Baby Boomers: What Effects Will They Have on the Demands for EMS in the City of Norfolk?

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Certification Statement

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

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Abstract

In 2010, the Baby-Boomer population started to reach age 65. As a result, this generational group expanded the older adult population in America from the current one in eight to one in five adults over the age of 65. The life expediency of older adults is also rising. The problem is that as a result of the aging population, the amount of 911 requests for Emergency Medical Services (EMS) in the City of Norfolk will increase. This escalation will result in a higher demand for EMS assistance and transports to the hospitals. The purpose of this research is to identify what steps could be taken to reduce the number of requests for EMS services made by older adults. Descriptive research was used to resolve (a) what determinants would be used to measure the effectiveness of any interventional risk reduction program, (b) do the chief officers in the department understand the future increase of EMS demands for older adults, (c) what have other departments done to lower the impact of increased EMS demands to older adults in their community, (d) what are the reasons older adults call 911 in the City of Norfolk, (e) what organizations in the community can be used to assist in reducing the number of responses to older adults. The results of the research indicated that the majority of the chief officers in Norfolk Fire Rescue (NFR) agreed that in three to five years this age group would impact EMS delivery. Recommendations to reduce the risks to older adults are supported by creating work groups to develop and implement interventional steps within the community.
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INTRODUCTION

An era of population growth developed in America directly after World War Two. As a result of that increase, the United States (US) population expanded in size between the years of 1945 and 1964. The addition of over 60 million citizens during this time period added to the growth of America and was later defined as the baby-boomer generation (Gillick, 2009). This group of citizens was highly productive in the development and advancement of this country, but many are reaching retirement age. In 2010 the earliest of this generational group reached the age of 65. Starting in January of 2011, estimates predict that 10,000 Baby Boomers would reach 65 years of age each day for the next 19 years (Gillick, 2009). This shift of retirement population coupled with the increased age expectancy will have an impact on the EMS delivery in the City of Norfolk.

To prepare for this inevitable increase in demand for EMS services, long-term strategic planning and preparation needs to occur. To forecast the impact of future, emergency medical responses information will be critical in the development of an informed decision. That information would be used to develop and enhance interventional steps that could be taken to reduce the need for emergency responses to the older adult population in the community. The consequence of not starting to prepare for this future shift in EMS demand would not only be detrimental to NFR’s ability to deliver quality patient care, but would ultimately be detrimental to the citizens NFR is sworn to protect.

The purpose of this research was to identify and determine what proactive steps could be taken to reduce the number of current and future EMS responses to the older adult population. Since this is not an isolated problem in the City of Norfolk, inquires to other fire departments around the country would help measure their understanding and urgency to also prepare for this
impending crisis. As a result of these inquires, interventional steps taken by other departments would be evaluated and considered for implementation within NFR.

Descriptive research was used to determine the answers to the following questions: (a) what determinants would be used to measure the effectiveness of any interventional risk reduction program, (b) do the chief officers in the department understand the future increase of EMS demands for older adults, (c) what have other departments done to lower the impact of increased EMS demands to older adults in their community, (d) what are the reasons older adults call 911 in the City of Norfolk, (e) what organizations in the community can be used to assist in reducing the number of responses to older adults.

**BACKGROUND & SIGNIFICANCE**

The City of Norfolk encompasses 54.2 square miles of land mass and is centralized in the Hampton Roads region of Virginia. Norfolk comprises a diverse community with a strong military presence. Within the city and a 20-mile radius, seven major military installations are actively present. In addition, military contract jobs and shipyards also contribute to the economic dynamics of the Hampton Roads vicinity. Due to the location and access to military health care facilities and on base privileges, a great number of federal government employees retire in the Norfolk area. This further expands the retirement age population group within the City of Norfolk.

In addition to government installations, the city supports a robust variety of professional and industrial businesses. It hosts a location for both international marine terminals and coal shipping ports. Norfolk further supports a major medical school, two state universities, and a regional community college. Other forms of businesses are subdivided into an assortment of support and service delivery organizations. The greater Norfolk area provides a wide range of
leisure, historical, and cultural opportunities for its citizens to enjoy. The city is surrounded by the Elizabeth River and Chesapeake Bay providing water sport opportunities for its citizens.

The continued growth and diversity of the community makes it beneficial for its citizens to retire within the city or the region. During the early 21st century, residential building efforts within the City of Norfolk were aimed toward upscale all inclusive condominium living. These dwellings were built to provide the residents with easy access to shopping, transportation means, and the freedom not to have to maintain their property. This concept of building was tailored to the growing aging population group living within the City of Norfolk.

NFR is a 140-year old career department that supports the vision of “preventing harm in the community while maintaining the public trust” (City of Norfolk). This goal is accomplished by providing a comprehensive level of administrative and operational services to the citizens living within the community. In the response services, NFR provides fire suppression, advanced and basic life support care and ambulance transport, hazardous material response and mitigation, water rescue and technical rescue team responses, and mass causality medical response teams. It is further believed that proactive steps can prevent harm to the community and this is accomplished through the education, prevention, and enforcement bureaus within NFR.

The census report conducted in 2010 illustrated the City of Norfolk growing to the current 242,803 citizen population (United States Census Bureau). Of the 2010 population figures, 10.9 percent are 65 years of age or older. This equates to approximately 26,000 citizens at or above the age of 65. In incorporating the national trend of 10,000 Baby-Boomers reaching retirement age each day, it would be judicious to project that this age group will continue to expand over the next two decades (United States Census Bureau). The US census population trends over the past 60 years in Norfolk support continued expansion of the older adult citizens.
In late 1960, pre-hospital emergency medical care was being developed nationwide. In 1971, the City of Norfolk took the opportunity to start providing basic life support care and transport of the sick and injured (personal communication Melton). The bureau later called Paramedical Rescue Services (PRS) was created under the General Services Department of Norfolk. PRS functioned separately from the fire service. As budget cutbacks were later threatened within the city, and ambulance response times were reaching 13 minutes, the two departments entered into negotiations (City of Norfolk). In 1992, the two departments worked out the details to merge. Personnel from both departments were cross-trained to perform fire and EMS functions (City of Norfolk). The merger ultimately provided enhanced coverage and considerably decreased ambulance response times.

At the time of the merger, five ambulances were available to provide 24-hour EMS care. As the next two decades passed, seven more ambulances were added to maintain the demand for
emergency care and transport to area hospitals. According to the US census, between the decades of 1990 and 2000, the population in Norfolk decreased from 261,229 to 234,403 (United States Census Bureau). Although the population decreased by 26,826 citizens, four additional ambulances were added to accommodate the increase in 911 demands. The following decade from 2000 until 2010, the population increased by 8,400 citizens and an additional three ambulances were added. In that two-decade period, the population in Norfolk decreased by twenty to eighteen thousand citizens, but the level of EMS transport units more than doubled (see figure 2). The trend of service demand was a strong indication for a need to evaluate the future impact on EMS delivery for the expanding baby-boomer populace. It would be fiscally and ethically irresponsible to continue adding ambulances to this problem without providing a holistic view toward prevention.

*Figure 2: Increased number of ambulances*
The City of Norfolk is host to three major hospitals that provide emergency room care. During the past two decades, each of the three hospitals have expanded their emergency room facilities multiple times to accommodate the increase in ambulance and walk-in patient visits. In addition, the Hampton Roads area has also added freestanding emergency rooms to further handle the increase in demand for emergency care. As the need for healthcare continued to rise, the municipal EMS delivery services and emergency rooms expanded to accommodate this increased demand.

In 2010, NFR responded to over 41,000 incidents for fire, EMS, and other requests for assistance (City of Norfolk). Of those incidents, 30,897 were for emergency medical assistance. A total of 33,787 patients were evaluated and treated, many requiring transport. A total 7,507 of the EMS responses in 2010 were for adults age 65 and older (City of Norfolk). This age group equated to 28.6 percent of the EMS calls but only represented 10.9 percent of the population. Research supported that adults over the age of 65 called 911 three times more frequently than the younger age groups.

Albert Einstein was quoted saying that the definition of insanity was “doing the same thing over and over again and expecting different results” (Cegielski, 2011). If the current trend continues to expand the demand for EMS care, the influx of the baby-boomer population will eventually overwhelm EMS delivery in the City of Norfolk. Serious consideration must begin with projecting, planning, and implementing preventative steps for the increased aging population.

In preparing for the future, it is critical to develop strategic initiatives through short and long-term planning. The United States Fire Administration recognized this and stated “prevention and preparedness” in their mission statement (United States Fire Administration
Strategic Plan, 2010). The first goal of the United States Fire Administration (USFA) is to “reduce the risk at the local level through prevention and mitigation” (United States Fire Administration Strategic Plan, 2010). In conjunction with this statement, the second goal is “improving local planning and preparedness” (United States Fire Administration Strategic Plan, 2010). As a department and a fire service organization, we must start to prepare for how we are going to handle the influx of the aging members of society.

LITERATURE REVIEW

In 2010, the Baby-Boomers represented 29 percent of the population or 76 million Americans (Meyer, 2001). In contrast to their parents’ generation, this group of the population will not go quietly into the night. They demand respect and actively are involved with political and community organizations. As this group of older adults age, they want to have control of their own future and expect certain services. As America’s rising debt and financial instability threatens their future health care protection, the baby-boomers expect quality health care coverage. This will affect the way EMS is perceived and delivered. The traditional way of adding more ambulances to accommodate the increase of call demands will have to change. To appreciate this shift in future delivery, one must first understand the baby-boomer affect on America.

As more baby-boomers are reaching retirement age, America is entering into new terrain. Never before in this country’s history has such a large number of citizens been removed from the working class population in such a short period of time. Couple this fact with the ever-increasing life expectancy due to advances in medical technology and it becomes apparent that a crisis is on the horizon (Barrett & Blackburn, 2010). It is prudent to hypothesize that it would be unrealistic to expect healthcare to remain the same over the next twenty years. The flood of baby-boomers
in the next two decades will create a society that will further represent over 20 percent of adults, over the age of 65 (Gillick, 2009). To place that into perspective, that would be a doubling in size of this population group. Are we as a society, and more specifically as providers of emergency medical care, prepared for this?

One factor that would make the ability to care for the increased aging population more complex is the number of health care providers. Trends have been exposed that recognize a reduced number of medical and social work professionals currently undergoing training. Many baby-boomers are still working in the health care industry, but when they leave more workers will be needed to take care of them. The further need for social workers to deal with the mental health and social needs would also increase (Hayes, 2006). Specifically, the number of registered geriatric doctors would need to increase from the current 7,100 to 36,000 by the year 2030 to accommodate the increased aging population (Johnson, 2008).

California, like some of the other areas in our country, recognized the aging population as a real problem. As that state deals with unprecedented budget cuts, it struggles to maintain an adequate level of service to the aging population. Skilled care workers and providers play a vital role in that service, but more of this work is being done by untrained family members and friends (Barrett & Blackburn, 2010). California’s “In-Home Support Services” (IHSS) provides care and assistance to a heavy caseload. Of those cases, 83 percent are over the age of 65. On the current trend, they will not be able to add additional cases to their manifests.

The burden of care is slowly shifting back to the families. They provide the personal care, emotional and financial support, and further provide the link to formal medical care (Barrett & Blackburn, 2010). This care, done with limited training, is the direction California was heading (Barrett & Blackburn, 2010). The burden and stress on the family caregiver is a realization that is
under appreciated. The secondary stress on the provider’s health further degrades this situation. For California alone, it is estimated that over four million health care providers care for the aged (Barrett & Blackburn, 2010). Requests for research and provisions for training for these providers have been sought out but with no financial support from the state government. As a result, many older adult patients do not receive the minimal care they need.

As government payments to Medicare benefits are continually reduced, the numbers of primary care physicians are on the decline (Currie, May 2008). The numbers of medical students are also on the decline and the number of professionals going into family practice has dramatically decreased. In 1960 over 50 percent of doctors practiced as primary care physicians (Tobler, 2010). In the year 2000 that percentage was down to 14 percent, and in 2011 it was at nine percent (Tobler, 2010). Studies have indicated that at that pace there will be a shortage of 40,000 family doctors by the year 2020 (Tobler, 2010). In the year 2011 alone, New York State had a shortage of over 1000 practicing primary care physicians (Currie, April 2011). It would be prudent to suggest that without definitive health care from a primary care physician, patients are more likely to access the emergency rooms for their treatment.

As adults age their dependency for medical care continues to increase. By the age of 65, 80 percent of the older adult population has at least one chronic medical situation, and over half have two or more ongoing serious medical conditions (Barrett & Blackburn, 2010). As the quality of life decreases, more support is needed in the form of medical evaluation, diagnostics, and treatment. A two-year study conducted in Canada supported the fact that the aging process requires more doctor visits, emergency room trips, and diagnostic testing (Vegda, Nie, Wang, 2009). As the population reached 80 years and older, significant increases were noted. This age group went to the doctor 46 percent more than the younger age group. In addition, the highest
use of health care fell into the 75-84-age range. To place that into perspective the beginning of the peak of healthcare impact from the baby-boomer population would be felt in 10 years (Vegda et al. 2009).

In evaluating other statistics of the aging population, a two-year Canadian research study revealed other significant data. Older adults visited the emergency room 131 percent more than the younger population (Vegda et al. 2009). In addition, the older adults take, on average, over eight different prescription medications (Vegda et al. 2009). Females were found to make more visits to general practitioners and, on average, took more medications. Based on these facts coupled with an increasing life expectancy, this study concluded the need for a “creative and innovative model of care for multiple and chronic conditions in late life” (Vegda et al. 2009).

In identifying the fact that older adults would require increased healthcare, it would be noteworthy to determine how this would affect EMS delivery. Older adults are prone to many medical conditions that would require them to access EMS. Through the aging process cogitative abilities, psychosocial, medical conditions, and a lack of a family support network would all determine the quality of life the individual may have. To reduce those threats, areas of risk assessment would need to be determined.

As society ages, individuals become at risk due to multiple reasons. On average, one in three older adults fall annually. Of that percentile, one half had subsequent recurrent falls (Lowton, Laybourne, Whiting, & Martin, 2010). Falls further account for 62 percent of fatal injuries in the older adult population (Lowton, et al. 2010). It was identified that half of the US population over the age of 50 are at risk for osteoporosis resulting in a high percentage of fractures (Whitson, 2010). Estimates predict that the number of non-fatal falls will increase five fold over the next 20 years due to the increase in the baby-boomers (Peters, 2008). The causes of
those falls are due to difficulty maintaining balance, upper and lower body weakness, medication errors, dementia, and visual impairments (Lowton, et al. 2010). The United Kingdom developed a program to intervene on falls in an attempt to reduce the occurrences. Fall clinics were developed for adults age 60 and over to determine the hazards and incorporate risk reduction means. For the individuals determined at high risk, exercise programs, teaching and education, vision assessments, and home fall assessments were completed (Lowton, et al. 2010).

As this study was evaluated, it was determined that the older adults that incurred one fall and were entered into interventional programs were less likely to call for an ambulance in the future for fall related injuries (Coupland & Gladman, 2010). Benchmarks were measured by improving their balance and physical strength. In addition, a risk assessment was done of their homes to further decrease trip hazards and provide grab bars where needed (Coupland & Gladman, 2010).

Other areas of prevention were educating the older adults on medication errors and effects of prescription medications on their blood pressure. Finally techniques were given to demonstrate how to get off of the floor if a fall without an injury occurred (Coupland & Gladman, 2010). The result of this study provided positive data supporting a fall prevention program for older adults who have already incurred one fall, or were identified at risk for a fall.

As the older adult population age, their vision and various cognitive abilities are compromised. A sharp increase of diabetes has been exposed in the aging population and has resulted in an increase in macular degeneration (Silbersweig & Garvey, 2007). This irreversible condition further weakens vision and increases fall and other compromising situations for this population group. As their vision reduces, the ability of the individuals to care for themselves is further hampered.
Reduced vision also has a direct effect on the aging population's ability to properly administer their own prescription medications. Although factors other than reduced vision contribute to this problem, it results in a large percentage of emergency room and hospital admissions. Accidental poisoning, which has trended over the past 40 years, has reached a spike in occurrences (Miech, Koester, & Dorsey-Holloman, 2011). Mortality in the older population was also attributed to an increase in medication errors and a lack of mental and educational abilities (Miech, et al., 2011).

As adults age, the susceptibility to mental impairment and dementia increased. This has been accepted and recognized as part of the aging process, but with the increase of this population group, it results in more complex social and health-related problems. On average, it is estimated that 72,000 Americans die each year from Alzheimer’s (Alzheimer’s, 2008). The expected trend would increase due to the expanded life expectancy, and this disease is anticipated to continue to increase over the next three decades. In 2010, Alzheimer’s was the sixth leading cause of death, surpassing diabetes (Alzheimer’s, 2008). The prevention of this disease is limited due to the complexity of the brain and it will continue to stress the healthcare industry for decades to come.

It is important to understand and appreciate the medical and social issues facing the aging population before interventional steps can be taken. The reasons older adults call emergency services should be acknowledged in order to better understand how those trends would affect future EMS care. A study conducted in San Diego enrolled 636 patients and was developed to determine why patients call 911 (Koenig, 2002). The top four reasons presented were “breathing problems, chest pain, falls, and loss of conscientiousness” (Koenig, 2002). A subsequent study
conducted in London in 2009 revealed those same results (Lister, 2009). In understanding the aging process, these four complaints are all contributing results of the aging process.

In addition to the medical problems baby-boomers incur, social factors also contribute to the needs of the older adult population. Isolation from friends and family are found in older age groups and contribute to the individual’s well being. Older adults currently use the telephone to bridge this gap to help meet their needs in the social realm while isolated in their homes. The advancing baby-boomers have the advent of computer knowledge on their behalf. (Grosik, 2010). Since they were raised in a technology-based society, many have gained the necessary skills to use the computer as a social networking medium. The use of the computer in this area is still in its infancy in determining the possibilities of social networking toward fulfilling the psychosocial needs of older adults.

Since the topic of computer based access for the aging population has limited research, only current trends can show direction for the future. Since most households in America have personal computers, it would be prudent to assume that as the baby-boomers age they will continue using them. Their use would be wide spread in access to family and friends through social networking sites such as Face-book, Skype, e-mail, and other yet to be developed methods (Grosik, 2010). Access to sites such as these could become critical in a family’s ability to keep up with medical issues of their loved ones, thus enabling interventional treatment before EMS becomes a need.

A study conducted by Indiana University polled participants ages 45 to 63 years of age to determine their access and use of computers. Of the responses from that study, 75 percent of the participants stated they used computers to keep in touch with family and friends (Grosik, 2010). In addition, 47 percent had Face book accounts (Grosik, 2010). However, many acknowledged
that they were slow to change to learn new forms of computer uses. Since we live in a technology-based world, areas of contact with patients have yet to be discovered but ultimately would play a vital role in the future of meeting some of the social needs of the older adult population.

As the adult population continues to increase, many adults want to remain in their own homes in their final years of life. In addition, they want the freedom to drive and commute to various areas that they need to go. Individual states are beginning to recognize that older drivers pose a risk and should be evaluated differently than the general population of drivers (Reed & Farber, 2010). These states have implemented repeated eye exams, road tests, and more frequent driver license renewals (Reed & Farber, 2010). Many older adults acknowledge the fact that they are not able to drive, or family members remove the privilege away from them. As a result of this, older adults rely more on family members, taxis, or other means of transport to meet their needs.

Transportation was recognized by the National Conference of State Legislatures as an impending problem of the aging population. This group understands that provisions must be started now to develop transportation systems that will benefit this growing population group (Reed & Farber, 2010). Over 60 local, state, federal, and private agencies provide some form of transportation for the older adult population. This committee recognized many redundancies in services and identified the need to reduce the complexity of the transportation issue (Reed & Farber, 2010). Benefits of easy access to transportation for the older citizens would repay dividends in multiple ways, and help reduce the EMS need for care and transport to the hospital.

As identified, research has determined that the baby-boomer population wants to remain in their own homes as long as possible. Recommendations by state legislators support and
encourage neighborhoods that are built around the ideology that allow this to occur (Reed & Farber, 2010). Communities are being designed and built with easy access to both public and private transportation, located within close proximity to grocery stores and pharmacies, and have onsite representatives that check on the well being of the occupants. In addition, safety features are being built into the designs of these buildings to decrease the risks to falls, reduce the hazards to fire, make door openings wider to allow walkers and wheelchair access, and make them an affordable option to the aging population (Reed & Farber, 2010). This shift toward communal condominium and apartment living has been ongoing for the past three decades, but government agencies see the need for more emphasis on this concept.

As the demands for elder care increase, New York City started to research and explore the services available to the older adults. What they identified as a current and future need were elderly citizens who were eligible and justified for nursing home admissions, but were allowed to remain in their homes with proper support. This study evolved into a “managed long-term care“ (MLTC) program (Dehm & McCabe, 2007). To qualify for this, a comprehensive plan of care had to be developed and implemented. Teams were equipped to (1) deliver meals, (2) provide transportation to medical appointments and diagnostic testing, (3) ensure medical equipment as needed, (4) help provide prescription medications and education, (5) and include the family in supporting the older adult (Dehm & McCabe, 2007). This concept of managed care was not new, but in the past it did not provide all areas of support the patient may need. As a result of this practice, Medicare and Medicaid costs are reduced by allowing the patient to remain in their homes as long as possible (Dehm & McCabe, 2007).

In planning for the influx of the aging population in our society, the fire service will need to change the way service delivery is provided from a reactive approach to that of a proactive
stance. Partnerships need to be developed that include government, private, and volunteer organizations to address the needs of the aging population. Prevention and education will be the pivotal keys to maintain and reduce the EMS demands in the near future. To accomplish this, identification and recognition of the problem must be appreciated on the federal, state, and local levels of government. Interventional steps are needed, and early implementing of actions would be critical in staying ahead of the inevitable aging society.

PROcedures

Descriptive research was used in formulating information to determine the preparedness of other fire services for the arrival of aging baby-boomers in their respective cities. This data was used to compare other department’s perception of the future EMS problem with that of NFR’s chief officers opinions. The data was retrieved and formulated in the form of an external and internal questionnaire. In addition to the survey instruments, research data was obtained from the National Fire Academy’s (NFA) Learning Research Center (LRC), statistical data from the City of Norfolk’s intranet, NFR Fire House reports, United States (US) census data, personal interviews, and Columbia Southern University’s (CSU) Online Library.

Questionnaire

The first segment of this research was to identify the perception and appreciation of other fire services on the future problem of increased demands on EMS care in the baby-boomer population. A questionnaire was submitted to fire departments that deliver EMS care in the US. A total of 50 departments were included encompassing 20 states. The departments were selected on the criteria of (1) a career department, (2) a population greater than 200,000 citizens, (3) and that they provide EMS service. The goal was to make a comparable association of Norfolk’s data with that of other US fire departments. In addition, this information was also used to determine
the level of preparedness of Norfolk with that of other US cities in understanding the future impact on EMS delivery in the aging population.

A brief letter was submitted to chief officers from 50 fire departments requesting participation in this research (see Appendix A). A disclosure statement was announced on the anonymity of their answers and the opportunity was afforded to allow them access to the completed research. The United States Postal Service (USPS) was used to deliver the letter of request and questionnaire, and included a return pre-paid postage envelope for their responses. The letters were delivered on May 16, 2011 and a total of 28 days were allowed for returns. Of the 50 requests submitted, a total of 13 were returned in the time frame resulting in a 26% return rate.

The questionnaire asked specific and general questions regarding their department and citizen population size (see Appendix B). In addition, it also requested the population of their current citizens aged 65 and older. This data was used to evaluate Norfolk with the other departments in appreciating the relationship of comparable department and population size. The strategic question requested was if their department currently recognized the aging adult population as a future problem for EMS delivery. The questionnaire further asked if any programs were developed and implemented to reduce the risks to the older adults and that ultimately reduced the response need for EMS. Finally, a list was requested of the agencies and organizations that partnered with the fire services in developing those interventional programs.

The second segment of this research involved an internal questionnaire to the chief officer in NFR. The officers included were the Fire Chief, Deputy Chief, Assistant and Battalion Chiefs. A total of eight questions were asked to develop an understanding and appreciation of their perception of the future problem of EMS delivery (see Appendix C). The survey was
created and delivered through NFR’s e-mail system. A brief narrative was included in the e-mailing to (1) request participation in the research, (2) explain why the research was being conducted, (3) acknowledge the confidentiality of the individual’s responses and (4) allow access to the completed research on this subject at their request.

The questionnaires were electronically sent on May 10, 2011 to a total of 22 chief officers. Each participant had access to a city computer with e-mail access to complete the request. A total of 21 days were allowed for submission, and this resulted in a return rate of 100 percent. On average, it was expected that each survey would require 10 minutes to complete. The eight questions consisted of likert scale responses to four of the questions. Two other questions required a multiple-choice answer, and the final two required a brief narrative response.

*Limitation of Data*

The responses from both the internal and external department questionnaires were based on the individual’s experience and appreciation of the subject matter. The subjectivity of the responses, based on their individual perception of the future EMS problem, cannot be restricted. The collective data of the combined responses helped develop a better appreciation of the attitudes and recognition of the EMS problem than sole individual responses.

Results of the external questionnaire research was limited to 50 fire departments in the US. The addition of more departments in all 50 states would be beneficial in this research to help determine any comparison on (1) perception of the problem, (2) proactive steps and programs implemented, (3) stakeholders in risk reduction programs, and (4) implementation. The exclusion of European and other countries negated the scope of this research in determining if this was a global or American problem.
RESULTS

Research Question 1: What determinants would be used to measure the effectiveness of any interventional risk reduction program?

After identification of any problem, methodical steps are needed to carry out and implement corrective actions. Reducing the risk to the mounting aging population would be in the form of actions NFR and other identified community support agencies would need to undertake. Ultimately, supporting statistical data would correlate changes in the percentile of effectiveness for the risks identified. This data would be information needed to make an informed decision on the effectiveness of any risk reduction program and would further identify if revisions were needed to improve a program.

NFR adopted Fire House software to document and record all EMS and fire responses. This data is available to compare past and current trends. In addition to Fire House software, NFR uses Fire View to import critical response information and formulate that data into graphs, charts, and other visual data. Specific data is easily obtained to determine why the older population call for EMS service, why they are transported, as well as the distribution within the city that have a greater need for EMS. This data can further be defined into time frames of 911 requests for assistance, age of patients, and any other pertinent information that would be of value in supporting facts.

NFR software data could be directly correlated with the census data obtained on population distribution for the population 65 and older. In addition, facts that show trends in service and frequency of EMS need would help to determine the impact in the form of decreased 911 calls. It would be important to first understand the risks that this age group faces to help develop the interventional steps that would reduce their need for EMS. After that achievement
and program implementation to intervene on the risks, the supporting data would be available for comparison.

*Research Question 2: Do the chief officers in NFR understand the future increase of EMS for older adults?*

The internal survey conducted inclusive to the chief level officers was collected and analyzed. The collection of the data resulted in full participation from the NFR staff for this research, and the 22 respondents completed all fields requested (see Appendix C). The results identified that the majority of the staff recognized and appreciated the baby-boomer population as a rising issue for EMS. In addition, most had an opinion when the impact on EMS would be felt. Finally, an understanding of the course of action to take to minimize the EMS impact had a diverse response.

The initial question was to understand the knowledge of the respondents on the percentage of adults over the age of 65. The majority acknowledged that they were aware of the populace of this age group. This appreciation was pivotal before understanding or addressing any interventional means.

*Figure 3: Question 1, I am aware of the current population of adults over the age of 65 living in Norfolk.*
The next question requested knowledge of the EMS responses to the older adult citizens in Norfolk. Under half of the returns had appreciation of the ratio of responses to the older adult population.

*Figure 4: Question 2, I am aware of the percentage of EMS calls NFR currently responds to for adults over the age of 65.*

Question three was subjective in the fact it allowed an opinion of when the demands for EMS would increase for the aging population. Over 87% of the returns thought that within two to five years NFR would have an increase in EMS responses due to the aging population. Since this problem had not been identified in other NFR training, recognition of the problem would be important prior to any risk reduction means.

Questions four and five of the internal questionnaire identified and prompted the same information, but the question was inversely asked. The results of the answers collaborated the responses and further identified the perception that EMS would be affected in the future due to the aging Baby-Boomer population.
Figure 5: Question 4, Over the next decade, the aging population will have an effect on NFR’s ability to deliver EMS care and transport.

Figure 6: Question 5, Future EMS demands for the aging population is not known so this should not be a current concern.
Research Question3: What have others departments done to lower the impact of increased EMS demands to older adults in their community?

The topic of baby-boomers reaching retirement age has been a relatively new issue. As a result feedback was requested to determine if other fire services had appreciated this issue and were working toward interventional steps to minimize the impact on their respective EMS systems. An external department questionnaire submitted to 50 US fire services resulted in a 26% return ratio (see Appendix B). The questions requested in this survey were specific to older adults in their communities.

To determine the relevancy of this topic in their community, population percentages were asked for adults over the age of 65. The hypothesis was to determine if departments with higher percentages of older adults living in their communities had already developed risk reduction programs to reduce the risk to this population group. The resulting information showed no correlation in population percentage with that of developed interventional programs.

Figure 7: Population percentages over the age of 65 from other departments
Only five of 13 returns identified interventional or proactive actions they had taken to reduce the risks to the older citizen population. However, nine departments appreciated that the aging society would be a problem in the near future. An additional four departments did not perceive the aging population as a problem for their EMS services.

Research Question 4: What are the reasons older adults call 911 in the City of Norfolk?

The dispatch criteria in Norfolk is determined using Pro-QA to code the reason the caller was requesting 911, and also determine the appropriate response of fire and EMS resources (H. Worley, personal communication, June 14, 2011). The data is captured and contained in Fire House software reporting system. Records are available through queries and examinations to determine the reason older adults call 911. Information was obtained for this research using data only from the year 2010. The information from this year further exposed data regarding gender percentages of EMS requests.

In 2010, the adult population in Norfolk age 65 and over called for EMS service three times the frequency of the younger age ranges. In addition, it was determined that in this age range the female gender called at a slightly higher ratio than males. Further evaluation was prepared on the top seven reasons why adults 65 and older requested EMS services in the City of Norfolk. The top seven medical complaints for the year 2010 equated to 4,983 requests for EMS service, or 65 percent of the total requests for that age group (see figures 7 & 8).
Baby Boomers: What effects will they have on the demands for EMS?

Figure 8: Top seven reasons adults 65 and older call for EMS service in 2010

Figure 9: Top seven reasons adults 65 and older call for EMS service (by gender) in 2010
The information obtained gave ample evidence to support program intervention in these high-targeted areas of need. In addition, it exposed a small elevation for risk in the female population in this age group. The 2010 census data revealed the population breakdown of the 65 and older age group. The males accounted for 38.5 percentage of the population, and the females accounted for 61.5 percent of the population in Norfolk. EMS reporting data determined that the female population in this age range equated to 67 percent of the total EMS requests. This resulted in over a five percent higher need for 911 EMS services from the female population.

Research Question 5: What organizations in the community can be used to assist in reducing the number of EMS responses to the older adults?

Results from NFR chief officer’s questionnaire identified many currently used agencies that assisted with older adults in the community. Of the groups and agencies listed, only some of them are actively tasked with assisting NFR. The stakeholder groups were identified as

- adult protective services;
- community mental health;
- civic leagues;
- family and friends;
- faith based groups;
- governmental agencies;
- health and wellness groups;
- hospice care, physicians, and assisted care facilities;
- public health;
- senior groups
- social services.
Results from questionnaires submitted to fire services around the US identified the stakeholders as:

- health and human services;
- meals on wheels;
- CERT programs;
- Senior centers;
- fire prevention bureau;
- health departments.

Further revealed in these two returns was that the majority of non-governmental agencies functioned independently of other agencies. Various departments acknowledged a lack of coordination in blending the various entities together in monitoring and caring for the individual adults.

**DISCUSSION**

*Research Question 1: What determinants would be used to measure the effectiveness of any interventional risk reduction program?*

As recognition of the problem of the aging society is better appreciated in the near future, it would be critical to develop a systematic way to monitor the effectiveness of various countermeasures or initiatives. Since one would look in specific terms compared to more general findings in reduced EMS responses, data from each interventional program would need to be evaluated for its purpose.

One example of a specific program would be a fall prevention program developed for the community. After implementation and education for a determined period of time, comparable data from Fire House and Fire View would show if in fact the percentages of adults over the age
of 65 fell less and further reflected that data in a reduced need for EMS. However, it would be just as imperative to track the rise of the aging population to provide accurate data to this dynamic issue. There must be a consistent ratio of falls in respect to the adult population over the age of 65 to make the data credible. It was further appreciated that quantifiable data alone will not supply enough evidence to measure a program’s effectiveness. Qualitative measures would also be needed to support positive steps towards risk reduction in this age group.

It is understood and respected that falls are only one reason this population group calls for 911 services. The goal of interventional program development and implementation should revolve around the highest risks to this population group. As programs are developed, adopted, and instituted in the community data should support the impact, if any, they have on the aging population.

Research Question 2: Do the chief officers in NFR understand the future increase of EMS for older adults?

Local problems that NFR have historically had were identified and directions toward improvements were undertaken. In the case of the aging society the chief officers of the department appreciate the problem, but until consistent increased EMS call volumes affect the daily operations, this problem may go unsettled. Many in the chief level positions will not be with the department when the peak impact is felt toward the year 2020.

As a nation, data is starting to be presented in various forms of media regarding the aging society. Statistical information on the numbers of baby-boomers are being presented weekly if not daily in various forms of the news media. Since this issue is a topic that we have not dealt with as a country, only the recognition of the problem is presented and not solutions. Since the
health care crisis of the second decade of 2000 continues to evolve, the outcome for the aging society will not be known for some time.

Research Question 3: What have others departments done to lower the impact of increased EMS demands to older adults in their community?

The return of questionnaires submitted to fire services with a municipal population over 200,000 revealed that some had already undertaken elderly prevention programs independent of the baby-boomer crisis. Many of these departments understood that to be effective in making an impact, they had to develop partnerships and coalitions with other resources within their cities. However, financial budget restrictions have reduced the resources of some individual departments. Returns supported the involvement and required a commitment from volunteers and other private and public agencies to accomplish many of the programs that they established or adopted.

Fire service agencies that started programs in their community used qualifiable evidence to determine the effectiveness of their interventions. They relied on feedback from the senior adult groups in determining if it met the needs of the recipients. Based on the evidence presented, quantifiable evidence was not possible in determining if it had an effect on reducing EMS demands. This however did not negate the effectiveness of their programs or efforts. The assessment of quantifiable information would be better valued in the long-term measures as this issue progresses over the next two decades.

Research Question 4: What are the reasons older adults call 911 in the City of Norfolk?

The top seven reasons that older adults called for EMS service resulted in 65 percent of the total EMS calls. In understanding how to intervene toward risk reduction for this age group, it would be critical to determine specifics for each condition. For example, the highest need for
EMS was in the breathing problem category. More information would be needed to determine if the problems that these patients had were as a result of (1) running out of medication, (2) lack of access to a physician, (3) multiple health contributory conditions, (4) lack of education of their condition. Since breathing problems are a result of several health related conditions, addressing this specific type of illness would be challenging.

It is understood that EMS will always have a part in care and transport to hospitals for all age groups. However, the goal in reducing the EMS demands in Norfolk should be multifaceted with avenues for access of various forms of assistance. The data is available to determine why patients call for EMS service.

Research Question 5: What organizations in the community can be used to assist in reducing the number of EMS responses to the older adults?

In order to accomplish the goal of reducing the need for EMS in the aging population, their quality of life will need to improve. This goal cannot be accomplished by any single agency or organization. To achieve any positive steps toward healthy living, efforts must be taken to coordinate efforts for the individual citizens. NFR regularly uses adult protective services, community mental health, social services, and other public agencies to intervene on problem situations with its citizens. However, a lack of communication and coordination exists between agencies and services in resolving the problems of individual adults.

To move forward in the future, case management must be evaluated in coordinating the efforts of various entities to reduce duplication of efforts, and more importantly prevent individuals from be overlooked. Case managers would help orchestrate the needs of each individual to ensure that they were met before a situation arose that would compromise their
health. Finally, efforts toward developing a task force would further help in getting care and needs met in crisis situations.

RECOMMENDATIONS

Recommendation 1:

In problem identification, ongoing information is critical to the success of any curative action. Before corrective action can be taken it is that information that would directly impact the outcome. In the case of the aging population and their ultimate impact on EMS demands in Norfolk, clear identification of the problem must be understood and comprehended. NFR has created workgroups in the past to labor through various temporary and long-term issues. In this circumstance, it would be prudent to bring a diverse group of NFR staff members together to examine the particulars of the aging problem, and identify stakeholders and resources available to develop interventions.

Since this issue was identified as a national problem; city, state, and federal agencies should be examined for the assets they may contribute. In addition, various agencies and community groups previously identified in this research should also be included in creating interventional programs. Representatives from Medicare, Medicaid, private insurance companies, hospital administrators, public health, and social services are a small sampling of the agencies that need to partner toward developing progressive steps in reducing the risks to the aging adults. The work group should identify the stakeholders that should be included in problem identification and resolution.

Recommendation 2:

One program that is widely accepted in the community toward preventing injuries to the older population is a fall reduction program. NFR should work toward the development or
adoption of such a program to institute in the community. Since the success of this initiative has proven worthwhile in various cities, it would be one of the simpler identified EMS requests for service to address. A committee or workgroup within NFR should develop a program that would address following up after a citizen’s request for 911 as a result from a fall. A risk assessment and analysis of their home for fall hazards could be conducted along with educational components toward fall prevention.

In addition to follow up evaluations for falls, this program should expand to encompass the various hazards the older population incurs. While having access to residences for fall prevention teaching and evaluation, additional assessments should be undertaken with an aim toward broad topics of prevention. The recommendation would be to have family or support groups included during this evaluation to educate them on the risks to the older citizens. This evaluation should expand to include (1) fire safety evaluation, (2) medication error education, (3) easy access to emergency contact and physician’s telephone numbers, (4) assistance in providing daily contact on the well being of the older adult, and (5) access to public transportation and home bound meals. The opportunities toward prevention are only limited to the time, resources, and personnel that are available to provide this service in the community.

Recommendation 3:

Since the aging society will continue to grow at a steady rate in Norfolk, ongoing research would be paramount to trend changes. The future of this age group is not well known, but predictions are based on supporting data that is obtainable through reports and trends in data charts. The technology department within NFR should trend frequency of calls for assistance in this age group on monthly intervals.
The US Census only collects information every 10 years. This report is detailed in its information, but to wait until 2020 for the next collection would be too long. That delay may allow the older population to rise unproportionately without notice. The City of Norfolk needs to collect data on older citizens at a minimum of every two years. This information coupled with the reporting data from NFR’s Fire House information would allow availability to more current trends toward change. To accomplish this, NFR should partner with other city departments to accurately collect the census on all adults 65 years of age and older, living within the city.
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Dear Chief Officer,

As a student in the National Fire Academy’s Executive Fire Officer Program, I would like to invite your participation in the following research. The purpose of my research is to determine what steps could be taken to reduce the number of Emergency Medical Service (EMS) calls to the older adult population in preparation for the influx of the baby boomer population in the coming years.

The specific purpose of your participation is to help provide information on: (a) steps your department has taken to identify this growing problem, (b) proactive interventions your department has taken to reduce the EMS demands for the older adult population, (c) if instituted, how effective were these interventions toward reducing the EMS demands on your department, (d) what agencies or other departments have you partnered with to address reducing the risks to older adults?

The information obtained in this questionnaire will be compiled into data that will be used in this research project. I would like to assure you that no references will be made to any specific person, department, or city. At your request, I will be glad to provide you with a summary of information that is collected in this research.

The enclosed questionnaire should take about 10 to 20 minutes to complete. A return pre-addressed and pre-paid envelope was enclosed in your packet. Please feel free to contact me via e-mail if you have any questions or concerns about your participation. I would like to thank you in advance for taking the time to complete this questionnaire. I think I share with you the importance of this ever-growing problem that all departments will be facing in the near future.

Respectfully,

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APPENDIX B

EMS Demands of Baby Boomers Questionnaire
(Please use back of page if additional space is needed)

1) What is your city population and department size?

Population _____________ Department _____________

2) What percentage of the population are adults 65 years of age and older?

_________________

3) Does your department recognize the future EMS demands of increasing older adult
   populations in your community?

Y / N

4) Has your department implemented any risk reduction programs for the older adult
   population living in your city?

Y / N

5) If the answer to #4 was yes, briefly list the program or programs that were implemented.

6) If the answer to #4 was yes, how were the programs measured or tracked for
   effectiveness?

7) If the answer to #4 was yes, list the other agencies or organizations that were involved in
   these programs?
APPEDDIX C

Chief Officer Questionnaire

1. I am aware of the current population of adults over the age of 65 living in Norfolk.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

2. I am aware of the percentages of EMS calls NFR currently responds to for adults over the age of 65.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

3. The demands for EMS service for adults over the age of 65 will increase in
   - 2-3 years
   - 5 years
   - 10 years
   - 15 years
   - Will not change
4. Over the next decade, the aging population will have an effect on NFR's ability to deliver EMS care and transport.

☐ Strongly Disagree
☐ Disagree
☐ Neutral
☐ Agree
☐ Strongly Agree

5. Future EMS demands for the aging population is not known so this should not be a current concern.

☐ Strongly Disagree
☐ Disagree
☐ Neutral
☐ Agree
☐ Strongly Agree

6. How should NFR prepare for the increasing older adult population in the City of Norfolk?

☐ Education of the public
☐ Education of NFR's personnel
☐ Add additional Medic Units
☐ Create intervention programs
☐ Determine if this is a problem with other departments

7. List any steps that NFR could take that would reduce the EMS need from the older adult population living in Norfolk.

8. What other agencies or groups are needed to reduce the demands for EMS in the older adult population?