning when energy levels are high and limited to one hour or less.

Instructors must understand the importance of not frightening their audience into action with their risk reduction program. Unfortunately, fire service instructors sometimes use illustrations to terrify or scare their audience into believing this technique will enhance their attention; however, this is not true. Denial creeps in as the natural tendency when adults are frightened usually resulting in no action to prepare or prevent an emergency. However, adults
are more accepting to the message if it is about the facts on how to prepare for a disaster or how to make their home safer and void of the unpleasant metaphors (Trench, 2007).

The strategy in reducing risk requires the community to use a plan that is similar to pre-incident planning. The EACRR course stresses the development of partnerships within the community to implement programs, initiatives, and services that prevent or mitigate the risk of human made or natural disasters (NFA, 2009).

The EACRR course (NFA, 2009) lists five mitigating strategies that should be included as a measure to reduce risk in a community. Education to inform the public, engineering to develop physical constructs in design, enforcement to insure conformity of plan, economical incentives to gain support, and emergency response to increase safety are all interventions to lower risk in the community.

Because of the complexity of intrinsic and external risk factors associated with older adults falling, a multi-factor intervention strategy is preferred. For example, age, mobility, and chronic conditions are just a few internal factors that are unique to each person. External factors such as tripping hazards, poor lighting, and lack of grab rails can elevate the risk of falling to older adult’s (Stevens, 2005). Successful fall prevention programs require a systematic method for identifying older adults who are at a higher risk for falling, so that fall prevention resources can be targeted where they are most needed. Additionally, the Rand report (2003) concluded that successful fall prevention programs using clinical assessments by medical personnel could reduce the average number of falls by 48 percent in older adults.

Many fall prevention programs have been delivered by a mixture of providers, including exercise instructors, nurses, physical therapists, social workers, and fire departments. The National Research Council and the Institute of Medicine (IOM) recognized the need for a
Reducing the Risks

coordinated effort to prevent injuries and recognized the CDC as the primary federal agency to lead injury research (CDC, 2006).

Since falls are a leading cause of injuries to older adults (CDC, 2008), using an assessment tool can inform caregivers on why the fall occurred. First, it helps target those older adults that are at greater risk for falling. Secondly, the assessment can tailor a prevention strategy to the needs of an individual. One tactic used in the acute care setting is the Hendrich II Fall Risk Model. Designed to be administered quickly, it focuses on eight independent risk factors to determine the intervention strategy. To prove the models’ efficacy, research by Henrich, Bender, and Nyhuis (2003) validated the instrument in a recent study.

The CDC (2006), American Geriatrics Society (“Guideline for”, 2001), and the National Council on Aging (National Council on Aging [NCOA], 2005) have identified the following five building blocks of an effective community-based fall prevention program: a) muscle weakness; b) environmental factors in and around home; c) prescription medicines; d) visual defects; e) education.

Strength and balance exercises are a key intervention to reduce the risk of falling in older adults. They do so by improving muscle tone, strength, and balance. Exercises such as Tai Chi offer promising results by improving balance (Center for Disease Control and Prevention [CDC], 2008b). Key findings about physical activity confirms that any exercise program must be sustained for over 10 weeks long to be effective. Additionally, there is evidence to show Tai Chi is among the best exercises for this demographic population by reducing the falls (“Guideline for”, 2001).

According to the CDC (2008b), approximately half the falls of older adults occur in the home. Risk factors such as poor housekeeping, rugs, inadequate lighting, and the lack of
handicap accessories (railings, ramps) can cause STF. A facilitated home assessment can identify many risk factors and provide older adults a plan to modify their environment resulting in a safer home.

Older adults can benefit from having their medicines reviewed to recognize the side effects of drugs and their possible interactions. Older adults who have fallen should have this assessment completed in the light of reducing further falls. Unfortunately, older adults frequently receive prescriptions from multiple physicians increasing their chance of dizziness or drowsiness. These symptoms are exacerbated when older adults take four or more prescriptions or those taking psychotropic drugs (“Guideline for”, 2001).

Vision conditions such as cataracts, glaucoma, and vision loss are common fall risk factors for older adults. Many of these abnormalities are painless and occur gradually. The erosion of visual acuities can disturb balance and walking by obscuring hazards that otherwise would have been avoided. Additionally, incidents of hip fractures occurred more frequently with older adults having visual impairments. A routine vision examination in older adults provides a good management plan to reduce the risk of falling and minimize vision loss (CDC, 2008b).

Behavioral and educational programs can be beneficial in developing a fall reduction program. Group sessions can provide an atmosphere of sharing personal experiences by reducing anxiety and fostering motivation to learn new ideas. Others may find individual instruction less intimidating. Whether the education is delivered to individuals or groups, the evidence suggests that it should be combined with other interventions to be effective. While education has demonstrated some short-term benefits in improving attitudes, providing social interactions, and self-efficacy, education by itself does not reduce the incidence of falls in older adults (“Guideline for”, 2001).
Industry is not exempt from the risks of a growing population of older adults. As the workforce ages, one may argue so does the incident of falls. Layne and Pollack (2004) in the *American Journal of Industrial Medicine*, studied how an older population of workers affects the incidents of slips, trips, and falls (STF) in industry. Their research demonstrates that STF is the leading cause of workplace injuries through contamination of the floor surface by fluids, objects, and debris. Interestingly, the results of this study illustrated that older workers (+55) were not at increased risk for a fall injury compared to their younger co-workers. However, when an older worker falls, there is a greater probability of sustaining a severe injury requiring hospitalization. The study also discusses the strategies for preventing STF. It should include a walk-through housekeeping program that ameliorates the risk of falling by maintaining a clean, dry, and debris-free floor. Additionally, using slip resistant materials on the floors and slip resistant footwear can lesson the hazard of STF by increasing the coefficient of friction. Actions such as this would help reduce the risk of falling in the industrial setting.

In the City of Edmonton, Canada, the emergency medical system recently was experiencing an increase of falls to older adults. For example, one elderly patient had fallen 13 times in 11 days in the city. The majority of these calls did not require transportation to the hospital because of the minor injuries sustained. However, resources are still needed to respond and assess the patient. These circumstances initiated the organization to look at how they can mitigate the risk factors of falls in the elder population. The medical system launched a pilot program with the help from a grant to develop educational materials and a fall risk assessment for older adults. A key component of the prevention program was the utilization of paramedics to assess elderly patients that have fallen. Patients were evaluated using a risk assessment tool to determine their threat of falling. If further follow-up is needed, the evaluation is sent to the
appropriate community service organization for a specialized assessment. Another component of the program was to give information about preventing falls and how to get up off the floor safely through education. The impact of the program has demonstrated over 100 referrals to community organizations that can further assist older adults to lower the number of risk factors and potentially save their life (Journal of Emergency Medical Services [JEMS], 2009).

Resources available for the West Carrollton Fire Department to implement a fall reduction program can be classified into national and local assets. Leading the charge at the national level is the CDC (2008b), NCA (2005), and USFA (2006) in providing interventions designed to help community based organizations address the problem of falls among older adults. At the local level are organizations such as the Area Agency on Aging, Alzheimer’s Association, Wright State University Boonshoft School of Medicine and Miami Valley Hospital offer assistance to the elderly population ranging from education, home hazard assessments, and exercise programs to medical interventions.

Procedures

The intent of this research is to develop a fall prevention program to reduce the number of injuries from falls for adults ages 65 and older. This applied research project uses action research to develop and implement a fall prevention plan that includes a standard operating procedure (Appendix I) in concert with answering the following questions: a) what are the most effective methods for the elderly population to learn; b) what strategies can be employed to reduce the amount of falls and injuries in the elderly population; c) what resources are available to implement the recommended strategies? The procedures that guided this research included
interviews and a literature review to analyze the existing body of knowledge and resources on reducing risks of falls to older adults.

The intent of the interview process (Appendix C) is to answer the research questions while using the list of resources to implement a fall prevention plan for WCFD. A list of support Agencies listed in the CDC guide on *Preventing Falls: How to develop a Community-based Fall Prevention Programs for Older Adults* (2008b) directed the author to seek out local providers of community services to interview.

Between the dates, November 2, 2009 and November 17, 2009 the author conducted interviews with the following agencies:

- Miami Valley Hospital, Elder Care Program (Appendix D)
- Alzheimer’s Association, Miami Valley Chapter (Appendix E)
- Boonshoft School of Medicine, Wright State University (Appendix F)
- Episcopal Retirement Home (Appendix G)
- Area Agency on Aging (Appendix H)

Dr. Lawhorne (Appendix F) is recognized as an expert in geriatric care and his name was obtained through referrals from other agencies. Tammy Herlihy from Episcopal Retirement Home (Appendix G) was contacted through the author’s knowledge of the retirement community’s demographics. The author conducted all the interviews pertaining to this research ensuring the process for each session was reliable.

For this research, the definition of an elderly person is adults ages 65 and older.
Limitations

This research was restricted by how well the individual in the interview understood the questions. Secondly, the author did not contact all the regional service agencies available for the elderly consequently, leaving out material that may have perhaps contributed to this research.

Results

Research question 1: What are the most effective methods for the elderly population to learn?

The responses of the five agency interviews (Appendix D-H), demonstrated that older adults learn best when encompassing all learning styles in an environment that is known to the individual such as churches, community rooms, and schools. Using a teaching technique of hands-on, group sessions, and lecturing will prevent boredom in the classroom. Additionally, limit the training sessions to 1 hour or less. The Episcopal Retirement Home (Appendix G) discussed the use of audio-visual aids and white-boards as an adjunct to improve the teaching techniques. However, the images must be large enough for people who have vision impairments.

Research question 2: What strategies can be employed to reduce the amount of falls and injuries in the elderly population?

Falls were listed as the greatest risk to the elderly population with dementia listed as the second greatest risk. In common, all five agencies (Appendix D-H) listed a multi strategic approach to reduce falls since rarely is there a single cause. Education was the leading strategic intervention that provides the elderly information on how to assess and prevent their risk of falling. Other tactics listed were to provide clinical assessments of the elderly to find underlining medical causes. The Episcopal Retirement Home (Appendix G) listed exercise and installation of handrails as an important intervention strategy to reduce falls.
Research question 3: What resources are available to implement the recommended strategies?

All the five agencies interviewed (Appendix D-H) said their primary mission is to improve the quality of life of the elderly and assist them in obtaining the needed resources to stay in their home. Each of these organizations specializes in a particular intervention strategy that can offer resources to prevent injuries including falls.

Appendix D is the Miami Valley Hospital Elder Care Program that focuses on providing superior care to seniors admitted for hospitalization. Their goal is to reach out and educate the elderly in the community through health fairs and speaking arrangements. The agency collaborates with Wright State University’s Boonshoft School of Medicine and the local chapter of the Alzheimer’s Association in preventing injuries to the elderly.

The Alzheimer’s Association (Appendix E) focuses on early detection of dementia in the elderly. They provide a plan and give support to both patients and family members that has a loved one affected by Alzheimer’s disease.

Wright State University’s Boonshoft School of Medicine (Appendix F) is primarily focused on teaching physicians, nurses, and other health professionals in geriatric medical care. Current research activities include interdisciplinary work on falls, delirium, dementia, and long-term care of older adults. A key research objective for the school is the study of interventions and models of care that will allow older adults to remain safely in their homes for as long as possible.

Episcopal Retirement Homes (Appendix G) enhances lives of the elderly and physically disabled with limited incomes by offering one and two bedroom housing sponsored by Housing, Urban and Development (HUD). This 150-apartment complex is located at Canterbury Court in
West Carrollton, Ohio. Independent living arrangements are only permitted in this community. Nevertheless, staff from the complex can arrange for ancillary services such as meal on wheels, exercise classes, and home health-care services if the residents so desire.

The local Area Agency on Aging, (Appendix H) is a private non-profit organization, that advocates, plans, coordinates, develops and delivers services for adults aged 60 years and older using federal and state funding.

Discussion

The literature review and research have demonstrated that the West Carrollton Fire Department can develop and use a fall prevention plan to reduce the amount of injuries from falls to the elderly population.

It is no longer acceptable to treat elderly adults that have fallen by just placing them back into bed without further intervention. Injuries from falls and the costs associated are rising for the elderly placing a financial, physical, and psychological burden on the patient, family, and medical system (CDC, 2006). Additionally, the estimated cost for falls and injuries to the elderly population in West Carrollton are $3.5 million (CDC, 2008).

We know that falls are the most common cause of injury and the ninth leading cause of death to the elderly (CDC, 2008b). Interviewing the local groups listed falls as the primary reason with dementia being second as the most common cause of injuries to the elderly (Appendix D-H). Layne and Pollack (2004) argue that older adults in the industrial setting are at no greater risk of falling than their younger co-workers. However, there is a greater propensity to be injured more severely and require hospitalization.

Many intervention strategies have been discussed and researched in this paper that can prevent injuries due to falls for the elderly. The CDC (2006), American Geriatrics Society...
(“Guideline for”, 2001), and the National Council on Aging (National Council on Aging [NCOA], 2005) listed exercise, muscle weakness; safe and clean home environment, medication evaluation, vision examinations, and education as the primary interventions in preventing falls in the elderly population. Education was pointed out as the leading strategic intervention by the five local organizations (Appendix D-H). All the agencies agreed that the fire department could play an integral role through assisting their organization with educating the elderly on reducing risk factors for falling. However, The Journal of American Geriatrics Society cautions that education alone is not an effective long-term intervention and should be combined with other methods (“Guideline for “, 2001).

A nationally accepted instrument that has been used successfully in the assessment and prevention of falls for the elderly has been the Hendrich II model (Hendrich, Bender, & Nyhuis, 2003). In fact, similar concepts have been used to decrease hospital falls (Appendix D) with a success of reducing falls by 48% (Rand, 2003). The City of Edmonton, Canada has demonstrated their success in a pre-hospital setting with the use a fall assessment instrument to bring needed resources to prevent injuries in the elderly population (JEMS, 2009). Through the research of the paper, the author developed a risk assessment tool that is part of the overall fall prevention strategy for the fire department. This instrument is included in the standard operating procedure (Appendix I).

While each local advocacy group for the elderly provides their own unique set of interventions, the fire department is not able to encompass and act upon all the interventions listed in this research. The scope and resources need to accomplish such a task is beyond what the fire department can provide. However, information gathered from the interviews (Appendix
A-D) about the role of the fire department demonstrated the importance to be a partner in educating and referring assistance the elderly.

In summary, research has demonstrated that WCFD has an obligation to the elderly population in reducing the risk of injury for falls. First, the elderly need to be reassured that if they experience a fall, a fire department member will provide an assessment of their fall risks. Secondly, this process can trigger other organizations into action with the resources and expertise needed to fit their situation.

Recommendations

There is strong evidence that a fall prevention program is effective at preventing falls, and therefore, ways are needed to better integrate these programs into the current care received by older adults by the West Carrollton Fire Department. Additional research may lead to better intervention strategies that can be used in the pre-hospital setting. Because of this research, there are five recommendations for future research and implementation.

1. Become a member of the local advocacy groups in the region to bolster the knowledge of elderly care and to maintain a path of communication.

2. Form partnerships with the Senior Citizen’s organization and the Episcopal Retirement Home community to educate their members on using fall prevention interventions through small group sessions.

3. Survey other fire departments in the region on proven fall reduction programs and their effectiveness on reducing falls.

4. Attend a meeting with Dr. Lawhorne in January, 2010 to explore a fall reduction pilot program involving the West Carrollton Fire Department and Wright State University’s Boonshoft School of Medicine.
5. Evaluation of the fall reduction program will be required to determine if the number of falls have been reduced in the elderly population by annually reviewing the fire department statistical information.
References


Appendix A

EMS Calls for Falls and Injuries
For Adults 65 Years and Older

<table>
<thead>
<tr>
<th>Year</th>
<th>Falls</th>
<th>Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>7</td>
<td>52</td>
</tr>
<tr>
<td>2007</td>
<td>15</td>
<td>112</td>
</tr>
<tr>
<td>2008</td>
<td>25</td>
<td>118</td>
</tr>
<tr>
<td>2009</td>
<td>35</td>
<td>165</td>
</tr>
</tbody>
</table>
Learning Pyramid

- Lecture: 10%
- Reading: 20%
- Audiovisual: 30%
- Demonstration: 50%
- Discussion: 75%
- Practice doing: 90%
- Teach others

Source: National Training Laboratories, Bethel, Maine
Appendix C

Reducing the Risk of Falls and Injuries to the Elderly Population in the City of West Carrollton
Interview Questions
By
Chris Barnett

Agency:

Representative:

Date of Interview:

Location of Interview:

1. How does your organization provide aid to the elderly population in the region?

2. What do you see as the greatest risk today and in the future for the elderly population?

3. What intervention strategies do you provide for the elderly population?

4. Based on your experience, what learning styles are the most accepted in the elderly population?

5. What role in preventing injuries and falls in the elderly population can you envision the fire department could have with your organization?

6. What is the best setting to communicate our fall and injury prevention message?

7. We are looking for additional partners to help with our program. Are there any other agencies you can think of that we need to contact?
Appendix D

Reducing the Risk of Falls and Injuries to the Elderly Population in the City of West Carrollton
Interview Questions
By
Chris Barnett

Agency: Miami Valley Hospital

Representative: Brenda Currie RN, Elder Care Program Manager

Date of Interview: November 2, 2009

Location of Interview: Miami Valley Hospital, Dayton, Ohio

1. How does your organization provide aid to the elderly population in the region?

We participate in the national gold standard program for senior care during hospitalization through the Hartford Foundation. Our goal is to reach out in multiple community health fairs, speaking arrangements at schools, community and professional organizations. Adjunct faculty at local colleges to train providers in care of older adults. Collaborative work with Wright State University Boonshoft School of Medicine and the Alzheimer’s Association.

2. What do you see as the greatest risk today and in the future for the elderly population?

Adverse drug events starting a cascade of complications in the process of managing multiple chronic illnesses.

3. What intervention strategies do you provide for the elderly population?

Evaluation of patient post injury to assess risk factors especially falling. Provide education to the patient during hospitalization on strategies to reduce risks in and around home. Refer patients to services such as: vestibular balance center, outpatient therapies, encourage an increase in physical activity following physician’s evaluation and recommendations.

4. Based on your experience, what learning styles are the most accepted in the elderly population?

Individual with a mixture of hands-on learning, using different stations that focus on a particular subject. This provided instant feedback
5. **What role in preventing injuries and falls in the elderly population can you envision the fire department could have with your organization?**

Provide information to the medical community on the number of falls and conditions that older adults have called EMS. It may be able to lead in developing a neighborhood watch program (similar) to check on older adults daily. Collaborate with the geriatric department to develop training and strategies to prevent injuries to older adults.

6. **What is the best setting to communicate our fall and injury prevention message?**

Meet at the most accessible and convenient location for the population. Local churches, meeting rooms within their complex, cafeteria.

7. **We are looking for additional partners to help with our program. Are there any other agencies you can think of that we need to contact?**

Injury Prevention Center

Wright State University Boonshoft School of Medicine

City of Kettering Safety Supervisor
Appendix E

Reducing the Risk of Falls and Injuries to the Elderly Population in the City of West Carrollton

Interview Questions

By

Chris Barnett

Agency: Alzheimer’s Association, Miami Valley Chapter

Representative: Pat Roby, Training Director of the Miami Valley Chapter

Date of Interview: November 2, 2009

Location of Interview: West Carrollton Fire Station 56

1. How does your organization provide aid to the elderly population in the region?

Work with patients that have dementia by supporting the patient and family through education/planning on life strategies. Dementia is a stage of Alzheimer’s

2. What do you see as the greatest risk today and in the future for the elderly population?

Dementia, due to higher risk of falling, injury in home from fire, risk of flight of leaving-getting lost. People are living longer and the chances of getting dementia increase with age so the increase of the disease will explode. Resources will be stressed even further.

3. What intervention strategies do you provide for the elderly population?

Training to fire and emergency personnel, police, nursing staff, home health care personnel. Anyone who would come in contact with people that have dementia. Future training to retail stores. Family assistance department to help with comfort and a care plan of patient and family. Educating the family on the disease process and intervention strategies.

4. Based on your experience, what learning styles are the most accepted in the elderly population?

Treat each individual/groups differently. Working in person is the optimum. Support groups are the second most ideal environments. Keep the information lively, touch them directly with specific details about their issues. Repeat often. Encompass all styles of learning.

5. What role in preventing injuries and falls in the elderly population can you envision the fire department could have with your organization?

Be a referral to the family and patient if there is suspicion of dementia about the Alzheimer’s Association. Repeat falling of a patient may be not physical but mental disabilities such as dementia. Possibly use an assessment instrument to give to the medical profession.
6. **What is the best setting to communicate our fall and injury prevention message?**

Local churches, schools, and community organizations about risks of falls. School children can be a path to bring attention to parents/grandparents about dementia.

7. **We are looking for additional partners to help with our program. Are there any other agencies you can think of that we need to contact?**

Adult Day Care Centers

Area Agency on Aging

In home care services
Appendix F

Reducing the Risk of Falls and Injuries to the Elderly Population in the City of West Carrollton
Interview Questions
By
Chris Barnett

Agency: Department of Geriatrics, Boonshoft School of Medicine, Wright State University

Representative: Dr. Larry Lawhorne, Department Chair

Date of Interview: November 5, 2009

Location of Interview: Telephone

1. How does your organization provide aid to the elderly population in the region?
Teaching, research and clinical practice in the areas of geriatrics.

2. What do you see as the greatest risk today and in the future for the elderly population?
The greatest risk is dementia and falls.

3. What intervention strategies do you provide for the elderly population?
Clinical evaluations and treatment in the office setting and consultations in the hospital. Presentations at senior centers and other community venues on medication management and fall risk reduction.

4. Based on your experience, what learning styles are the most accepted in the elderly population?
In small group settings where the areas are quiet and allow plenty of time for questions.

5. What role in preventing injuries and falls in the elderly population can you envision the fire department could have with your organization?
Develop tools to assess and decrease fall risks when the fire department is called to residence for fall and possible injury.

6. What is the best setting to communicate our fall and injury prevention message?
Collaboration through existing agencies that specialize in elderly care, management, and treatment when training classes are offered in the community.
7. We are looking for additional partners to help with our program. Are there any other agencies you can think of that we need to contact?

Area Agency on Aging

Alzheimer’s Association

Senior Resource Connection
Appendix G

Reducing the Risk of Falls and Injuries to the Elderly Population in the City of West Carrollton
Interview Questions
By
Chris Barnett

Agency: Episcopal Retirement Home

Representative: Tammy Herlihy, Community Manager, Canterbury Court

Date of Interview: November 11, 2009

Location of Interview: Canterbury Court, 450 N. Elm St. West Carrollton, Ohio

1. How does your organization provide aid to the elderly population in the region?

Provide housing for adults that are 62 and older or 18 and older (physical needs) based on their income. Independent living however, we provide sources that residence can use such as nurse, meals on wheels, etc.

2. What do you see as the greatest risk today and in the future for the elderly population?

Falls, dementia, and financial burdens due to health care.

3. What intervention strategies do you provide for the elderly population?

Set up classes in balance, fall prevention for the residence. Exercise classes to strengthen their muscles. In contact with referral services

4. Based on your experience, what learning styles are the most accepted in the elderly population?

Most residents learn in small groups less than 20 and hands on is important. Mixture of teaching methods, vision is diminished so power point presentations have to be adjusted to larger font. 1 hour is good length for the training.

5. What role in preventing injuries and falls in the elderly population can you envision the fire department could have with your organization?

Train the residents on fall prevention through classes at least two times per year. Possibly use a risk assessment tool or procedure to alert the staff of residents that are a fall risk.

6. What is the best setting to communicate our fall and injury prevention message?
Have the residence stay on property to help increase the attendance of the class. Stay on campus due to health of some residents due to their mobility.

7. We are looking for additional partners to help with our program. Are there any other agencies you can think of that we need to contact?

Area Agency on Aging

Home health care agencies

Parish Health Ministries
Appendix H

Reducing the Risk of Falls and Injuries to the Elderly Population in the City of West Carrollton

Interview Questions

By

Chris Barnett

Agency: Area Agency on Aging

Representative: Ann Finnicum, Communications and Training Coordinator

Date of Interview: November 17, 2009

Location of Interview: Area Agency on Aging

1. How does your organization provide aid to the elderly population in the region?

We are a clearinghouse of services to the elderly that are ages 60 and older. We get federal and state funding to provide programs such as housing, meals on wheels, medical and physical assessments, provide direction to those who can benefit from various social services.

2. What do you see as the greatest risk today and in the future for the elderly population?

Slips, trips, and falls are the biggest risks for the elderly population. We will see a large increase in these types of falls due to the retiring of the baby boomer population.

3. What intervention strategies do you provide for the elderly population?

We provide education through television ads, billboards to make the elderly population aware of our organization. Also, we are in the community to train caregivers, senior centers and health fairs on education materials for risk reduction in the elderly population.

4. Based on your experience, what learning styles are the most accepted in the elderly population?

Use a variety of sources or methods in training to prevent boredom. Small group settings work best. Provide food, giveaways such as small gift items to bring people to attend the sessions. Do not talk down to them. Treat each person individually and do not paint them as all having a hearing or vision disability.

5. What role in preventing injuries and falls in the elderly population can you envision the fire department could have with your organization?

Be able to refer the elderly to them if a need is seen during an emergency call. Also, participate in local trainings or health fairs to inform and educate the elderly.
6. What is the best setting to communicate our fall and injury prevention message?

Small groups and be cognizant of the season as mobility issues are huge for the elderly during inclement weather. Day is better again versus night. Churches, senior centers, and senior living housing are great areas for training the elderly.

7. We are looking for additional partners to help with our program. Are there any other agencies you can think of that we need to contact?

Matter of Balance

State of Ohio Area Agency on Aging
PURPOSE:
The purpose of this policy is to act as a guideline when responding to an elderly patient who has fallen. Falls are a significant risk to the health and freedom of adults ages 65 and older. In America, over one third of adult's ages 65 and older fall each year making it the most common cause of non-fatal injuries and hospital admissions. This policy will allow WCFD medical personnel to refer fall patients to resources through the Area Agency on Aging. The scope of this policy is to allow the patient to continue living in their home while obtaining the necessary resources or education to accomplish this.

RESPONSIBILITY:
It is the responsibility of all personnel to adhere to this policy.

POLICY:
The West Carrollton Fire Department is committed to provide and create a safer environment for the City’s elderly ages 65 and older. The Fire Department in cooperation with the Area Agency on Aging, will establish a method of providing a referral for people who have fallen and may need additional resources beyond the capability of the West Carrollton Fire Department.

PROCEDURES:
When WCFD personnel respond to a fall of an elderly patient, the paramedic in charge (PMIC) will make a determination if this fall would have been preventable. If it is determined that the fall was preventable, the Fall Assessment Tool will be filled out returned to the EMS Coordinator. The Area Agency on Aging will be contacted by the EMS Coordinator to schedule a home follow-up visit and falls assessment with consent of the patient. When making multiple visits to the same patient, fill out the Fall Assessment Tool to track the history of the patient.
RISK FOR FALLS ASSESSMENT TOOL

Directions: Place a check mark in front of elements that apply to your client. The decision of whether a client is at risk for falls is based on your judgment.

Guidelines: A patient who has five or more check marks is at moderate risk of a fall and should be referred to the EMS Coordinator for further evaluation.

<table>
<thead>
<tr>
<th>Tool 1</th>
<th>Risk Assessment Tool For Falls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Data:</strong></td>
<td><strong>Medications:</strong></td>
</tr>
<tr>
<td>___ Age over 65</td>
<td>___ Takes three or more medications</td>
</tr>
<tr>
<td>___ History of falls in the last 6 months</td>
<td>___ Hypotensive or CNS suppressants (e.g., narcotic, sedative, psychotropic, hypnotic, tranquilizer, antihypertensive, antidepressant)</td>
</tr>
<tr>
<td>___ Is patient a woman</td>
<td></td>
</tr>
</tbody>
</table>

**Physical Condition**

___ Dizzy or lightheaded
___ Difficult time getting in and out of Bathtub or on and off toilet
___ Lean of objects to move around
___ Uses a cane or walker
___ Needs new glasses or hearing aids
___ More than two chronic medical conditions

**Enviroment:**

___ Trip hazards in home, rugs, poor lighting
___ Pet in home that jumps on patient or might cause a fall
___ Stopped getting regular exersise

**Mental Status:**

___ Depressed recently
___ Impaired memory or judgment

References

Centers for Disease Control and Prevention

*Falls Among Older Adults*

Premier Health Partners

*Are You at Risk of Falling?*