MIH and Fall Prevention:

Utilizing Mobile Integrated Healthcare to Reduce the Risk of Falls at Senior Living Facilities in Olathe, Kansas

Kevin Weyand

Olathe Fire Department, Olathe, Kansas

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: 
Kevin L. Weyand

Abstract

An analysis of response data from 2011-2015 revealed that the Olathe Fire Department (OFD) had been experiencing an increasing trend in fall-related incidents involving older adults at local senior living facilities. The problem was that the OFD did not have a fall prevention program in place that could help reduce the risk and occurrence of falls involving older adults at local senior living facilities. The purpose of this research was to develop a fall prevention program that could be administered by OFD's Mobile Integrated Healthcare (MIH) unit to help reduce the risk and occurrence of falls among older adults at local senior living facilities. An action research methodology was used to answer the following research questions: (a) what is the scope of the fall problem among older adults? (b) what are the contributing factors related to the fall problem among older adults? (c) what goals, objectives and intervention strategies can be developed to help reduce or eliminate the effects of the contributing factors? (d) what intervention strategies are being utilized by other fire departments across the nation to reduce fall risk factors in their communities? The procedures included a review of literature, an analysis of CAD incident data, a situational analysis using a logic model, and the development and dissemination of an external survey to fire department members throughout the United States. The results provided details to the scope of the fall problem among older adults, identified contributing factors related to the fall problem, and helped establish goals, objectives and strategic interventions to accomplish the research purpose of developing a fall prevention program. Recommendations were made to proceed with the adoption and implementation of the author's newly developed MIH Fall Prevention Program.

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Introduction

In 2012, the Olathe Fire Department (OFD) became one of over 200 fire departments in the nation to receive agency accreditation status from the Commission on Fire Accreditation International (CFAI). Undeniably, the journey that led to this achievement was one of the most monumental endeavors ever undertaken by the OFD, and as a result, significant changes were made to the philosophies and strategies related to the delivery of emergency services. With the development of a 5-year strategic plan, a self-assessment manual and a standard of cover document, the OFD slowly began making the transformation from a response-driven fire department to a data-driven organization that elevated community risk reduction (CRR) and continuous improvement to the highest priority. Over the past four years, this paradigm shift in philosophy has helped the OFD become increasingly more aware of its community risk issues, and proactive in their approach to finding creative ways of preventing or reducing their occurrence through CRR initiatives and programs.

A prime example of this shift in philosophy was the development and implementation of a Mobile Integrated Healthcare (MIH) program. Recognizing the need to more accurately match fire department and other healthcare resources with the needs of those who required medical assistance within their community, the OFD launched their MIH program in 2014. The overarching goal of the program was two-fold: to deliver CRR services aimed at mitigating targeted risk factors, and effectively connect patients with the appropriate level care to reduce the burden on the 911 and healthcare systems.

The MIH program began operating its first response unit on a full-time basis in June of 2014. Initially, two paramedics were tasked with following up on repeat customers and refusals,

responding to nonemergency calls, conducting welfare checks, and performing outreach activities. In total, the MIH program supported more than 2,750 people in 2014 (OFD, 2014).

Throughout 2015, the MIH program continued to grow and develop its core services and outreach strategies as it strived to better meet the needs of the community (see Appendix B). A nurse practitioner was added to the staff to increase its scope of practice providing a higher level of patient care in areas like medication management and on-site treatment. Key areas were identified through data analysis to help focus the program's efforts in the coordination of care being provided (i.e. falls, lifts assists, congestive heart failure). As a result, a greater emphasis was placed on outreach and disease/injury prevention increasing the frequency of activities such as blood pressure checks, public health screenings, sidewalk CPR, and seminars at schools, libraries, and senior living facilities. The program supported more than 3000 people in 2015 (Martin, 2016).

Now after two years of operation, the MIH program has garnered tremendous success and has even received national recognition earning the 2016 Thomas H. Muehlenbeck Award for Excellence in Local Government by the Alliance for Innovation. Additionally, the MIH program was honored in Washington D.C. with the Congressional Fire Service Institute/Masimo Excellence in Fire Service-Based EMS award. Both of these awards attest to the OFD's determination to develop new and innovative approaches for setting the standard for excellence in the delivery of fire/EMS services (Martin, 2016).

Although it would be easy to coast on these early successes linked to the MIH program, there is the potential to further adapt the program to solve a newly discovered community risk issue. Recently, through the analysis of incident data, the author uncovered an increasing trend in the amount of fall-related emergencies occurring at their local senior living facilities. The

problem was that the OFD did not have a fall prevention program in place that could help reduce the risk and occurrence of falls involving older adults at local senior living facilities. The purpose of this research was to develop a fall prevention program that could be administered by OFD's MIH unit to help reduce the risk and occurrence of falls among older adults at local senior living facilities. An action research methodology was used to answer the following research questions: (a) what is the scope of the fall problem among older adults? (b) what are the contributing factors related to the fall problem among older adults? (c) what goals, objectives and intervention strategies can be developed to help reduce or eliminate the effects of the contributing factors? (d) what fall prevention intervention strategies are being utilized by other fire departments across the nation to reduce fall risk factors in their communities?

Background and Significance

The research setting for this applied research project (ARP) is the city of Olathe, Kansas. Olathe is located in the northeastern part of the state and is situated approximately twenty miles southwest of the downtown Kansas City metropolitan area. Olathe has a land mass of 61.3 square miles, and an appraised property value of $10.3 billion (OFD, 2015). At the time of this research project, the population of Olathe was estimated at 134,305 total residents, and was recognized as the fourth largest city in the state of Kansas and in the Kansas City metropolitan area (U.S. Census Bureau, 2016)..

Presently, Olathe residents are served by 1 mayor, 6 councilpersons, and 884 full-time employees. The citizens of Olathe reside in one of the safest communities in the nation, benefitting from an Insurance Service Office (ISO) class 1 public protection rating and an internationally accredited fire department. This is a significant achievement in that there are only

220 accredited fire departments in the world, and 178 fire departments nationwide with a class 1 public protection rating out of over 48,000 communities that are rated by ISO (OFD, 2016).

At the time of this research, there were 145 full-time employees working at the OFD with 28-32 firefighters on duty 24 hours a day. As depicted in the organizational chart (Appendix A), the daily operational staffing includes two battalion chiefs, eight fire captains, eight fire apparatus engineers, and sixteen firefighters.

There are ten frontline fire apparatus units that make up the daily emergency response force at the OFD. Four engine companies, two quint companies, one truck company, one rescue company, two rescue squads and one MIH unit respond to emergencies throughout the community from seven strategically located fire stations. There are a minimum of 3 firefighters on every apparatus with the exception of the truck and rescue company, which maintain a minimum of 4 firefighters. The rescue squads operate Monday through Thursday from 7am-5pm and consist of two firefighter/paramedics. The MIH unit operates Monday through Thursday from 8am-5pm and consists of a one paramedic and one nurse practitioner.

On average, the OFD responds to approximately 10,000 emergencies each year involving fires, medical incidents, technical rescues, hazardous materials, and explosive ordinance disposal. In 2015, the OFD responded to 10,502 total calls for service with 6,890 being EMS related incidents (OFD, 2015). The table below illustrates the OFD's call volume by incident type for the years 2011-2015. The total calls for service were 48,856 for all five years with 30,768 being EMS-related incidents. This equates to 63% (30,768 out of 48,856) of all of the emergency responses in the city of Olathe for the years 2011-2015 were EMS in nature. The statistical significance of this fact is important as this research begins to delve into the fall problem and how the proposed solution could potentially reduce this number over time.

OFD 5-Year Incident Data						
	2011	2012	2013	2014	2015	Total
Fire	328	371	240	265	269	**1,473**
EMS	5,679	5,853	6,164	6,182	6,890	**30,768**
Non-Fire	3,132	3,141	3,279	3,420	3,343	**16,315**
Total	**9,139**	**9,365**	**9,683**	**10,167**	**10,502**	**48,856**

Table 1 – OFD Three Year Incident Data (OFD, 2016)

When looking at the data as it directly pertained to the research problem in this ARP, approximately 20% (6,068 out of 30,768) of the total EMS calls from 2011-2015 were fall-related in nature. The table below illustrates the OFD's 5-year fall-related incident data for the years of 2011-2015.

OFD 5-Year Incident Data for Falls and Lift Assists						
	2011	2012	2013	2014	2015	Total
Falls	776	738	805	823	899	**4,041**
Lift Assists	285	343	454	452	493	**2,027**
Total	**1,061**	**1,081**	**1,259**	**1,275**	**1,392**	**6,068**

Table 2 – OFD Five-Year Incident Data for Falls and Lift Assists (OFD, 2016)

Upon further analysis of the department's fall response data, it was discovered that a majority of the falls and lift assist incidents were transpiring within the city's senior living facilities. At the time of this research, there were 15 active senior living facilities in the city of Olathe with three under construction or about to open. These facilities vary in their level of care options and services functioning as skilled nursing, memory care, short-term rehabilitation, long-term care, assisted living, and/or independent living. Several of the facilities offer a combination of every care option and service listed above. The table below graphically depicts the total

number of fall-related incidents that transpired at all 15 senior living facilities in the city of Olathe from 2011-2015 ranked from highest to lowest.

OFD 5-Year Fall Data for Senior Living Facilities						
	2011	2012	2013	2014	2015	Total
Cedar Lake Village	75	77	100	117	98	**467**
Olathe Towers	57	59	65	64	48	**293**
Santa Marta	44	44	63	53	76	**280**
Greenwood Terrace	34	28	50	45	62	**219**
Aberdeen Village	25	32	44	39	28	**168**
Homestead of Olathe	37	26	36	23	37	**159**
Gardens at	24	21	17	45	26	**133**
Good Samaritan	17	11	18	20	28	**94**
Ridgeview Village	16	25	19	21	13	**94**
Evergreen	17	13	12	15	25	**82**
Villa St. Francis	20	10	11	20	18	**79**
Pinnacle Ridge	9	11	14	13	17	**64**
Assisted Lifestyles	15	16	2	8	18	**59**
Royale Terrace	13	18	8	3	17	**59**
Hoeger House	5	1	5	3	6	**20**
Total	**408**	**392**	**464**	**489**	**517**	**2,270**

Table 3 – OFD 5-Year Fall Data for Senior Living Facilities (OFD, 2016)

When comparing the total number of fall-related incidents city-wide to the total number of fall-related incidents transpiring at senior living facilities, the data revealed that 37% (2,270 out of 6,068) of all fall-related incidents were taking place at senior living facilities. Based on these statistics and their potential to continue adversely impacting the community, the citizens and the OFD, the author felt that there was sufficient background evidence and significance to justify this ARP from an organizational perspective.

The author attended the Executive Fire Officer Program's Executive Analysis of Community Risk Reduction (EACRR) course at the National Fire Academy (NFA) from the dates of January 4th to January 15th in 2016. The overall focus of the EACRR course was to help executive fire officers understand the value of community risk reduction and the process of applying risk reduction to the community. The course teaches the importance of developing partnerships with the community to implement programs, initiatives and services that prevent and/or mitigate the risk of human-caused or natural disasters. The goals of the EACRR course were to improve executive's abilities to develop leaders in comprehensive multihazard community risk reduction, create a strategic community risk reduction plan in the community, focus on reducing risks in the local community, and reduce line-of-duty- deaths among firefighters (USFA, 2015). Since the goal of this ARP was to develop a comprehensive fall prevention program to help reduce the risk and occurrence of preventable falls involving older adults at senior living facilities, a direct and definitive linkage was established between the research purpose and course content related to reducing risks in the community. Additionally, this ARP supports the U.S. Fire Administration's first strategic goal in America's Fire and Emergency Services Leader Strategic Plan 2014-2018, which aims to "reduce fire and life safety risk through preparedness, prevention, and mitigation" (USFA, 2014).

Literature Review

The purpose of this literature review was to research the writings and findings of others in order to gain a deeper insight into the fall problem that is impacting older adults around the world. Specifically, the author's intent was to answer the research questions regarding the scope of the fall problem, the contributing factors related to the fall problem, and preventative

intervention strategies that could help assist the author in the development of a fall prevention program for the OFD.

The Scope of the Fall Problem

In researching the topic of accidental or unintentional falls among older adults, the findings related to the scope of the problem were both alarming and far-reaching – plaguing every continent across the globe. Due to the enormity of the problem, fall-related injuries and deaths among adults age 65 and older are presently considered a major public health issue worldwide.

According to the World Health Organization (WHO), falls rank as the second leading cause of accidental or unintentional injury deaths across the globe with an estimated 424,000 fatalities and 37.3 million injuries taking place each year (WHO, 2016). The WHO (2016) reports that in all regions of the world, adults over the age of 60 have the highest mortality and morbidity rates than any other age group, estimating that approximately 28-35% of people age 65 and older fall each year. Data from the most recent report global report on older adult falls from the WHO maintains that approximately 30-50% seniors living in long term care institutions fall each year, with 40% of them experiencing recurrent falls (WHO, 2007).

In the United States, fall statistics are not any better among adults age 65 and older. The Centers for Disease Control and Prevention (CDC), who is considered the leading authority on major public health and safety issues in the United States, report that injury is the leading cause of death across all 50 states in America with older adults falls leading the way in deaths, unintentional injuries, and hospital admissions for trauma (CDC, 2016). Sadly, the CDC reports that 1 out of every 3 older adults falls each year, and over 2 million are treated in hospital emergency rooms for fall-related injuries (CDC, 2016). The most current data from the CDC

suggests that every 11 seconds an older adult is treated in the emergency room for a fall, and every 19 minutes an older adult dies from a fall. This equates to approximately 2.8 million injuries, 800,000 hospitalizations and more than 27,000 fatalities among older adults nationwide (CDC, 2016).

Additional research into the scope of the fall problem in the United States revealed similar findings regarding falls among older adults, but the author noted that they all referred back to the CDC's fall statistics mentioned above. These organizations are listed below:

1. The National Council on Aging (NCOA)
2. The National Safety Council (NSC)
3. The National Institute on Aging (NIA)
4. The National Institute on Health (NIH)
5. The Agency for Healthcare Research and Quality (AHRQ)
6. The Office of Disease Prevention and Health Promotion (ODPHP)
7. The Patient-Centered Outcomes Institute (PCOI)
8. The National Institute for Health and Care Excellence (NICE)
9. The American Geriatrics Society (AGS)
10. The Fall Prevention Center of Excellence (FPCE) – www.stopfalls.org

Even at the state level, falls pose a significant threat to the public health and well-being of older adults. According to the Kansas Department of Health and Environment (KDHE), falls were considered the leading cause of injury morbidity and mortality in the state of Kansas (KDHE, 2016). Kansans age 65 and older accounted for 88% of deaths due to fall-related injuries, equating to 1,690 fatalities from 2009-2013 (KDHE, 2013). Also, fall-related injuries

were highest among Kansans age 65 and older accounting for 25% of emergency room visits and 73% of all hospitalizations in the state (KDHE, 2016).

At the community level, falls are more prevalent among older adults residing at senior living facilities than elderly citizens living in the community according to the CDC (2012). It is estimated that 50-75% of older adults residing at some kind of senior care facility fall each year, which is twice the rate of falls that occur among elders living in the community. Also, the CDC (2012) suggests that older adults living at senior living facilities fall multiple times each year averaging about 2.6 times per person. This research provides some insight into the author's fall problem at senior living facilities found in the analysis of CAD incident data displayed in earlier tables.

As evident from the statistical data mentioned above, the scope of the fall problem as it relates to older adults throughout the world is massive in scale, and at the same time very concerning. Unfortunately, researchers from several governmental agencies predict that it will only worsen as the demographic landscape dramatically increases due to the baby boomer generation becoming senior citizens. The demographic shift in the number and proportion of older adults in the United States is unprecedented in the nation's history, and according to the CDC, is anticipated to grow to nearly 89 million people by 2050. This shift is more than double the number of older adults in the United States in 2010 (CDC, 2013). Fortunately, research has also shown that falls are preventable and aging, itself, does not cause falls. Instead, falls are the result of a combination of contributing factors. The more factors a person has, the greater their chances of falling.

Contributing Factors to the Fall Problem

Research has identified many conditions that contribute to falls among older adults. These conditions are known as risk factors. The National Institute on Health (NIH) defines a risk factor as something that increases a person's risk or susceptibility to a medical problem or disease (NIH, 2016). Researchers from the CDC have categorized fall risk factors into two main categories – intrinsic and extrinsic. Intrinsic risk factors include advanced age, previous fall history, muscle weakness, chronic medical conditions, impaired vision, gait/balance problems, postural hypotension, and fear of falling. Extrinsic risk factors include environmental factors, home hazards, improper assistive devices, and psychoactive medication use (CDC, 2016).

The WHO's Global Report on Falls Prevention in Older Age (2007) concurred with the CDC's risk factor findings suggesting that older adults may experience a higher frequency of fall-related injuries and deaths due to chronic medical conditions, physical inactivity, medication side effects, poor mobility/balance, limited vision, and unsafe environmental factors. The National Safety Council also falls into agreement with the CDC affirming that risk factor s for falls include muscle weakness, medications that cause dizziness, improper footwear, impaired vision, slick floors, poor lighting, loose rugs, clutter and uneven surfaces (NSC, 2016).

Scholarly research indicates similar findings in studies conducted to identify fall risk factors. One study suggests that the strongest independent risk factors for falls are linked to previous falls, muscle weakness, gait and balance impairments, and use of psychoactive medications (Lee et al., 2013). Another study attributes falls among older adults to risk factors that include weakness, balance deficits, gait deficits, visual deficits, mobility limitation, cognitive impairment, postural hypotension, and chronic medical conditions (Rubenstein, 2006). A recent article written in the Nurse Practitioner journal identified risk factors that include aging,

medications, polypharmacy, alcohol abuse, diabetes, visual disturbances, coordination and balance, foot problems, urinary incontinence, and depression (Saccomano et al., 2015). Even a Master's degree thesis found that falls were the result of poor vision, polypharmacy, lack of strength and balance, and home safety hazards (Keuter, 2012). In the end, the author noted that a majority of the scholarly research agreed upon many of the same fall risk factors.

As evident from the research findings above, there are many risk factors that contribute to falls among older adults. Most of them have been linked to biological health factors (i.e. age, medical conditions, etc.), behavioral factors (i.e. fear of falling, sedentary behavior, etc.) and environmental factors (i.e. home hazards, surrounding environmental hazards, etc.). However, the WHO (2007) suggests that there are also socioeconomic risk factors as well related to falls among older adults. These risk factors include low income, low education, inadequate housing, lack of social interaction, lack of community resources, and limited access to health and social care.

The good news is that even though there seems to be an abundance of contributing factors to falls among older adults; research has also shown that most risk factors can be modified, adjusted, or eliminated to help reduce or prevent falling altogether. These preventative measures are referred to as fall intervention strategies.

Fall Prevention Intervention Strategies

Many risk factors can be changed or modified to help prevent falls with the use of preventative fall intervention strategies. According to the WHO (2016), fall prevention strategies should be both comprehensive and multifaceted, exploring fall risk factors that can be modified by utilizing effective interventions to reduce their impacts. Researchers from the WHO (2106)

recommend utilizing strategic interventions that include the following components in order to identify and modify fall risk factors among older adults:

1. Screening within living environments for risks for falls
2. Clinical interventions to identify risk factors, such as medication review and modification, treatment of low blood pressure, Vitamin D and calcium supplementation, treatment of correctable visual impairment
3. Home assessment and environmental modification for those with known risk factors or a history of falling
4. Prescription of appropriate assistive devices to address physical and sensory impairments
5. Muscle strengthening and balance retraining prescribed by a trained health professional
6. Community-based group programs which may incorporate fall prevention education and exercises or dynamic balance and strength training
7. Use of hip protectors for those at risk of a hip fracture due to a fall

Researchers at the CDC's injury center are taking fall prevention very seriously, and as a result, have taken major strides towards reducing the impacts of falls among older adults in the United States. Through the development of the STEADI (Stopping Elderly Accidents, Deaths, and Injuries) initiative, they have been able provide a pathway to assist healthcare providers with identifying fall risk-levels, modifying fall risk factors, and implementing fall intervention strategies to reduce the chance of falls among older adults. Looking specifically at STEADI's fall prevention strategies, the CDC (2016) recommends utilizing the following interventions:

1. Screening for fall risk levels

2. Conducting a fall risk assessment that includes:
    a. Conducting a physical exam
    b. Reviewing medications
    c. Gait/strength/balance testing
    d. Conducting vision testing
    e. Managing hypotension
3. Conducting a home safety evaluation
4. Educating patients on fall prevention

The CDC has developed a STEADI Tool Kit consisting of printed materials and resources that are readily available online for healthcare providers to download and use at no charge. Besides being specifically designed for older adults and their friends and families, the materials are able to be easily utilized by healthcare providers to assess, treat, and refer older adult patients based on their fall risk. The CDC (2015) maintains that for every 5,000 healthcare providers who adopt STEADI, over a 5-year period, as many as:

- 6 million more patients could be screened,
- 1 million more falls could be prevented, and
- $3.5 billion more in direct medical costs could be saved

When looking at fall intervention strategies for senior living facilities, there are multiple challenges. According to the CDC (2012), fall interventions must consist of a combination of risk assessments, medical treatments, rehabilitation, and environmental changes in order to be effective at reducing falls in senior living facilities. The most effective fall interventions address multiple factors and should include:

1. Assessing patients after a fall to identify and address risk factors and treat the underlying medical conditions.
2. Educating staff about fall risk factors and prevention strategies.
3. Reviewing prescribed medicines to assess their potential risks and benefits and to minimize use.
4. Making changes in the nursing home environment to make it easier for residents to move around safely. Such changes include putting in grab bars, adding raised toilet seats, lowering bed heights, and installing handrails in the hallways. Providing patients with hip pads that may prevent a hip fracture if a fall occurs.
5. Exercise programs that can improve balance, strength, walking ability, and physical functioning among nursing home residents.
6. Teaching residents who are not cognitively impaired behavioral strategies to avoid potentially hazardous situations is a promising approach (CDC, 2012).

Research findings related to effective strategic interventions for fall prevention helped the author see that the OFD's MIH program would definitely be best suited to handle implementation of a fall prevention program. Most intervention strategies require a substantial amount of contact hours with older adults in order to properly screen/assess their risk levels, provide individualized treatment or referral plans, make home or environmental changes, and properly teach/educate about fall prevention. Traditional fire department response resources would not be able to provide the quantity of time and quality of care necessary to produce effective fall prevention outcomes without substantial funding. However, this type of service could easily be provided by the OFD's MIH unit since it falls directly in line with its current mission and scope of practice.

Procedures

Research Methodology

The purpose of this research was to develop a comprehensive fall prevention program that could be administered by OFD's MIH unit to help reduce the risk and occurrence of falls among older adults at local senior living facilities. An action research methodology was used to answer the following research questions: (a) what is the scope of the fall problem among older adults? (b) what are the contributing factors related to the fall problem among older adults? (c) what goals, objectives and intervention strategies can be developed to help reduce or eliminate the effects of the contributing factors? (d) what intervention strategies are being utilized by other fire departments across the nation to reduce fall risk factors in their communities?

The procedures utilized for this ARP were clearly delineated to permit replication, and were appropriate to achieve the stated research purpose of this project. The procedures included a literature review, an analysis of CAD system data, a situational analysis logic model, and the development and dissemination of an external survey to fire department members throughout the United States. The overall goal of the procedures was to analyze research related to the fall problem among older adults, provide answers to the proposed research questions, and establish program goals, objectives, and strategic interventions concerning fall prevention that could be utilized for program development and implementation at the OFD.

Literature Review

The literature review for this applied research project (ARP) initially began at the Learning Resource Center (LRC) located on the campus of the National Fire Academy (NFA) in Emmitsburg, MD in January of 2016. Several journal articles and EFO papers related to elderly

falls, fall risks, and fall prevention were reviewed to help gain insight into the author's research problem.

Upon returning home, the author utilized the Gardner, Kansas branch of the Johnson County Public Library system to further research information on older adult falls, fall risk factors, and fall prevention. Additionally, internet searches were conducted on the World Wide Web using Google® as a search engine. Key phrases such as "fall injury statistics," "elderly falls," "falls among older adults," "fall risk factors," and "fall prevention" were utilized to find information on the author's research topic. The overall goal of the literature review process was to review current sources related to the author's research problem and summarize their critical findings. In the end, the literature review identified relevant and practical information regarding the scope of the fall problem among older adults, contributing factors related to the fall problem, and strategic interventions used for reducing/eliminating the contributing factors related to the fall problem among older adults.

CAD System Data Analysis

The analysis of CAD system data was an important part of the research process to determine the scope of the fall problem in Olathe, Kansas. To accomplish this evaluation, the author reached out to the Emergency Communications Center (ECC) located in Olathe. The ECC is the main dispatching center for every fire department in Johnson County, Kansas. Specifically, the author corresponded via email with GIS coordinator Mark Whelan. First, the author requested CAD data for every type of incident the OFD responded to from 2011-2015. Upon receiving the data, the author created a table to categorize the incident types into three main categories – Fire, EMS, and Nonfire (see Table 1). Next, the author requested CAD data for every fall-related incident that transpired in the city of Olathe from 2011-2015. Upon receiving

the data, the author created a table to categorize incidents into falls and lift assists (see Table 2). Finally, the author analyzed the addresses linked to the CAD data received from ECC to see where a majority of fall-related incidents were transpiring. Analysis revealed that the bulk of the fall-related incidents from 2011-2015 were taking place at senior living facilities within Olathe (see Table 3). Upon further examination of the fall incident data, it was discovered that the number of fall-related incidents transpiring at the senior living facilities had been increasing over the five year period. Ultimately, it was the discovery of this upward trend that led the author to proceed with this APR.

Situational Analysis Logic Model

In an effort to gain a better understanding of how best to develop, implement, and evaluate a fall prevention program, the author conducted a situational analysis to analyze all of the contributing factors related to the fall problem that were identified in the literature review. Using a situational analysis was recommended for action research in the EFOP Handbook (USFA, 2015 pg. 34). To better visualize all of the elements included in the situational analysis, the author used a logic model as a planning tool to graphically display the process for developing goals, objectives and strategies that lead to change. Creating a logic model made it easier for the author to visualize direct linkages with the contributing factors. In the end, four program goals were identified, four measurable objectives were established, and four strategic interventions were developed with appropriate evaluation methods (see Appendix C). These outcomes were later used as the framework to construct the author's fall prevention program.

External Survey Instrument

In order to provide further depth into the third research question, an internet-based survey instrument was developed by the author using Surveymonkey.com® (see Appendix D). The

survey was designed with the intent of determining what intervention strategies and/or best practices are being utilized by other fire departments across the nation to reduce fall risk factors in their communities, and whether or not they were successful. The survey was made available to fire department members of all ranks across the United States using the Training Resources and Data Exchange Network (TRADENET) and two social media sites – Facebook® and LinkedIn®. For TRADENET, the author sent an email requesting assistance with survey participation for an ARP in the EFOP. The email included a brief description of the survey topic along with the survey link. For Facebook®, the author posted the survey link in two different EFOP group forums – "NFA EFO 2014-2017" and "11-2014 EFOP." For LinkedIn, the author posted a link to the survey on the main newsfeed.

The actual total population size for the external survey was unidentified by the author due to the unknown nature of the number of subscribing fire department members to TRADENET and LinkedIn®. However, the population size of the Facebook® groups totaled 183 members. The internet-based survey was made available online for a four week period of time and had a total of 97 respondents. All respondents were anonymous, but certain demographic information was collected within the survey to determine the respondent's city population, amount of fire department members, and type of fire department. This information was useful in helping determine comparability with the OFD. Additionally, the survey was designed with the intent of determining whether or not other fire departments had fall prevention or MIH programs in place, what intervention strategies were included in those programs, and how often those programs were evaluated.

Assumptions and Limitations

Three main assumptions were made by the author while conducting research for this project. First, the author assumed that all information examined and gathered through the literature review was both factual and unbiased. Second, the author assumed that the older adult population residing at senior living facilities in Olathe would be willing and receptive participants of the newly developed fall prevention program. Lastly, the author assumed that the data gathered from the survey's respondents were factual, unbiased, and beneficial for the fire service.

The research was limited by the following four factors: time, amount of literature, and the scope of the situational analysis and survey instrument. First, the amount of time the author had available to conduct research and collect data was limited to a 6-month timeframe. This deadline did not allow time for the author to follow-up with survey respondents concerning their fall prevention programs and strategic interventions. Second, the amount literature reviewed on the subject of falls among older adults was limited by the author's abilities to conduct research, and the limited amount of information on the subject as it related to the fire service. Finally, the scope of the research was limited by the lack of information about fire department fall prevention programs, population sizes and number of responses returned in both survey instruments.

Results

The results of this action research were based upon procedures including a literature review, an analysis of CAD system data, a situational analysis and logic model, and responses from an internet-based survey instrument that was developed and distributed by the author using SurveyMonkey.com®. The information gathered from the research was utilized to answer the four research questions developed by the author.

Research Question #1:

What is the scope of the fall problem?

To answer this question, the author researched report findings and factual information from governmental agencies pertaining to the topic of falls among older adults from an international, national, statewide and community perspective. The author analyzed CAD system data from the ECC to determine the scope of the fall problem at the local level.

Initially, research revealed that fall-related injuries and deaths among older adults were a major public health problem plaguing every continent across the globe. The World Health Organization (WHO) ranked falls among older adults as the second leading cause of accidental or unintentional injury deaths across the globe with an estimated 424,000 fatalities and 37.3 million injuries taking place each year (WHO, 2016). The WHO also reported that older adults have the highest risk of falling and suffering from fall-related injuries and deaths each year with their percentage of risk increasing exponentially with age.

In the United States, the scope of the fall problem among older adults was found to be quite shocking. Statistics from the CDC maintained that one in every three older adults fall, and over 2 million are treated in emergency departments for fall-related injuries (CDC, 2016). Also, CDC data claimed that every 11 seconds an older adult was treated in the emergency room for a fall, and every 19 minutes an older adult died from a fall, which equated to approximately 2.8 million injuries, 800,000 hospitalizations and more than 27,000 fatalities among older adults nationwide (CDC, 2013).

In Kansas, the scope of the fall problem among older adults closely mirrored national trends indicating that adults age 65 and older accounted for 88% of deaths due to fall-related injuries, equating to 1,690 fatalities from 2009-2013 (KDHE, 2013). Also, statistics from the

KDHE identified that fall-related injuries accounted for 25% of emergency room visits and 73% of all hospitalizations in the state for Kansans age 65 and older.

At the community level, the CDC indicated that the scope of the fall problem was more prevalent among older adults residing at senior living facilities than elderly citizens living in the community (CDC, 2012). Statistics showed that 50-75% of older adults residing at some kind of senior care facility fall each year, which was twice the rate of falls that occur among elders living in the community. Also, the CDC (2012) suggested that older adults living at senior living facilities fell multiple times each year averaging 2.6 times per person.

An analysis of OFD's CAD system data helped determine the scope of the fall problem at the local level. First, the author examined incident types, breaking down every call into three main categories – Fire, Non Fire, and EMS (see Table 1). This breakdown of call volume into incident types helped the author have a better understanding of how OFD resources were being impacted by certain call types. Results showed that 63% (30,768 out of 48,856) of all of the emergency responses in the city of Olathe for the years 2011-2015 were EMS in nature, 33% (16,315 out of 48,856) were non fire calls, and 4% (1,463 out of 48,856) were fire-related incidents. Next, the author examined fall-related incidents over the same five-year period (see Table 2). Results showed that 20% (6,068 out of 30,768) of the total EMS calls from 2011-2015 were fall-related in nature. This allowed the author to gauge how big the fall problem was in comparison with the total number of EMS incidents over the same time period. Finally, the author examined the location of the fall-related incidents to determine where the fall problem was transpiring (see Table 3). Results showed that 37% (2,270 out of 6,068) of all fall-related incidents were taking place at Olathe's 15 senior living facilities. Upon further examination of the fall incident data, it was discovered that the number of fall-related incidents transpiring at

these senior living facilities had increased 23% (1,061 to 1,392) over the five year period. Ultimately, it was the discovery of this upward trend that led the author to proceed with this APR. In the end, research findings and results provided a sufficient answer to the scope of the fall problem among older adults, while at the same time directly supporting the author's CAD data findings as it related to the research problem in Olathe, Kansas.

Research Question #2:

What are the contributing factors related to the fall problem among older adults?

To answer this question, the author researched report findings and factual information from governmental agencies and scholarly writings pertaining to the topic of falls among older adults to uncover fall risk factors. The research revealed that fall-related incident among older adults was the result of multiple risk factors. Researchers from the CDC categorized these risk factors into two main categories – intrinsic and extrinsic. Intrinsic risk factors included advanced age, previous fall history, muscle weakness, chronic medical conditions, impaired vision, gait/balance problems, postural hypotension, and fear of falling. Extrinsic risk factors included environmental factors, home hazards, improper assistive devices, and psychoactive medication use (CDC, 2016).

The WHO (2007) indicated that falls were due to risk factors that included chronic medical conditions, physical inactivity, medication side effects, poor mobility/balance, limited vision, and unsafe environmental factors. The National Safety Council affirmed that risk factors included muscle weakness, medications that cause dizziness, improper footwear, impaired vision, slick floors, poor lighting, loose rugs, clutter and uneven surfaces (NSC, 2016).

Scholarly research indicated similar findings suggesting that the strongest independent risk factors for falls were linked to previous falls, muscle weakness, gait and balance

impairments, and use of psychoactive medications (Lee et al., 2013). Another study attributed falls to risk factors that included weakness, balance deficits, gait deficits, visual deficits, mobility limitation, cognitive impairment, postural hypotension, and chronic medical conditions (Rubenstein, 2006). A recent article written in the Nurse Practitioner journal identified risk factors that included aging, medications, polypharmacy, alcohol abuse, diabetes, visual disturbances, coordination and balance, foot problems, urinary incontinence, and depression (Saccomano et al., 2015). Finally, a Master's degree thesis found that falls were the result of poor vision, polypharmacy, lack of strength and balance, and home safety hazards (Keuter, 2012). In the end, research findings and results provided a sufficient answer to the type of contributing factors that were related to the fall problem among older adults, while at the same time they helped the author classify identified risk factors into the following four main categories:

1. Biological factors
2. Behavioral factors
3. Environmental factors
4. Socioeconomic factors

These categories were used in the situational analysis logic model to aid in the development of goals, objectives and strategic interventions for the MIH Fall Prevention Program.

Research Question #3:

What goals, objectives and intervention strategies can be developed to help reduce or eliminate the effects of the contributing factors?

To answer this research question, a situational analysis logic model (see Appendix C) was created and utilized by the author to examine the four categories of contributing factors

surrounding the fall problem. With the help of the logic model, the following four program goals were established to help alleviate, modify, or remedy the contributing factors:

1. To improve access to fall prevention resources for older adults residing at senior living facilities in Olathe.
2. To reduce injuries from falls and repeat falls among older adults through follow-up screening and assessment of fall risk factors.
3. To reduce fall-related incidents around the home resulting from unsafe living conditions, unsafe practices and fall hazards.
4. To improve attitudes and awareness about fall risk factors and fall prevention among older adults residing at senior living facilities in Olathe.

The program goals were broad in nature, yet focused with the intent of reducing or improving the effects of the contributing factors related to the fall problem.

Once the program goals were identified, the following four objectives were established to generate measurable outcomes directly related to the goals as compared to baseline data:

1. By December 31st 2021, there will be a 10% improvement in access to fall prevention resources for older adults residing at senior living facilities in Olathe.

2. By December 31st 2021, there will be a 25% reduction in fall related injuries and repeat falls involving older adults residing at senior living facilities.

3. By December 31st 2021, there will be a 25% reduction in fall-related incidents around the home involving older adults caused from unsafe living conditions, unsafe practices, and fall hazards.

4. By December 31st 2021, there will be a 10% improvement in the attitudes and awareness levels of older adults concerning fall risk factors and fall prevention.

Objectives #2 and #3 were outcome based, seeking to “reduce” impacts from the contributing factors, while Objectives #1 and #4 were impact based, seeking to ‘improve” circumstances related to the contributing factors.

Next, four program intervention strategies were developed to assist in achieving the desired measurable outcome and impact objectives. The following strategic interventions were utilized based upon literature review findings mentioned above and survey results cited later in the paper:

1. Follow-up Screenings
2. Risk Assessments
3. Home Safety Evaluations
4. Public Education

To assist in the implementation of each strategic intervention, the author obtained supplementary support materials from the CDC’s Stopping Elderly Accidents, Deaths, and Injuries (STEADI) program. As mentioned earlier, the STEADI program was created by researchers at the CDC’s Injury Center to assist health care providers in reducing fall risks and improving fall prevention. The author decided to incorporate STEADI materials into the fall prevention program (see Appendix G) due to their quality and ease of use for assessing, treating, and referring older adult patients based on their fall risk level. The following STEADI forms and materials were utilized by the author for the newly developed MIH Fall Prevention Program:

1. Fall Risk Checklist
2. Algorithm For Fall Risk Assessments and Interventions
3. Fall Prevention Patient Referral Form
4. The Time-Up and Go Test

5. The 30 Second Chair Stand Test
6. The 4-Stage Balance Test
7. Home Safety Checklist
8. Staying Independent Brochure
9. Risk Factor For Fall Brochure

Research Question #4:

What intervention strategies are being utilized by other fire departments across the nation to reduce fall risk factors in their communities?

To answer this research question, an internet-based external survey (see Appendix C) was developed by the author using Surveymonkey.com®. The survey was made available to fire department members of all ranks across the United States using the Training Resources and Data Exchange Network (TRADENET) and two social media sites – Facebook® and LinkedIn®. For TRADENET, the author sent an email requesting assistance with survey participation for an ARP in the EFOP. The email included a brief description of the survey topic along with the survey link. For Facebook®, the author posted the survey link in two different EFOP group forums – "NFA EFO 2014-2017" and "11-2014 EFOP." For LinkedIn, the author posted a link to the survey on the main newsfeed.

The actual total population size for the external survey was unidentified by the author due to the unknown nature of the number of subscribing fire department members to TRADENET and LinkedIn®, but the Facebook® groups had a total population size of 183 members. Regardless of the population size, there were a total of 97 respondents to the internet-based survey within a four-week period of time. All respondents were anonymous, but certain demographic information was collected within the survey to determine the respondent's city

population, amount of members within their fire department, and type of fire department. This information was useful in helping determine comparability with the OFD. Additionally, the survey was designed with the intent of determining whether or not other fire departments had fall prevention programs or MIH programs in place, what intervention strategies were included in those programs, and how often those programs were evaluated.

The survey contained the following ten questions:

1. What is the population of you community?
2. How many members are in your department?
3. How would you describe your department?
4. Approximately how many Fire/EMS calls does your department respond to each year?
5. What percentage of your department's call volume is EMS related? Estimate if unknown?
6. If known, what percentage of your department's EMS calls involve falls or lift assists?
7. Does your department have a fall prevention program in place?
8. Does your fall prevention program include any of the following assessment or intervention strategies? Check all that apply.
9. Does your department have a Mobile Integrated Healthcare (MIH) program in place?
10. Does your department evaluate their fall prevention program?

Survey question #1 asked respondents to identify their community's population range. Six (6.19%) respondents answered that their population was between 0-9,999, forty-five (46.39%) between 10,000-49,999, thirteen (13.40%) between 50,000-99,999, seventeen (17.53%) between 100,000-199,999, ten (10.31%) between 200,000-499,999, four (4.12%) between 500,000-999,999, and two (2.06%) were over one million. This data was helpful in determining the size of the community in comparison with the city of Olathe.

Survey question #2 asked respondents to identify a range of the amount of members within their departments. Twenty-nine (29.90%) respondents answered that their department membership was between 0-50 people, twenty-seven (27.84%) between 51-100, seventeen (17.53%) between 100-200, nine (9.28%) between 200-300, six (6.19%) between 300 -400, one (1.03%) between 400-500, and eight (8.25%) had over 500. This data was useful in determining the size of the fire department in comparison with the Olathe Fire Department.

Survey question #3 asked respondents how they would describe their fire department. Sixty-seven (69.07%) respondents answered full-time, zero (0.00%) answered part-time, three (3.09%) answered volunteer, twenty-seven (27.84%) answered combination. This data was helpful in determining the type of fire department in comparison to the Olathe Fire Department.

Survey question #4 asked respondents to approximate how many Fire/EMS calls their departments respond to each year. Nine (9.38%) respondents answered between 0-1,000 calls, thirty-four (35.42%) answered between 1,000 -5,000 calls, twenty-one (21.88%) answered between 5,000-10,000 calls, twenty-five (26.04%) answered between 10,000-50,000 calls, and seven (7.29%) answered 50,000 plus calls. This data was useful in determining the call total volume in comparison with the Olathe Fire Department.

Survey question #5 asked respondents to identify what percentage of their department's call volume was EMS related. Four (4.12%) respondents answered between 0-25%, one answered (1.03%) answered between 25%-50%, forty-four (45.36%) answered between 50%-75%, and forty-eight (49.48%) answered 75% plus. This information was helpful in determining how the respondent's EMS call volume compared to the Olathe Fire Department's EMS call volume.

Survey question #6 asked respondents to what percentage of their department's EMS calls involve falls or lift assists. Only 86 respondents answered this survey question, while 11 skipped it. Twenty-seven (31.40%) respondents answered between 0-10%, thirty-eight (44.19%) respondents answered between 10%-20%, fourteen (16.28%) respondents answered between 20%-30%, and seven (8.14%) respondents answered 30% plus. This information was helpful in determining the extent of the respondent's fall problem and how it compared to the Olathe Fire Department.

Survey question #7 asked respondents if their departments had a fall prevention program in place. Twenty-five (25.77%) respondents answered "yes" to the question, while seventy-two (74.23%) respondents answered "no" to the question. This question was asked to determine how prevalent fall prevention programs were among fire departments across the United States. Unfortunately, only 1 in 4 fire departments had fall prevention programs in place. Additionally, there was a follow-up question asked to respondents that answered "no" to the question. Respondents were asked if they felt that their department should have one in place. Only forty-nine of the seventy-two respondents that answered "no" commented on the follow-up question. However, thirty-four of the forty-nine comments were positive in nature suggesting that having a fall prevention program in place would be beneficial.

Survey question #8 asked respondents to identify what assessment or intervention strategies were included in their fall prevention program. Only 29 of 97 total respondents answered this question. eighteen (62.07%) respondents utilized risk assessments in their fall prevention program, nineteen (65.52%) respondents utilized home evaluations and/or modifications in their fall prevention program, twenty-four (82.76%) respondents utilized public education in their fall prevention program, eight (27.59%) respondents answered that they review

medications as a part of their fall prevention program, five (17.24%) respondents conduct vision checks as a part of their fall prevention program, six (20.69%) respondents perform walking assessments as a part of their fall prevention program, and three (10.34%) respondents answered that they utilized exercise programs as a part of their fall prevention program. This data was helpful in determining what strategic interventions were being utilized the most by fire departments across the United States. Public education, risk assessments, and home evaluations were the most utilized fall prevention interventions.

Survey question #9 asked respondents whether or not their departments had a Mobile Integrated Healthcare (MIH) program in place. Only four (4.17%) respondents answered “yes” to the question, while ninety-two (95.83%) respondents answered “no” to the question. This data was useful for determining how prevalent MIH programs were within fire departments across the United States. From the data provided, it would appear that only 1 in 20 fire departments have MIH programs in place.

Survey question #10 asked respondents whether or not their departments evaluated their fall prevention programs and how often. Only 79 of 97 total respondents answered this question. 17 (21.52%) respondents answered “yes” that they do evaluate their programs, while sixty-two (78.48%) respondents answered “no” to the question. The data showed that most fall prevention programs were evaluated quarterly, bi-annually, and annually.

Overall, the survey results provided the author with enough supportive evidence to not only gain a better understanding of what strategic interventions were being utilized to prevent or reduce fall-related incidents in other communities, but also to aid in the development of a fall prevention program for the Olathe Fire Department.

Discussion

Research results identified the scope of the fall problem to be a worldwide epidemic plaguing older adult populations on every continent (WHO, 2016). Falls among older adults ranked as the second leading cause of accidental or unintentional injury deaths across the globe with an estimated 424,000 fatalities and 37.3 million injuries taking place each year (WHO, 2016). In the US, unintentional injuries and deaths among older adults from fall-related accidents were staggering in number as well showing that every 11 seconds an older adult is treated in the emergency room for a fall, and every 19 minutes an older adult dies from a fall (CDC, 2016). In Kansas, falls were considered the leading cause of injury morbidity and mortality showing older adults accounting for 88% of deaths due to fall-related injuries (KDHE, 2016). Locally, the scope of the fall problem in Olathe showed that 37% of all fall-related incidents were taking place at Olathe's 15 senior living facilities, an upon further examination, it was discovered that the number of fall-related incidents transpiring at these senior living facilities had increased 23% over five year period from 2011-2015.

Research results identified that most falls were associated with intrinsic and extrinsic contributing risk factors linked to advanced age, previous fall history, muscle weakness, chronic medical conditions, impaired vision, gait/balance problems, postural hypotension, fear of falling, environmental factors, home hazards, improper assistive devices, and psychoactive medication use (CDC, 2016). Risk factors were able to be classified into 4 different categories consisting of biological factors, behavioral factors, environmental factors, and socioeconomic factors (WHO, 2007).

Research showed that detection and mitigation of risk factors could significantly reduce the rate of future falls. Researchers from the WHO (2016) recommended utilizing strategic

interventions that include screenings, clinical interventions, home assessments and environmental modifications, prescription of appropriate assistive devices to address physical and sensory impairments, muscle strengthening and balance retraining, community-based group programs which may incorporate fall prevention education and exercises or dynamic balance and strength training, and use of hip protectors for those at risk of a hip fracture due to a fall. Researchers from the CDC recommended utilizing screening for fall risk levels, conducting a fall risk assessments, conducting a home safety evaluations, and educating patients on fall prevention (CDC, 2016).

In the end, the research results and findings related to falls and fall prevention helped the author see that the OFD's MIH program would definitely be best suited for the implementation of a fall prevention program. Specifically, the author noted that fall preventative intervention strategies required a substantial amount of contact hours with older adults in order to properly screen/assess their risk levels, provide individualized treatment or referral plans, make home or environmental changes, and properly teach/educate older adults about fall prevention. The author felt that this type of service could easily be provided by the OFD's MIH unit since it fell directly in line with its current mission and scope of practice. Additionally, research results and findings greatly assisted the author in the development of a logic model that helped in the identification of goals, objectives, and intervention strategies. These components were eventually used as the framework to create a "real" fall prevention program with "measurable" impacts and outcomes aimed at solving the fall problem in Olathe, Kansas.

Recommendations

The problem was that the OFD did not have a fall prevention program in place that could help reduce the risk and occurrence of falls involving older adults at local senior living facilities.

The purpose of this research was to develop a comprehensive fall prevention program that could be administered by OFD's MIH unit to help reduce the risk and occurrence of falls among older adults at local senior living facilities.

The results of the literature review, incident data analysis, situational analysis and external survey have provided the author with an ideal pathway for developing and implementing a comprehensive fall prevention program for older adults residing at senior living facilities in Olathe. Using the research findings, the author was able to develop a fall prevention program that could be administered by the department's MIH unit to older adults residing in senior living facilities. Once the program was developed, the author revised the current MIH policy to incorporate procedures directly related to the newly developed fall prevention program to ensure its proper implementation. With these two components in place, the following recommendations were made by the author for the organization:

1. Schedule a meeting with the Command Staff to share findings from this applied research project and present the newly developed MIH Fall Prevention Program and policy revision as a proposed solution to the research problem.
2. Submit a formal request to the Fire Chief requesting to adopt, approve and implement the revised MIH policy and highlighted Fall Prevention Program addendum (see Appendix G).
3. Submit a formal request to the Fire Chief requesting to adopt, approve and implement the newly developed MIH Fall Prevention Program and supplementary STEADI forms from the CDC (see Appendix F).

4. Once the program is approved, schedule a meeting with the MIH personnel to explain the details related to the proposed implementation of the new MIH Fall Prevention Program.
5. Once the program is approved, submit a formal request to the Battalion Chief requesting an internal training session be scheduled to educate the OFD staff and personnel about the purpose and details related to the newly developed MIH Fall prevention program.
6. Once the program is approved, schedule meetings with each senior living facility in Olathe to explain the purpose and details related to the MIH Fall Prevention program.

Recommendations for future readers and researchers interested in implementing fall prevention strategies and/or programs for older adults in their communities would include delving into the implementation of community-based fall prevention programs involving multiple community resources, further adapting the author's MIH fall prevention program to incorporate more assistance and guidance from staff members at senior living facilities, and comparing results of this program after the one year mark with the results of other fire service-based community paramedicine programs that include fall prevention as a core service and scope of practice.

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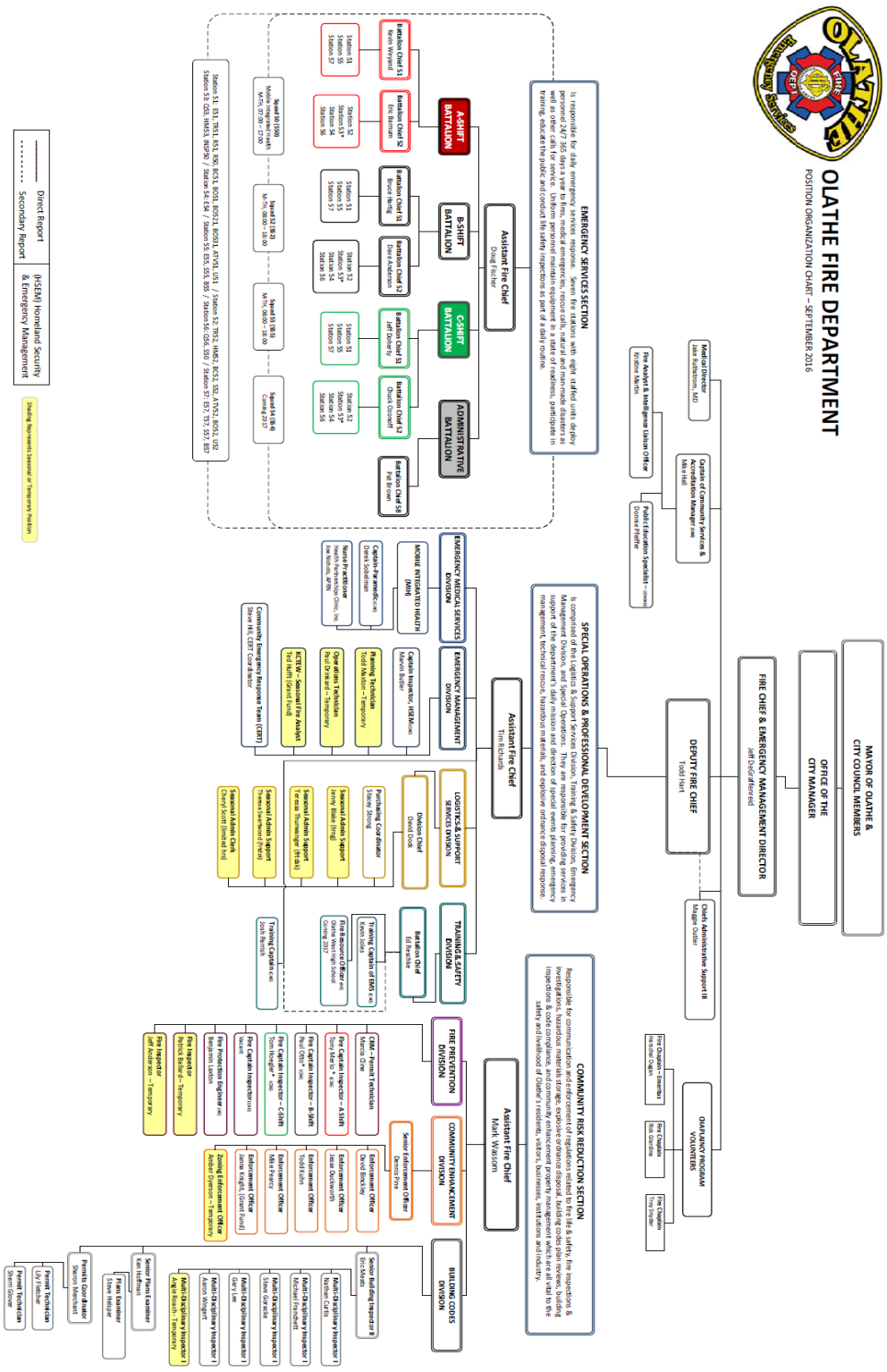
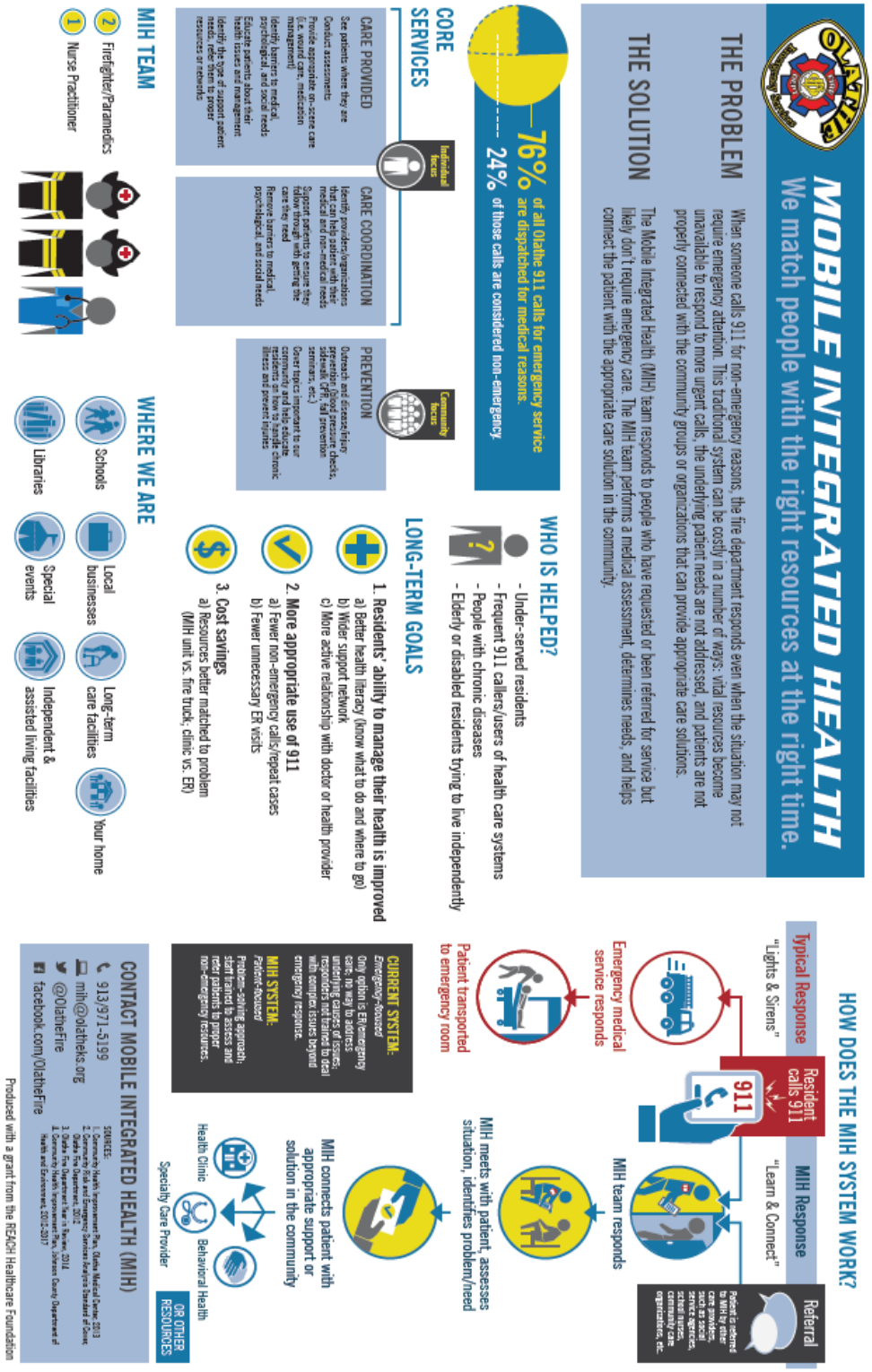
Appendix A: OFD Organizational Chart



Appendix B: OFD MIH Program Infographic



Appendix C: Situational Analysis Logic Model

Appendix D: External Fall Prevention Survey Instrument

Olathe Fire Department Fall Prevention Survey

Thank You

I am working on an applied research project for the Executive Fire Officer Program in regard to developing a fall prevention program. If you would like to contribute, I would greatly appreciate it if you could please take a moment and complete my 10 question survey.

1. What is the population of your community

- ◯ 0-9,999
- ◯ 10,000-49,999
- ◯ 50,000-99,999
- ◯ 100,000-199,999
- ◯ 200,000-499,999
- ◯ 500,000-999,999
- ◯ 1 Million+

2. How many members are in your department?

- ◯ 0-50
- ◯ 51-100
- ◯ 100-200
- ◯ 200-300
- ◯ 300-400
- ◯ 400-500
- ◯ 500+

3. How would you describe your department?

- ◯ Full-time
- ◯ Part-time
- ◯ Volunteer
- ◯ Combination

4. Approximately how many Fire/EMS calls does your department respond to each year?

- ◯ 0-1,000
- ◯ 1,000-5,000
- ◯ 5,000-10,000
- ◯ 10,000-50,000
- ◯ 50,000+

5. What percentage of your department's call volume is EMS related? Estimate if unknown.

- ◯ 0-25%
- ◯ 25%-50%
- ◯ 50%-75%
- ◯ 75%+

6. If known, what percentage of your department's EMS calls involve falls or lift assists?

- ◯ 0-10%
- ◯ 10%-20%
- ◯ 20%-30%
- ◯ 30%+

7. Does your department have a fall prevention program in place?

- ☐ Yes
- ☐ No

If no, do you feel that your department should have one in place?

[ ]

8. Does your fall prevention program include any of the following assessment or intervention strategies? Check all that apply.

- [ ] Risk assessments
- [ ] Home evaluations/modifications
- [ ] Public Education
- [ ] Reviewing Medications
- [ ] Vision Checks
- [ ] Walking Assessments
- [ ] Exercise Programs

Others (please specify)

9. Does your department have a Mobile Integrated Healthcare (MIH) program in place?

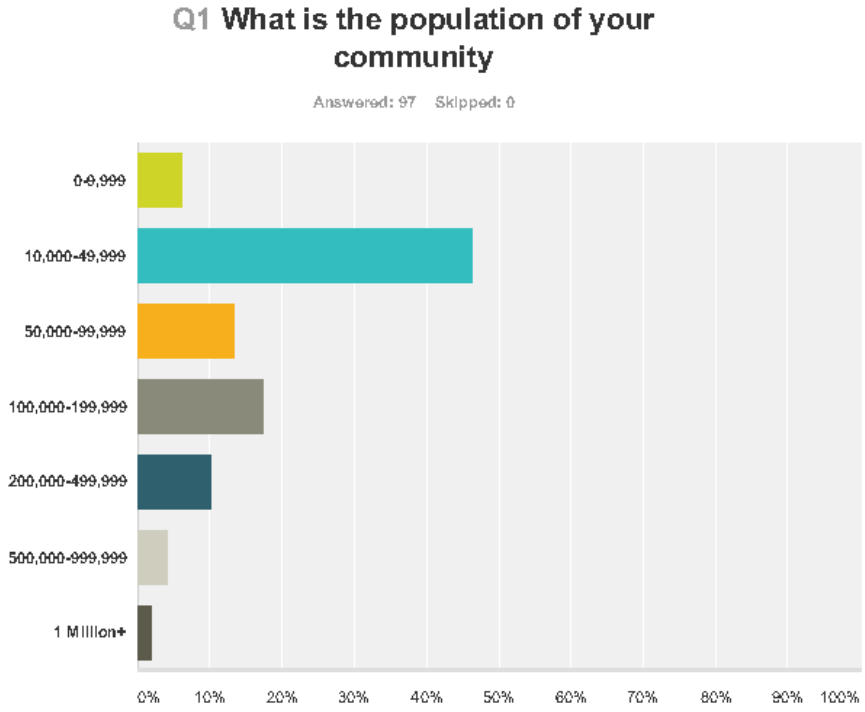
- ( ) Yes
- ( ) No

If yes, does your MIH program include fall prevention? Does it help administer your fall prevention program

10. Does your department evaluate their fall prevention program?

- ( ) Yes
- ( ) No
- ( ) If yes, how often? Quarterly? Bi-annually? Annually?

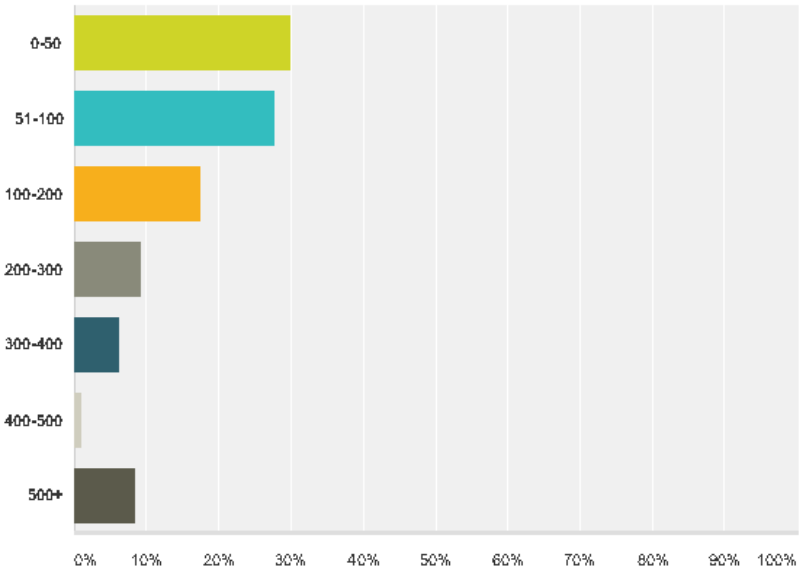
Appendix E: External Fall Prevention Survey Results



Answer Choices	Responses	
0-9,999	6.19%	6
10,000-49,999	46.39%	45
50,000-99,999	13.40%	13
100,000-199,999	17.53%	17
200,000-499,999	10.31%	10
500,000-999,999	4.12%	4
1 Million+	2.06%	2
Total		97

Q2 How many members are in your department?

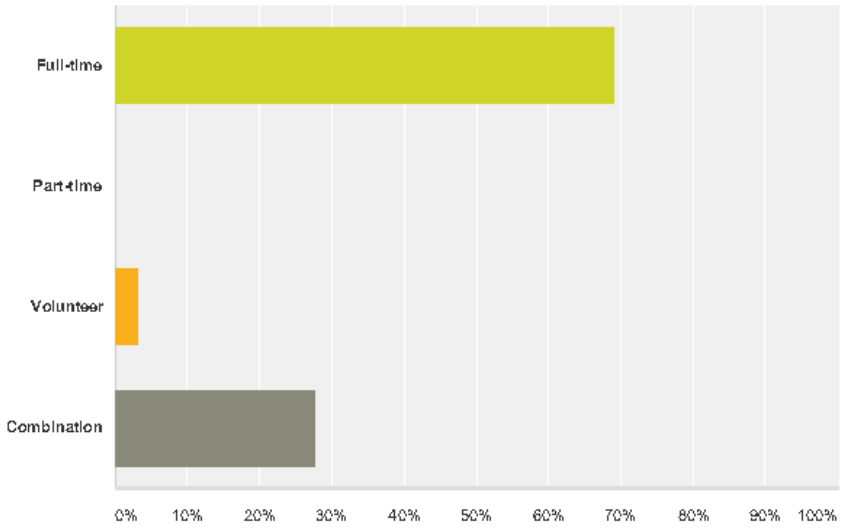
Answered: 97 Skipped: 0



Answer Choices	Responses	
0-50	29.90%	29
51-100	27.84%	27
100-200	17.53%	17
200-300	9.28%	9
300-400	6.19%	6
400-500	1.03%	1
500+	8.25%	8
Total		97

Q3 How would you describe your department?

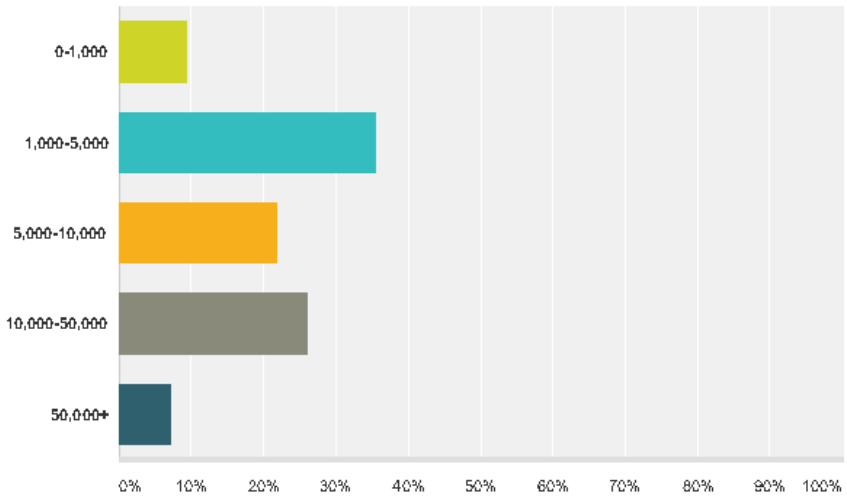
Answered: 97 Skipped: 0



Answer Choices	Responses	
Full-time	69.07%	67
Part-time	0.00%	0
Volunteer	3.09%	3
Combination	27.84%	27
Total		97

Q4 Approximately how many Fire/EMS calls does your department respond to each year?

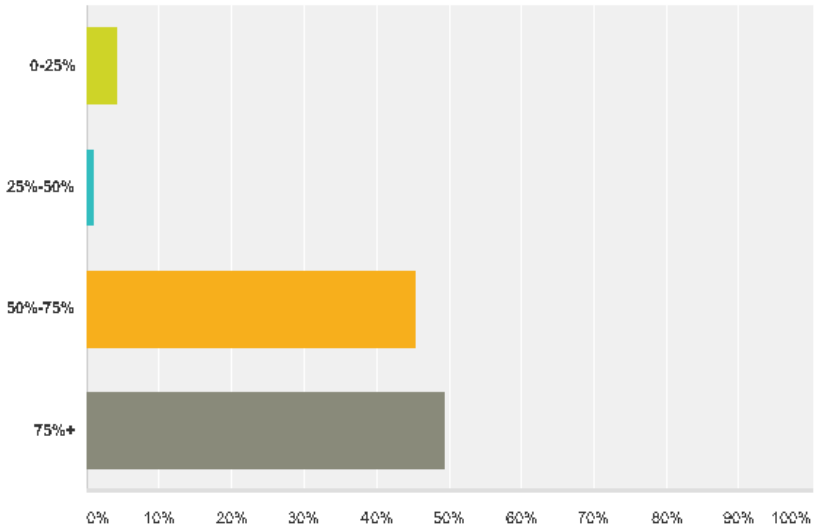
Answered: 96 Skipped: 1



Answer Choices	Responses	
0-1,000	9.38%	9
1,000-5,000	35.42%	34
5,000-10,000	21.88%	21
10,000-50,000	26.04%	25
50,000+	7.29%	7
Total		96

Q5 What percentage of your department's call volume is EMS related? Estimate if unknown.

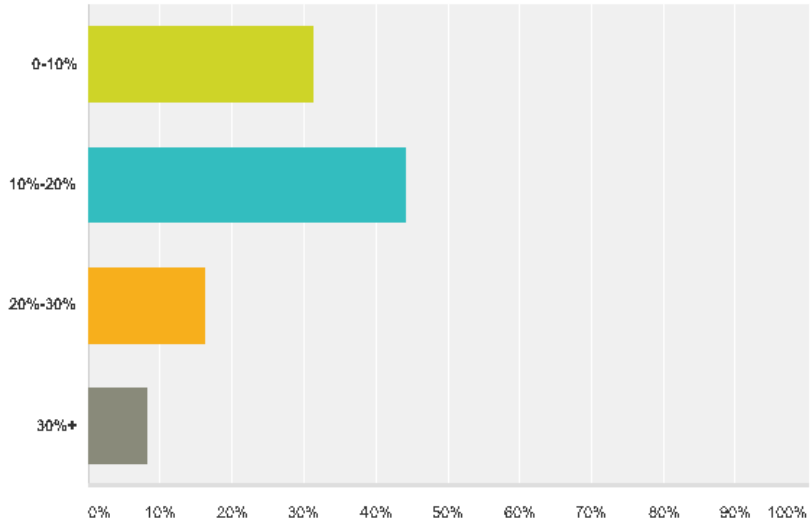
Answered: 97 Skipped: 0



Answer Choices	Responses	
0-25%	4.12%	4
25%-50%	1.03%	1
50%-75%	45.36%	44
75%+	49.48%	48
Total		97

Q6 If known, what percentage of your department's EMS calls involve falls or lift assists?

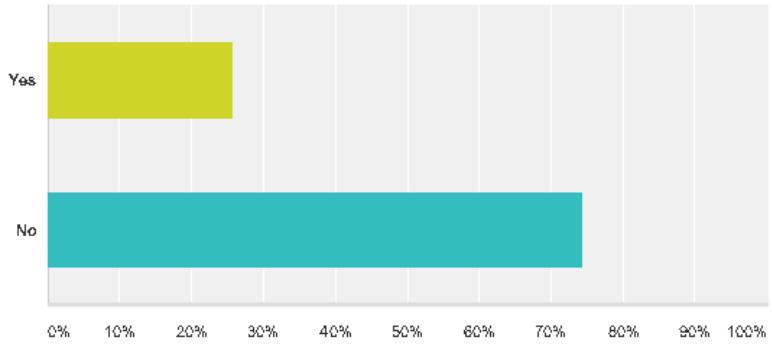
Answered: 86 Skipped: 11



Answer Choices	Responses	
0-10%	31.40%	27
10%-20%	44.19%	38
20%-30%	16.28%	14
30%+	8.14%	7
Total		86

Q7 Does your department have a fall prevention program in place?

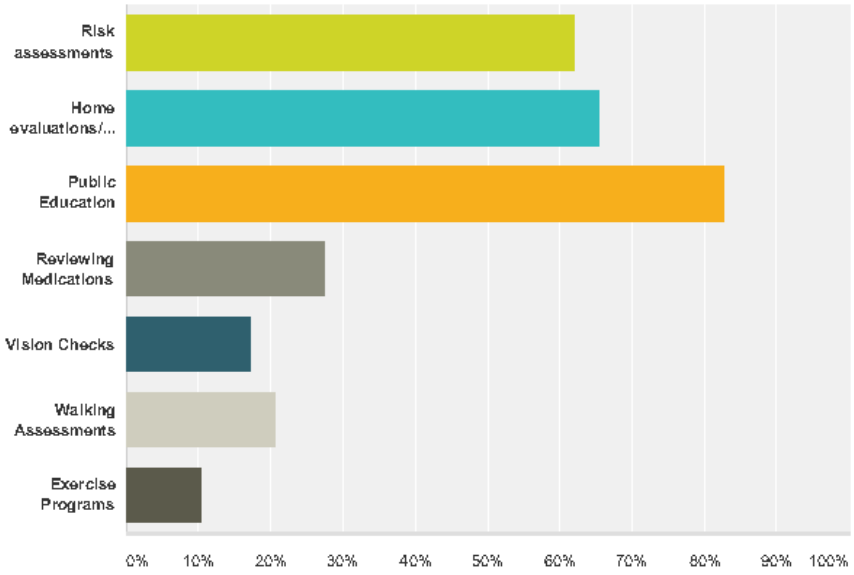
Answered: 97 Skipped: 0



Answer Choices	Responses	
Yes	25.77%	25
No	74.23%	72
Total Respondents: 97		

Q8 Does your fall prevention program include any of the following assessment or intervention strategies? Check all that apply.

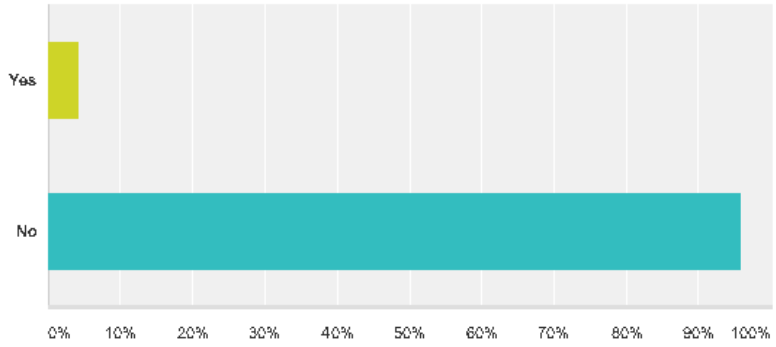
Answered: 29 Skipped: 68



Answer Choices	Responses	
Risk assessments	62.07%	18
Home evaluations/modifications	65.52%	19
Public Education	82.76%	24
Reviewing Medications	27.59%	8
Vision Checks	17.24%	5
Walking Assessments	20.69%	6
Exercise Programs	10.34%	3
Total Respondents: 29		

Q9 Does your department have a Mobile Integrated Healthcare (MIH) program in place?

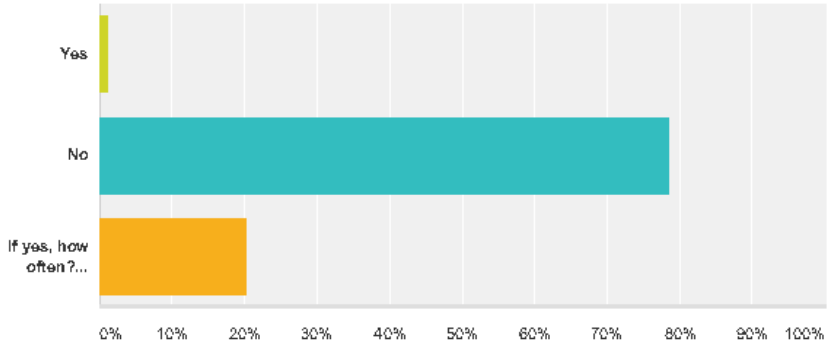
Answered: 96 Skipped: 1



Answer Choices	Responses	
Yes	4.17%	4
No	95.83%	92
Total		96

Q10 Does your department evaluate their fall prevention program?

Answered: 79 Skipped: 18



Answer Choices	Responses	
Yes	1.27%	1
No	78.48%	62
If yes, how often? Quarterly? Bi-annually? Annually?	20.25%	16
Total		79

Appendix F: OFD MIH Policy with Fall Prevention Program Addendum

OLATHE FIRE DEPARTMENT
ADMINISTRATIVE POLICY GUIDE

Current Policy Date:	08/25/2014	**Policy No.:** 4-215	**Total Number of Pages:** 3
Supersedes Policy Issuance Dates:			
Original Policy Issuance Date:	08/18/2014	Date of last review:	
Subject: Mobil Integrated Healthcare			
Summary: Guidelines for Mobile Integrated Healthcare operations		**Approved:** Signed on 08/18/2014 Jeff G. DeGraffenreid, Fire Chief	
			Self-Assessment References:

I. SCOPE / PURPOSE

The Olathe Fire Department is a community resource committed not only to exceptional Fire and Emergency Medical Services (EMS), but to overall community health. The Mobile Integrated Healthcare (MIH) initiative leverages resources to expand fire department response capabilities and better meet the expanding needs of our community.

The purpose of the MIH practice in the City of Olathe is to more accurately match fire department and other healthcare resources with the needs of those who require medical aid.

The fire department will navigate patients toward appropriate healthcare options, reduce the number of unneeded 911 calls and EMS transports that place a strain on an already overloaded emergency system, work towards reducing overall healthcare costs through readmission and repeat 911activation avoidance, place an emphasis on prevention, create a better patient experience, and educate individuals on healthcare interventions and wellness.

II. OVERVIEW

The Mobile Integrated Healthcare Vehicle (MIHV) will be a fully staffed response vehicle capable of emergency response and treatment as well as specialized services such as non-acute care, community service, mental health and patient follow up.

The paramedic and mid-level provider will be able to provide a level of service at least as advanced as other first line emergency response vehicle but will also have the unique ability to provide enhanced non-emergent medical care as well.

A large part of this program consists of helping the patient access the most appropriate level of healthcare. The MIHV will facilitate appropriate transport or appointment to the Emergency Department, clinic, pharmacy, mental health institution, or other appropriate facilities using all available resources. During patient interaction, neither the Physician Assistant (PA) nor the Firefighter-Paramedic (FF-P) shall preference any pharmacy or healthcare facility for treatment and care.

III. ROLES/RESPONSIBILITY

It is the responsibility of all members of the department to understand the intent of this APG and to support participating members in accomplishing their goals, objectives, and day to day tasks involved with the MIHV.

IV. STAFFING

Staffing for the MIH initiative consists of response vehicles resourced with FF-P and PA.

This program provides approximately 40 hours of service coverage per week. FF-P and the PA are employees of the Olathe Fire Department and have specialized training in the area of community paramedicine and/or nursing.

The PA is specially trained in integrated health care. Medical oversight is conducted by the Olathe Fire Department Medical Director.

V. SCOPE OF PRACTICE

The FF-P will work under the Johnson County Emergency Medical Services Protocols. The PA will work under PA Protocols as approved by the Olathe Fire Department Medical Director.

VI. EMERGENCY RESPONSE CAPABILITIES

The MIHV will have emergency medical capabilities consistent with that provided by fire apparatus. This includes but is not limited to cardiac monitoring, IV access, emergency airway management, trauma management, and medication administration. In the event that the call is or becomes a true medical emergency, the MIHV is properly equipped and personnel are properly trained to provide a level of service at the standard of care provided by any Olathe Fire Department Advanced Life Support first response vehicle.

On occasions in which the PA is not working, two fire personnel may staff and place in service a squad that will respond to calls when available as outlined in the Olathe Fire Department Response Plan.

VII. CALL TYPES

Call types will be generated by several means:

- 911 generated calls: The Mobile Integrated Healthcare unit may be dispatched on certain protocol driven call natures. These calls are ones that are primarily deemed “nonemergent” based on dispatchers triage. These are normally restricted to code 3 calls when the MIHV is available and can respond in a reasonable timeframe. Page 3 of 3 APG 4-215 Mobile Integrated Healthcare

- Calls generated by emergency personnel: Fire crews and ambulance personnel can request the MIHV on patients deemed appropriate for such response. Some examples of these cases would be patient refusals, lift assists or calls that an emergency response is not needed but assistance for the patient is still required. Personnel on the MIHV will connect citizens that require special services as outlined in the Johnson County Fire and Emergency Services Chiefs Model Procedure on the Citizens Assist Program.

• Medical system generated calls: In certain circumstances, medical providers may request the MIHV to respond to patients that require follow up.

• Repeat customers and patient refusal follow-up: The MIHV can be triggered to respond to citizens that frequently use the 911 system in order to access medical care for nonacute injury or illness. The role of the MIHV would be to assist the citizen in navigating the healthcare environment to find a more appropriate way to be treated. The MIHV also follows up with individuals who refuse medical treatment and transport.

• Fall or lift assist follow-up screening at senior living facilities: The MIHV will follow up with individuals who were assisted, treated and/or transported as the result of a lift assist or fall-related emergency at any of Olathe's senior living facilities. Appropriate intervention strategies from the OFD's Fall Prevention Program (See attachment A) will be administered to selected individuals during the follow-up session.

• Community Service calls: Calls to schools, shelters, clinics and other healthcare environments will be made for monitoring, treatment, and education.

VIII. MEDICAL OVERSIGHT

Intense medical oversight is provided to ensure safe and effective patient care. The goal of this program is to provide the best possible patient care to the citizens of Olathe.

Under direction of Olathe Fire Department Medical Director, all calls will be reviewed under the QA process. The oversight process continues to be rigorous and stringent, focusing on skills, education, patient outcomes, and satisfaction.

Providers may also have real time access to the Medical Director, Base Station Physician, and Clinic Physicians depending on call type and situation.

Appendix G: OFD MIH Fall Prevention Program

OLATHE FIRE DEPARTMENT

MIH FALL PREVENTION PROGRAM

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Community Risk Issue

Falls and fall-related incidents are a growing public health concern within the community, and are threatening the quality of life and independence of Olathe's older adult population. Due to their frequency of occurrence and adverse impacts, the Olathe Fire Department has identified falls as a community risk issue that can no longer be ignored. Data analysis has revealed that the OFD responded to **6,068** fall-related emergencies throughout the city over the past five years (2011-2015). Of those emergencies, **2,270** transpired at local senior living facilities involving older adults.

Community Risk Reduction Program

In an effort to proactively resolve this emerging community risk issue, the OFD has developed the *MIH Fall Prevention Program*. By combining fall prevention goals, measurable objectives, and strategic interventions with a premiere mobile integrated healthcare program, the OFD is confident that a significant reduction in fall-related emergencies among older adults at senior living facilities can be achieved.

Program Vision

The City of Olathe will be widely recognized as a "fall safe" community in which older adults are able to enjoy their independence and easily maintain a high quality of life.

Program Mission

The mission of the MIH Fall Prevention Program is to reduce the risk and occurrence of fall-related incidents involving older adults at senior living facilities through the coordination and administration of preventative intervention strategies.

Program Goals

1. To improve access to fall prevention resources for older adults residing at senior living facilities in Olathe.
2. To reduce injuries from falls and repeat falls among older adults through follow-up screening and assessment of fall risk factors.
3. To reduce fall-related incidents around the home resulting from unsafe living conditions, unsafe practices and fall hazards.
4. To improve attitudes and awareness about fall risk factors and fall prevention among older adults residing at senior living facilities in Olathe.

Program Outcome & Impact Objectives

As compared to baseline data, the following measurable outcomes will occur:

1. By December 31st 2021, there will be a 10% improvement in access to fall prevention resources for older adults residing at senior living facilities in Olathe.
2. By December 31st 2021, there will be a 25% reduction in fall related injuries and repeat falls involving older adults residing at senior living facilities.
3. By December 31st 2021, there will be a 25% reduction in fall-related incidents around the home involving older adults caused from unsafe living conditions, unsafe practices, and fall hazards.
4. By December 31st 2021, there will be a 10% improvement in the attitudes and awareness levels of older adults concerning fall risk factors and fall prevention.

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Program Intervention Strategies

1. **Follow-Up Screening** – MIH personnel will follow-up with individuals who were assisted, treated and/or transported as a result of a fall-related incident at any of Olathe's senior living facilities. Screening will consist of a comprehensive risk assessment using the "Fall Risk Checklist" and guided by the "Algorithm for Fall Risk Assessment & Interventions." The Fall Risk Checklist and Algorithm for Fall Risk Assessment & Interventions is a part of the CDC's "Stopping Elderly Accidents, Deaths & Injuries (STEADI)" program, which provides free published materials for healthcare providers. Both forms can be found attached as appendices to this document.

2. **Risk Assessment** – Using the CDC's STEADI Fall Risk Checklist, screened individuals will be assessed to identify the presence of any of the following fall risk factors:
   - **Fall History**
   - **Chronic Medical Conditions**
   - **Medication Review**
   - **Mobility Testing** –Using one of the CDC's mobility tests listed below, an individual's gait/strength/balance will be evaluated:
     1. Conduct Time up and Go (TUG) Test
     2. Conduct 30-second Chair Stand Test
     3. Conduct 4-Stage Balance Test
   - **Vision Testing**
   - **Blood Pressure Check** for Postural Hypotension
   - **Other Risk Factors Noted**

   Once the risk assessment is completed, using the Algorithm for Fall Risk Assessment and Interventions form, MIH personnel will categorize the individual's risk level and provide personalized interventions connecting the individual with the appropriate level of care and support solution needed to address their identified risk factors.

3. **Home Safety Evaluation** – If home hazards or poor living conditions were the cause of previous fall-related incidents, MIH personnel will conduct a home safety evaluation using the CDC's "Home Fall Prevention Checklist" at the individual's residence to remedy any unsafe conditions that may be present. The following assessments will be completed:
   - **Floor Assessment**
   - **Stairs and Steps Assessment**
   - **Kitchen/Dining Area Assessment**
   - **Bathroom Assessment**
   - **Bedroom Assessment**
   - **Fire Safety Check-up**

   If certain home hazards require substantial repairs or the installation of fall safety hardware/devices, recommendations will be left with the on-site facility staff to work with the individual and the maintenance team to resolve the fall risk issues.

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4. **Public Education** –MIH Personnel will raise awareness and educate individuals about fall prevention and fall risk factors so that they can manage themselves better to prevent future falls. This will be accomplished through the distribution of public educational materials during follow-up visits and public seminars.

    Distribute Public Educational Materials – During each follow-up visit, public educational materials will be distributed and explained by MIH personnel to individuals who have completed a risk assessment and/or home safety evaluation.

        1. **CDC's "Staying Independent" Brochure**
        2. **CDC's "Risk Factor for Falls" Brochure**

    Conduct Annual Fall Prevention Seminars – Once a year, MIH personnel will conduct a fall prevention seminar at every senior living facility to raise awareness among older adults and their families and caregivers, elder care professionals, and the general public about fall prevention and fall risk factors. These seminars will take place annually during the nationally recognized "Fall Prevention Awareness Week" in September.

Program Evaluation

The MIH Fall Prevention Program will be evaluated quarterly through quantitative methods that measure and track the total number of the following:

- **Contacts made**
- **Referrals made**
- **Pre & Post Surveys distributed and collected**
- **Follow-up screenings performed**
- **Risk assessments completed**
- **Medications changed**
- **Mobility tests completed**
- **Vision tests completed**
- **Home evaluations performed**
- **Home hazards remedied**
- **Home modifications made**
- **Public educational materials distributed**
- **Fall prevention seminars conducted**

The data collected will be analyzed to evaluate how well the program met its program goals and objectives. Modifications to the program will be made as needed in order to achieve desired outcomes and impacts.

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FALL RISK CHECKLIST

Fall Risk Checklist

Patient: Date: Time: AM/PM

Fall Risk Factor Identified	Factor Present?	Notes
Falls History		
Any falls in past year?	☐ Yes ☐ No	
Worries about falling or feels unsteady when standing or walking?	☐ Yes ☐ No	
Medical Conditions		
Problems with heart rate and/or rhythm	☐ Yes ☐ No	
Cognitive impairment	☐ Yes ☐ No	
Incontinence	☐ Yes ☐ No	
Depression	☐ Yes ☐ No	
Foot problems	☐ Yes ☐ No	
Other medical conditions (Specify)	☐ Yes ☐ No	
Medications (Prescriptions, OTCs, supplements)		
CNS or psychoactive medications	☐ Yes ☐ No	
Medications that can cause sedation or confusion	☐ Yes ☐ No	
Medications that can cause hypotension	☐ Yes ☐ No	
Gait, Strength & Balance		
Timed Up and Go (TUG) Test ≥12 seconds	☐ Yes ☐ No	
30-Second Chair Stand Test Below average score based on age and gender	☐ Yes ☐ No	
4-Stage Balance Test Full tandem stance <10 seconds	☐ Yes ☐ No	
Vision		
Acuity <20/40 OR no eye exam in >1 year	☐ Yes ☐ No	
Postural Hypotension		
A decrease in systolic BP ≥20 mm Hg or a diastolic bp of ≥10 mm Hg or lightheadedness or dizziness from lying to standing?	☐ Yes ☐ No	
Other Risk Factors (Specify)		
	☐ Yes ☐ No	
	☐ Yes ☐ No	

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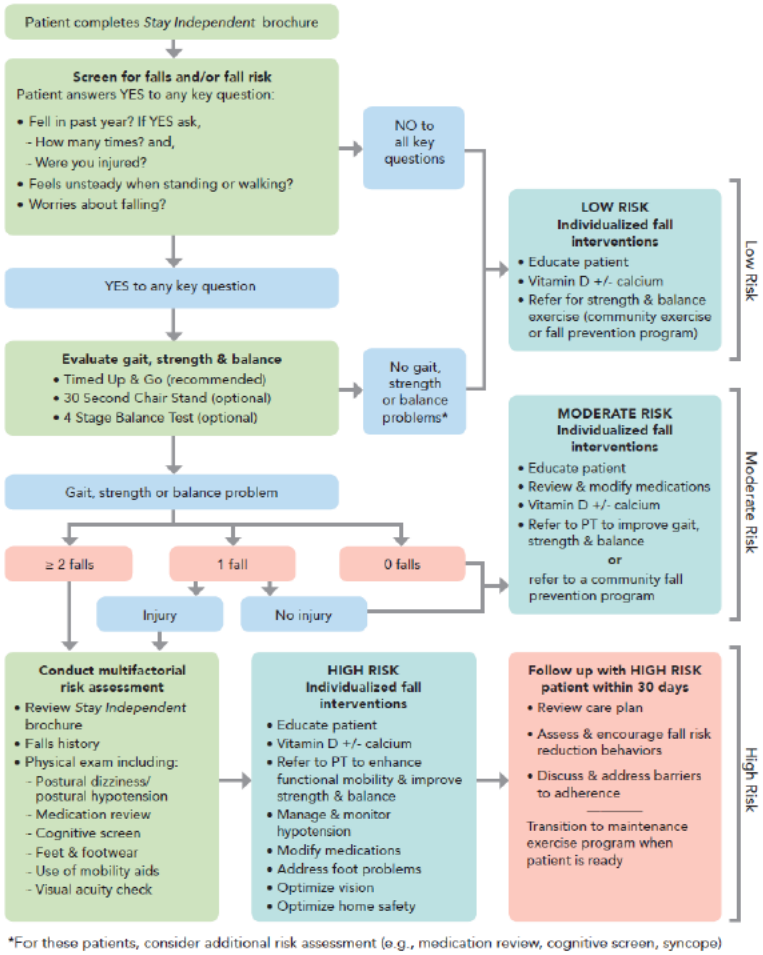
ALGORITHM FOR FALL RISK ASSESSMENT & INTERVENTIONS

Algorithm for Fall Risk Assessment & Interventions



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FALL PREVENTION PATIENT REFERRAL FORM

Fall Prevention Patient Referral Form

Patient:	Referred to:
Sex: DOB:	
Address:	Address:
Phone:	Phone:
Email:	Email:
Diagnosis:	
Type of Referral	
Type of specialist (See back of form):	
Exercise or fall prevention program (See nurse for options):	
Reason for Referral	
Gait or mobility problems	Medication review & consultation
Balance difficulties	Inadequate or improper footwear
Lower body weakness	Foot abnormalities
Postural hypotension	Vision <20/40 in R L Both
Suspected neurological condition (e.g., Parkinson's disease, dementia)	Home safety evaluation
Other reason:	
Other relevant information:	
Referrer signature:	Date:

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THE TIMED UP AND GO (TUG) TEST

Patient: Date: Time: AM/PM

The Timed Up and Go (TUG) Test

Purpose: To assess mobility

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a walking aid if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters or 10 feet away on the floor.

Instructions to the patient:

When I say **"Go,"** I want you to:

1. Stand up from the chair
2. Walk to the line on the floor at your normal pace
3. Turn
4. Walk back to the chair at your normal pace
5. Sit down again

On the word **"Go"** begin timing.

Stop timing after patient has sat back down and record.

Time: _____ seconds

An older adult who takes ≥12 seconds to complete the TUG is at high risk for falling.

Observe the patient's postural stability, gait, stride length, and sway.

Circle all that apply: Slow tentative pace ■ Loss of balance ■ Short strides ■ Little or no arm swing ■ Steadying self on walls ■ Shuffling ■ En bloc turning ■ Not using assistive device properly

Notes:

For relevant articles, go to: **www.cdc.gov/injury/STEADI**

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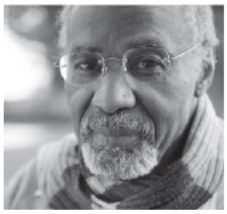
THE 30 SECOND CHAIR STAND TEST



Patient: Date: Time: AM/PM

The 30-Second Chair Stand Test

Purpose: To test leg strength and endurance

Equipment:

- A chair with a straight back without arm rests (seat 17" high)
- A stopwatch

Instructions to the patient:

1. Sit in the middle of the chair.
2. Place your hands on the opposite shoulder crossed at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight and keep your arms against your chest.
5. On **"Go,"** rise to a full standing position and then sit back down again.
6. Repeat this for 30 seconds.

On **"Go,"** begin timing.

If the patient must use his/her arms to stand, stop the test. Record "0" for the number and score.

Count the number of times the patient comes to a full standing position in 30 seconds.

If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

Record the number of times the patient stands in 30 seconds.

Number: _____ **Score** _____ **See next page.**

A below average score indicates a high risk for falls.

Notes:

For relevant articles, go to: **www.cdc.gov/injury/STEADI**

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THE 4-STAGE BALANCE TEST

Patient: Date: Time: AM/PM

The 4-Stage Balance Test

Purpose: To assess static balance

Equipment: A stopwatch

Directions: There are four progressively more challenging positions. Patients should not use an assistive device (cane or walker) and keep their eyes open.

Describe and demonstrate each position. Stand next to the patient, hold his/her arm and help them assume the correct foot position.

When the patient is steady, let go, but remain ready to catch the patient if he/she should lose their balance.

If the patient can hold a position for 10 seconds without moving his/her feet or needing support, go on to the next position. If not, stop the test.

Instructions to the patient: I'm going to show you four positions.

Try to stand in each position for 10 seconds. You can hold your arms out or move your body to help keep your balance but don't move your feet. Hold this position until I tell you to stop.

For each stage, say "**Ready, begin**" and begin timing.
After 10 seconds, say "**Stop.**"

See next page for detailed patient instructions and illustrations of the four positions.

For relevant articles, go to: **www.cdc.gov/injury/STEADI**

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HOME SAFETY CHECKLIST

"Last Saturday our son helped us move our furniture. Now all the rooms have clear paths."

FLOORS: Look at the floor in each room.

Q: When you walk through a room, do you have to walk around furniture?

☐ Ask someone to move the furniture so your path is clear.

Q: Do you have throw rugs on the floor?

☐ Remove the rugs or use double-sided tape or a non-slip backing so the rugs won't slip.

Q: Are there papers, books, towels, shoes, magazines, boxes, blankets, or other objects on the floor?

☐ Pick up things that are on the floor. Always keep objects off the floor.

Q: Do you have to walk over or around wires or cords (like lamp, telephone, or extension cords)?

☐ Coil or tape cords and wires next to the wall so you can't trip over them. If needed, have an electrician put in another outlet.

STAIRS AND STEPS: Look at the stairs you use both inside and outside your home.

Q: Are there papers, shoes, books, or other objects on the stairs?

☐ Pick up things on the stairs. Always keep objects off stairs.

Q: Are some steps broken or uneven?

☐ Fix loose or uneven steps.

Q: Are you missing a light over the stairway?

☐ Have an electrician put in an overhead light at the top and bottom of the stairs.

Q: Do you have only one light switch for your stairs (only at the top or at the bottom of the stairs)?

☐ Have an electrician put in a light switch at the top and bottom of the stairs. You can get light switches that glow.

Q: Has the stairway light bulb burned out?

☐ Have a friend or family member change the light bulb.

Q: Is the carpet on the steps loose or torn?

☐ Make sure the carpet is firmly attached to every step, or remove the carpet and attach non-slip rubber treads to the stairs.

Q: Are the handrails loose or broken? Is there a handrail on only one side of the stairs?

☐ Fix loose handrails or put in new ones. Make sure handrails are on both sides of the stairs and are as long as the stairs.

KITCHEN: Look at your kitchen and eating area.

Q: Are the things you use often on high shelves?

☐ Move items in your cabinets. Keep things you use often on the lower shelves (about waist level).

Q: Is your step stool unsteady?

☐ If you must use a step stool, get one with a bar to hold on to. Never use a chair as a step stool.

BATHROOMS: Look at all your bathrooms.

Q: Is the tub or shower floor slippery?

☐ Put a non-slip rubber mat or self-stick strips on the floor of the tub or shower.

Q: Do you need some support when you get in and out of the tub or up from the toilet?

☐ Have grab bars put in next to and inside the tub and next to the toilet.

"I put a lamp on each side of my bed. Now it's easy to find the light if I wake up at night."

BEDROOMS: Look at all your bedrooms.

Q: Is the light near the bed hard to reach?

☐ Place a lamp close to the bed where it's easy to reach.

Q: Is the path from your bed to the bathroom dark?

☐ Put in a nightlight so you can see where you're walking. Some nightlights go on by themselves after dark.

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STAYING INDEPENDENT BROCHURE

Four things you can do to prevent falls:

1. Begin an exercise program to improve your leg strength & balance
2. Ask your doctor or pharmacist to review your medicines
3. Get annual eye check-ups & update your eyeglasses
4. Make your home safer by:
   - Removing clutter & tripping hazards
   - Putting railings on all stairs & adding grab bars in the bathroom
   - Having good lighting, especially on stairs

"It's not the broken hip, it's the nursing home I don't want. I need to be independent, so I take Tai Chi."

Leonard Jones, age 74

"People who use canes are brave. They can be more independent and enjoy their lives."

Shirley Warner, age 79

Contact your local community or senior center for information on exercise, fall prevention programs, or options for improving home safety.

For more information on fall prevention, please visit:

www.cdc.gov/steadi

www.stopfalls.org

This brochure was produced in collaboration with the following organizations:

VA Greater Los Angeles Healthcare System, Geriatric Research Education & Clinical Center (GRECC), and the Fall Prevention Center of Excellence

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

2015

Stay Independent

Falls are the main reason why older people lose their independence.

Are you at risk?

Check Your Risk for Falling

Please circle "Yes" or "No" for each statement below.			Why it matters
Yes (2)	No (0)	I have fallen in the past year.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.
Total_____		Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling. Discuss this brochure with your doctor.	

This checklist was developed by the Greater Los Angeles VA Geriatric Research Education Clinical Center and affiliates and is a validated fall risk self-assessment tool (Rubenstein et al. J Safety Res 2011;42(6):493-499). Adapted with permission of the authors.

Your doctor may suggest:

- Having other medical tests
- Changing your medicines
- Consulting a specialist
- Seeing a physical therapist
- Attending a fall prevention program

OLATHE FIRE DEPARTMENT

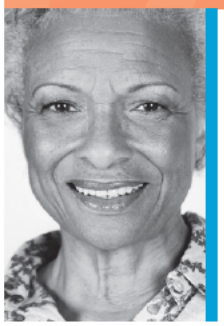
MIH FALL PREVENTION PROGRAM

"We proudly exist to protect and preserve life and property through dynamic emergency response and excellence in training, preparedness and prevention."

RISK FACTORS FOR FALLS BROCHURE

FALLS

Risk Factors For Falls



Research has identified many risk factors that contribute to falling—some of these are modifiable.

Most falls are caused by the interaction of multiple risk factors. The more risk factors a person has, the greater their chances of falling. Healthcare providers can lower a person's risk by reducing or minimizing that individual's risk factors.

To prevent falls, providers should focus **FIRST** on these modifiable risk factors:

- Lower body weakness
- Difficulties with gait and balance
- Use of psychoactive medications
- Postural dizziness
- Poor vision
- Problems with feet and/or shoes
- Home hazards

Fall risk factors are categorized as intrinsic or extrinsic.

Intrinsic	Extrinsic
Advanced age	Lack of stair handrails
Previous falls	Poor stair design
Muscle weakness	Lack of bathroom grab bars
Gait & balance problems	Dim lighting or glare
Poor vision	Obstacles & tripping hazards
Postural hypotension	Slippery or uneven surfaces
Chronic conditions including arthritis, diabetes, stroke, Parkinson's, incontinence, dementia	Psychoactive medications
Fear of falling	Improper use of assistive device

For more information, go to: www.cdc.gov/injury/STEADI

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STEADI Stopping Elderly Accidents, Deaths & Injuries