Component Identification for an Adult Focused Community Risk Reduction Program in the Central Jackson County Fire Protection District

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Appendices Not Included. Please visit the Learning Resource Center on the Web at http://www.lrc.dhs.gov/ to learn how to obtain this report in its entirety through Interlibrary Loan.
CERTIFICATION STATEMENT

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

Signed: ________________________________________________
ABSTRACT

As the protected communities for the Central Jackson County Fire Protection District (CJC) increases in population, and that population increases in age, the varied risks to the resident population increases as well. With fire and life safety education typically focused on children, adult programming is extremely informal or nonexistent. The problem is that CJC has no adult education programming for fire and life safety or overall community risk reduction.

The descriptive research method was used to determine what trends were visible in CJC responses, and how those responses compared to state and national concerns. The purpose of this research was to identify components to be included in an adult community risk reduction program.

Literature reviews were done to determine trends and risk guidelines. Email and focus group surveys were conducted to determine what topics residents felt important, and CJC, State of Missouri, and national trends and statistics were evaluated to answer the following research questions: 1) What are CJC’s target adult groups?, 2) What are the local, state, and national trends that can be used as a guideline for a risk reduction program?, 3) What components comparable sized fire departments using for a comprehensive community risk reduction program?, and 4) What components do adult target groups feel are important for risk reduction?

The end result determined that an adult risk reduction program should include not only the historically accepted fire safety topics such as smoke detectors and exit plans, but also lessons on topics such as fall prevention, in depth cooking safety, weather preparedness, and medical emergency awareness and reaction.
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INTRODUCTION

The Central Jackson County Fire Protection District (CJC) has always considered fire safety education a priority. As the percentage of fires in relation to overall call load is relatively low, a cultural shift needs to be developed to expand education components into more comprehensive risk reduction programming. These lessons should include information on fire safety as well as concerns determined by today’s society that relate to the injuries and emergencies facing our communities. This puts a higher responsibility for the organization as a whole, but specifically the fire prevention division, to determine how best to develop and deliver effective programming. This is in an effort to educate our citizens in not only the historic fire safety topics, but also medical emergency awareness and prevention, and other overall community risk reduction components. Additionally, there are lessons that may be developed and delivered to specific target audiences based on trends and recognized needs.

The problem is CJC currently has no developed all hazards type community risk reduction education or a program focusing on adult concerns and adult level learning. Current fire prevention division programming allows for a number of topic lessons and delivery mediums, but it is almost entirely based on the “standards” of fire prevention; smoke detectors, stop drop and roll, and escape plans. Programs are designed to be presented to school age children, with target groups consisting primarily of children preschool age through 5th grade.

The purpose of this research is to identify program components that should be included in a comprehensive adult community risk reduction education program for Central Jackson County Fire Protection District citizens. The research used will be the descriptive method. Literature searches will be used to collect statistics on common causes of injury and fire / life safety concern in adults. This information will be compared to standards and established practices...
addressing those concerns through additional literature reviews. Surveys will be conducted with organizations protecting similar size and demographic communities to CJC to determine which components of other programs may be considered for integration into CJC’s program.

In addition, considerations for potential program delivery target groups, i.e. homeowners associations, civic groups, adult care facilities, etc., will be determined. Through discussion with members, surveys, and event comparisons within those groups, information will be gathered to determine what concerns they feel should be addressed in a Community Risk Reduction awareness and education program. The following questions will be used to direct this research:

1) What, if any, are the target adult groups within the Central Jackson County Fire Protection District to be included in a comprehensive community risk reduction program?

2) What, if any, are the local, state, and national trends that can be used as a guideline for a comprehensive and effective community risk reduction program?

3) What components, if any, are comparable sized fire departments using for a comprehensive community risk reduction program?

4) What components do adult target groups feel are important for risk reduction?

BACKGROUND AND SIGNIFICANCE

CJC is a full service fire department covering 63 square miles in Eastern Jackson County, Missouri with 140 employees providing all fire service and related components; fire and ALS - EMS response and transport, fire prevention, special rescue, Haz Mat, and fire and EMS training / education.

CJC’s protected communities of Blue Springs, Grain Valley, Lake Tapewingo, and portions of Jackson County (all in Missouri) are, for the most part, suburban bedroom communities for Kansas City, MO. There is some retail and light industry creating a small transient daytime population, but the demographic is predominately residential. According to
statistics gathered from the Missouri Economic Research and Information Center (MERIC), Grain Valley was one of the fastest growing communities (4th) in Missouri through 2008, with that growth being almost entirely residential. This growth, while slowed by the economic downturn, has continued in Blue Springs and Grain Valley.

According to U.S. Census Bureau (2010) data, the approximate population of CJC’s coverage area is 71,000. Appendix A shows estimated 2010 populations for Blue Springs and Grain Valley. These figures also helped determine that the adult population, 18 and older, is approximately 70% of the total. (It is important to note that in phone discussion with the U.S.Census Bureau customer service [1-800-923-8282] it was stated that information to a specific zip code and census tract is not yet available. Also, Lake Tapawingo, while an incorporated city, is a small community within the borders of Blue Springs and the population is included in total numbers shown for Blue Springs. Unincorporated Jackson County numbers are estimated.) Since the protected communities are primarily residential and contain only light industry and retail occupancies, an adult based risk reduction program will need to be developed to be delivered to adult population groups, such as homeowner’s associations and civic groups, with available components for industrial and office safety education. In addition to the 1 and 2 family resident populations, there are 7 apartment complexes and 6 extended care facilities within CJC coverage areas.

As CJC’s protected communities increase in residential populations and add more retail and commercial properties, the number of families, visitors, and activities also increase. With those increases, incident and response numbers rise. In response to economic considerations and more efficient resource management, along with citizens expecting better customer service, it has become more important for CJC to understand the impact call loads place on community health
and safety and daily department risk analysis. Programs have to be developed to look at reducing as many community risks as possible.

CJC’s fire prevention division is comprised of 4 fire inspectors and an assistant chief / fire marshal. The division is charged with a number of components; investigation, plans review, inspections, etc. While all of these are important, the primary focus of the division is fire and life safety education, with one of the inspectors assigned as a public education officer. This position was created on recommendation by the Commission on Fire Accreditation International (CFAI) accreditation process in 2008 and is responsible for program development and implementation of any and all fire and life safety education programs and subsequent in service training on how others can best deliver the information to the target audience.

For the purposes of this research, juveniles are defined by Missouri Revised Statutes, chapter 211 as “any person under seventeen years of age and shall mean, in addition, any person over seventeen but not yet eighteen years of age alleged to have committed a status offense”. (http://www.moga.mo.gov/statutes/C200-299/2110000021.HTM.) As it relates to CJC fire and life safety education programming, the focus has remained primarily pre-school age children through 5th grade.

The fire prevention division has always had a comprehensive and involved fire safety education program presented to school age children. Appendix B lists the number of contacts and the type of event used to deliver education and information. In 2010, CJC delivered some level of fire safety message or lesson to over 9,000 children and approximately 3,000 adults. This included everything from “Stop, Drop, and Roll”, delivered to day care and preschool age children, to the sciences of fire in the “Safety Awareness and Fire Education” (SAFE) program, cornerstone of the juvenile education program. The SAFE program focuses on fire safety and
education lesson deliveries to all 4th grade classes and is designed to include lesson components that can be directly tied to school district and Missouri state curriculum requirements for science, math, and history. Additionally, some form of fire safety education or information is delivered to children through informal station tours and community relations events such as day care visits, scout meetings, and neighborhood block parties. Most of this comes in the form of handouts and informal presentations.

In comparing CJC’s fire and life safety education programming as it relates to fire causes and EMS responses within CJC, it was determined that only a small percentage of fires were associated in any way to juveniles. According to a report by Hall (2010), published through the National Fire Protection Association (NFPA):

In 2008, an estimated 53,500 child-playing fires were reported to U.S. municipal fire departments, with associated losses of 70 civilian deaths, 910 civilian injuries, and $279 million in direct damage. Most (77%) of these fires occurred outdoors. An estimated 7,600 fire-play structure fires occurred in the home, resulting in 70 civilian deaths, 780 civilian injuries, and $202 million in direct property damage. In 2008, child-playing fires accounted for 2% of total reported home structure fires, 3% of associated civilian deaths, 6% of associated civilian injuries, and 2% of associated direct property damage. (p. i)

CJC has had record management complications. In 2006, CJC began dispatching services in house, which has led to two computer aided dispatch program changes. In 2009, CJC changed record management systems for a third time, adding separate EMS and fire reporting programs. Records are extremely difficult to access and compile with any accuracy. From fire prevention division juvenile fire setter contact records there have been only 4 structure fires creating minor damage, 1 with moderate damage, and 7 outside fires in a period from October, 2007 to January,
Component Identification for 2011. This is far below the 2% suggested by Mr. Hall. Additionally, of the juvenile offenders CJC and/or Blue Springs Police have seen in fire related offenses, there have been no “repeat offenders”. Although difficult to directly determine, it can be assumed that the juvenile education programs delivered by CJC are effective since there is such a small incidence of juvenile fires. Unfortunately, this would also initially indicate the remaining causes of fire responses, either accidental or intentional, are directly related to the adult population.

In comparing response types and numbers, fire related incidents are a small segment of the total responses for CJC. Also, there has not been a fire related death concern. For CJC, since 1991, there have been only three civilian fire deaths for CJC: 2 children died in the same fire as a result of parents using gasoline in a kerosene heater and an elderly person died from smoke inhalation after being unable to get out soon enough. While tragic, these are not trends, but do confirm that some basic fire safety education for adults can be beneficial.

The impact on an older population related response, primarily EMS, created additional consideration for program development directed at comprehensive “community risk reduction” programming rather than a focus solely on fire safety.

Currently, the CJC Fire Prevention Division (FPD) has no formal curriculum or delivery system in place to reach the adult population with an “all hazards” safety education message that could include subjects such as BBQ grill safety, injury prevention, weather awareness, etc. The purpose of this applied research project will be to identify program components that should be included in providing an adult level comprehensive Community Risk Reduction awareness and education program for the citizens of the Central Jackson County Fire Protection District.

CJC has three ALS - EMS units in service. The number of simultaneous and back to back responses has increased. In addition, when a CJC EMS unit is unavailable, a mutual aid unit
from another agency is used. This has two distinct impacts. First, the delay in response can allow further or more serious injury or illness to occur in our community. Second, this then puts subsequent strain on neighboring agencies and can compromise the quality and timely delivery of care to their citizens.

In looking for EMS trends to develop a program around, the most prevalent was the average age of patients and the type of EMS call related to that patient (Appendix C). In addition, there is a lack of curriculum to help these adults avoid the need for a response.

To reduce the number of responses would reduce the number of subsequent responses and the need for outside agency support. For example, to lower the number of fall responses, would allow unit availability for more serious medical or fire related needs. This is not to say that falls aren’t serious. However, there is a belief that with an effective home safety program, including home inspections and fall prevention education, citizens would be more aware of their surroundings and there would be fewer occurrences, resulting in less injury to CJC’s patrons. These falls into line with the United States Fire Administration (USFA, 2010) strategic goal # 1; “Reduce risk at the local level through prevention and mitigation. (p.13)

In Executive Analysis of Community Risk Reduction (EACRR) the three levels of prevention were discussed. In the primary level, it was mentioned that fire departments typically accomplish this with the programs they have in place. For CJC this focus is almost entirely in the schools. Programs are aimed at making the hazard nonexistent in advance of an emergent need. Secondary prevention is “aimed at people who may appear healthy, however, because of age, gender, family history… might be identified as high risk candidates for a particular condition.” (EACRR Student Manual, 2009, p.SM 1-11) The example used is fall prevention, which has
been identified as one of the focus needs of an adult program. Finally, fewer falls, less lost work, and decreased need for outside resources can all be considered tertiary prevention.

A risk reduction program should be designed with resident health and safety being the primary focus. However, other considerations are moving into the forefront. Agency resource management, financial concerns related to preventable responses, and reducing risk to employees and equipment should be additional considerations. To develop more formal lesson plans and a method to deliver them to the CJC adult population, there is a potential for reduction in those areas that are of direct concern to the protected residents and visitors. In addition, by becoming more proactive in less common causes for response, the possibility to develop trends mirroring state and national risks is also reduced. In taking a more proactive approach, USFA (2010) strategic goal #2, “Improve local planning and preparedness” and #3, “Improve the fire and emergency services capability for response to and recovery from all hazards.” (p.13) are addressed. Obviously, to what extent will be dependent on program components. However, any reduction in a risk - falls, fires, etc., allows resources to be used more efficiently, and the citizens to be better prepared for individual and personal risks.

As a low volume service, the number of even the most common fire response is minimal. The EMS components are more easily identified and are a much larger part of CJC’s workload. Adult patients and falls become the trend and those numbers are more efficiently supported. For additional consideration, Missouri and surrounding states have recently had a number of incidents of severe damage, one with high life loss, from the worst severe storm season in more than 50 years. Weather awareness and preparation can also be added to a risk reduction model for the protected communities of CJC. That said, it becomes prudent to determine trends based
on state and national level information and develop proactive and preemptive lessons for all risk components of an adult education program.

LITERATURE REVIEW

For CJC to develop an effective community risk reduction program there are a number of components that have to be identified. It is not enough to develop a program that includes generic or standard “fire and life safety topics” it is also unfair to our communities to leave specific components out, based solely on a perception that the problem doesn’t exist. CJC doesn’t seem to have a true trend or recurrent fire problem. Unfortunately, due to the mentioned records system challenges, there is some difficulty in confirming that position. It can be said that of the fires CJC does respond to, the most common cause is some form of kitchen or cooking fire. There is no accurate and accessible historical, supportive report. It is also believed that during the summer there are an increased number of fires related to outdoor cooking. Again, there is no specific supporting documentation available.

To begin, it is necessary to find literature that would offer research, opinion, and suggestions to answer the applicable research questions. The direction of the research needs to be determined. In the FEMA (2008) document, *Public Education Planning – A Five Step Process*, the first step is to conduct a community risk analysis. “A community risk analysis is a process that identifies fire and life safety problems and the demographic characteristics of those at risk in a community.” (p.iii) There is a need to identify and evaluate local, state, and federal risk concerns for consideration as appropriate components of an adult program. CJC as with all communities has a risk potential. Unfortunately, with no critical trends to base the program on, there becomes a need to define and understand a direction for program development. Some
program components will be related to CJC responses, but others will be proactive and preemptive.

Typical “bread and butter” fires for most fire departments are in one and two family residences. This is no different for CJC. Most fire responses are to single and two family buildings. Ahrens (2010) confirms this trend by saying “Home fires dominate the structure fire problem. Seventy-eight percent (377,000) of the 480,500 structure fires occurred in residential properties, including homes, hotels, motels, rooming houses and dormitories; three quarters (362,500) occurred in homes.”(p.3)

A community risk reduction program should also be delivered to reduce potential firefighter injuries and fatalities by increasing awareness and reducing response numbers. For example, in the USFA, the Topical Fire Report Series (2011) states that “Eighty-seven percent of firefighter injuries reported to NFIRS from 2006 to 2008 were associated with structure fires. Three times as many firefighter injuries occur in residential structures than in nonresidential structures.” In relation to firefighter fatalities the FEMA document, Firefighter Fatalities in the United States in 2008 (FEMA, 2008) table 14 relates almost four times as many fire fighters died in residential structure fires as in any other building type in 2008: residential = 15 deaths at 71.4%, commercial with 4 deaths at 19%. (p.29) These trends hold true today, with more firefighter deaths in residential structures than any other specific building type.

EACRR Student Manual, (2009) “Community risk reduction combines prevention and mitigation strategies” (p.SM 1-10) CJC is very good at mitigation; if a response is needed, patient care and fire response takes place in a competent and effective “customer service” based approach. Fire prevention components, when related to juvenile fire setter responses, are presumed effective based on negligible juvenile related fires. But as has been discussed, the adult
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population is more complacent and/or unaware of fire safety and injury prevention measures and should be targeted for education as well as children.

According to the pre-course assignment “each community must develop a specific plan to address the unique fire problems of that community through a combination of combined preventive interventions.” (NFA EACRR pre-course assignment, 2010) Fire Problems are always the primary focus of fire department prevention and education programs. In America Burning (1973), the second paragraph delivered a shocking message. “Fire is a major national problem. During the next hour there is a statistical likelihood that more than 300 destructive fires will rage somewhere in this nation… At least one person will have died. Thirty four will be injured.” (National Commission of Fire Prevention and Control [NCFPC], 1973, p.1) Nearly 30 years later, in America at Risk, (2002) it is said that “To a great extent, the fire problem in America remains as severe as it was 30 years ago. If progress is measured in terms of loss of life, then the progress in addressing the problem, which began with the first America Burning report in 1973, has come to a virtual standstill.” (p.15) describing an increased effort by the fire service, but a lack of interest and increased apathy by the public, as well as funding concerns.

As a fire service society, we have made strides towards reducing the number of events and subsequent outcomes. There are certain programs that have been the cornerstone of the fire prevention message to children and should always be included components of an adult education program as well. Smoke detectors and their importance with “Change your Clock, Change your Battery” and “Exit Drills in the Home (EDITH)” are championed by the fire service, International Code Council, and most fire related organizations, including NFPA in documents such as the NFPA Educational Messages (NFPAEM), recommendations on educational information. “The messages are used throughout NFPA’s educational programs, curricula, and
handouts and provide fire and life safety educators with accurate and consistent language for use when offering safety information to the public.” (NFPAEM, 2010) Residential sprinklers, while battling political and economic concerns, continue to gain momentum in support in communities across the country. Support from organizations such as the International Code Council (ICC) and the United States Fire Administration helps move sprinkler programs forward. In a position paper released by the United States Fire Administrator in 2008, it was written that:

> It is the position of the U.S. Fire Administration that all citizens should be protected against death, injury, and property loss resulting from fire in their residence. All homes should be equipped with both smoke alarms and automatic fire sprinklers, and all families should have and practice an emergency escape plan. The USFA fully supports all efforts to reduce the tragic toll of fire losses in this nation, including the proposed changes to the International Residential Code that would require automatic sprinklers in all new residential construction (USFA, 2008)

With CJC having minimal to no trending to draw program ideas from, additional component considerations should come from outside sources. The FEMA pamphlet FA-326 (2010) states that “Cooking is the leading cause of residential structure fires in 2007, causing 40% of all fires” (p.6) This trend has continued, supported in the Topical Fire Report Series (2011) by FEMA which confirms that “Cooking is the leading cause of one- and two-family residential building fires reported to the fire service (31 percent)”. (p.1) This is supported at a state level as well by the NFIRS report released by the Missouri State Fire Marshal’s Office in 2007. (Appendix D) NFPA (2009) discusses cooking fires as a primary cause. “Chances are 1 in 10 you will have a reported cooking fire…1 in 14 you will suffer an injury…1 in 325 that someone in your household will be injured in a reported home cooking fire.” (p.1) USFA (2010) also reports “cooking as the leading cause of residential building fires for the 5 year period – 2005 -
2009.” (p.6) These lend comparative support between local, state and federal that a cooking and kitchen fire safety lesson must be included.

In addition to fire components, EMS concerns are becoming more of an educational necessity. As identified in the CJC EMS Data Report and through comparison to the total CJC responses (Appendix E), emergency medical response is the primary work load for the department. This seems to be the case in most fire departments that have EMS as an additional responsibility. If that is the case, education programming will need to address those primary response reasons.

Falls were the largest number of emergent response type for CJC. This remains consistent with state and federal statistics as well. In a report by Owens, Russo, Spector, and Mutter, (2006) “Each year, approximately one third of the elderly adults experience a fall. Falls are the most common cause of fatal injury among elderly adults age 65 and older.” (para. 2) When evaluating for program components, another concern is subsequent outcomes. According to the Centers for Disease Control (CDC, 2010), “Twenty percent to 30% of people who fall suffer moderate to severe injuries such as lacerations, hip fractures, or head traumas. These injuries can make it hard to get around or live independently, and increase the risk of early death.” (para. 4) In addition to efforts to protect our communities, fall and injury prevention can also assist in CJC resource management. If an adult, falls, they are more likely to need repeat responses and support, drawing on CJC resources.

At a state level, in a report published by Missouri Department of Health and Senior Services, falls were the highest number of unintentional injury and death in Missouri from 1998 to 2008. (Appendix F)
Another emergency medical concern that reflects directly on preserving life is cardiac arrests. The concern here is, in addition to heart health discussions that a number of cardiac arrests occur on the way to or in the emergency department.

In the American Heart Association (AHA) Resuscitation Guidelines updates it was stated that “To increase the chance of successful resuscitation following cardiac arrest, this requires an integrated set of coordinated, sequential actions represented by a chain of links. This is known as the Chain of Survival.” (http://emergencymedic.blogspot.com/2011/02/chain-of-survival-aha-resuscitation.html) CJC EMS Division Captain M. Wallace (personal communication, 3-22-2011) stated that in 2009, 1500 chest pain patients drove themselves to our local hospitals. Of those, approximately 60% were actual cardiac events requiring advanced and invasive treatments. The concern is that our public isn’t aware of what to do with chest pain symptoms, how serious it can become, and how paramedic level treatments in the pre-hospital setting can increase recovery times or survivability.” Cummins, Omato, Thies, and Pepe (1991) state,

The early access link can be strengthened through public education, especially persons most likely to witness a cardiac arrest, and by installation of an efficient emergency communication system. Educational and public service programs such as those done by the American Heart Association and the American Red Cross are designed to make the public aware of what to do when cardiac arrest occurs. (pg. 1833)

This still holds true in emergency cardiac medicine today. In a report published by the Missouri Department of Health and Senior Services (DHSS) in 2008, stroke recognition and chest pain and reaction are discussed by the Time Critical Diagnosis (TCD) Task Force. “In fact, each 30-minute delay has been found to be associated with: reduced heart function at discharge, increased
relative risk for mortality at one year, and an overall increase of mortality at one year.” (p.14) In addition, DHSS (2008) continues by stating that “symptom-onset-to-treatment time greater than 4 hours has been found to be an independent predictor of one year mortality.” (p 14)

Additionally, education in what to do if cardiac events are witnessed should be examined. Abella and Esposito (2010) state that “sudden cardiac arrest continues to be a leading cause of death in the United States, claiming the lives of more than 300,000 people each year.” (para.5) In addition, it has been shown that “Studies have shown that restoration of a pulse is very sensitive to chest compression rate and depth and pauses in compressions. One study found that minimally interrupted cardiac resuscitation (MICR) dramatically increases survival rates from out-of-hospital arrests.” (Abella & Esposito, 2010, para. 6) AHA has always been a proponent for early recognition and entering the chain of survival as soon as possible. Education for the adult populating should also include these signs and symptoms recognition and reaction components.

In Missouri, and across the country, 2011 has been an historical weather year. Information from NOAA outlined the severity of winter weather CJC communities faced through the 2010/2011 season. In a two day period there were close to record breaking snowfalls, an event that was 1 of three major snowfalls for the area. On Feb. 1st and 2nd, the Kansas City metro area recorded up to 12 inches of snow in a 24 hour period.

According to the National Oceanic and Atmosphere Association (NOAA) reports that 2011 is the 7th most deadly tornado season since records were kept beginning in 1950. April set a new record for the most tornados in one day, and April 27th was the 4th deadliest single day outbreak in history. In Missouri, there have been significant outbreaks, with May 22nd in Joplin being listed as the 8th deadliest single tornado. This following record setting snow falls for most of the country through the 2010 – 2011 winter season. What this has done for education
programs is require the addition of weather awareness and emergency management sections to allow the public a better understanding of early warning and weather safety.

LITERATURE REVIEW SUMMARY

The spectrum of what can be covered in a fire and life safety education program, whether directed at children or adults, is limitless. As discussed in class, the program has to be user friendly for the presenter and the audience. Most adult groups are too busy with everyday life to spend much time in meetings or formal presentations, so the message has to be applicable, interesting, and concise. In today’s world, the program also has to cover more than just fire safety. It must also address

After reviewing the endless supply of information and comparing it to the specific needs of CJC’s protected population, the data confirmed what was believed to be some core components. Fire safety, as always, is a priority, but in a proactive approach. Most adults don’t think about fire departments, smoke detectors, or fire safety until it is too late. An awareness delivery is critical to maintain the low fire loss in CJC. Components of the program should focus on the standards; smoke detectors, exit drills, kitchen fire safety, etc., but should also educate on outdoor cooking fires. The continued push for residential sprinklers should also be stressed, not only for family and property safety, but for firefighter safety as well.

Additionally, as emergency medical responses increases and the population continue to age, medical safety and awareness should become core lessons. Fall and trip safety is paramount to protecting our adult population, especially our elderly residents and visitors. Programs such as the vial of life and seatbelts can be included. There should also be a strong component in educating the public in cardiac and stroke recognition and reaction to limit delays in accessing
Component Identification for treatments. Understanding and following the AHA guidelines on chain of survival segments and skills will also be a significant part of an effective program.

To step outside of the typically recognized fire and life safety programming, weather awareness is on the minds of more and more adult groups. Questions have been fielded over the past few weeks about severe weather safety and emergency management responsibilities, with the public wanting to better understand early warning, sheltering in place, and post-event processes. There is a heightened awareness because of the weather season the country has had, but an effective community risk program should draw on that sensitivity and use lessons to combat complacency.

PROCEDURES

General information on population numbers and ages was done through internet access of the United States Census Bureau’s American Fact Finder. Information from the 2010 census was still incomplete, (this fact confirmed by a phone call to the U.S. Census Bureau customer support line 1-800-923-8282) but it listed a total estimated population for CJC, shown in Appendix A. It also answered a question prevalent, but subsequent, to the research questions. What is the percentage of adults versus juveniles in CJC’s protected communities? Again, Appendix A shows this as approximately 70%. As discussed, since juvenile fire and life safety concerns are minimal and addressed at the grade school and below level, the predominate call load is related to adults, and an adult focused awareness and education program is a necessity.

The research questions were developed to identify two main topic headings. The first question is focused on defining the target audiences for a community risk reduction program for CJC. This was done by gathering information from the census bureau on age groups for CJC and using response type and age factor data about trending to determine the groups that should
receive the education program. There was a search through community development departments to compile the number of homeowners associations (HOA). Blue Springs listed 44 homeowner’s associations, Grain Valley showed 4, and Lake Tapewingo had one governing body. An email (Appendix K) was sent with the following 4 questions to the listed officers for these groups:

1) Have you had a fire or medical incident involving you or your family? (Yes or no only)

2) Was it the type of incident that a program delivered to your adult group would have addressed and possibly prevented? (Yes or no only)

3) Would you consider sponsoring and / or attending a short presentation on fire and life safety in the home?

4) If you were to attend a short fire and life safety program focused on adult learning, what topics would you be interested in?

Responses were minimal, only 4 residents answered, but some information was gathered through this email survey.

In addition to the email survey, a request was made to attend HOA meetings and events in an effort to gather information through face to face discussions with the groups. Unfortunately, it was determined that 1) a number of HOAs are inactive and don’t meet on a regular basis, or 2) they had already met. Again, response was limited; however 4 meetings were attended with 54 total residents. The four questions listed above were asked in an informal, roundtable type discussions, notes were made, and counts were tabulated. In addition to asking residents what they would like to learn about, the discussions were also to try and gain perspective on actual interest in a program. Discussions were held with a resident group at one of the senior / assisted living facilities with approximately 21 residents. Included in the residence types are 7 apartment complexes. Attendance at 1 of the complex residence meetings only addressed 5 residents. Information is listed in table 1.
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<th>TABLE 1- HOA Survey Questions / Results</th>
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<td>1) Have you had a fire or medical incident involving you or your family?</td>
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<td>10</td>
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<td>8</td>
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<td>15</td>
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</tr>
<tr>
<td>Was it the type of incident that a program delivered to your adult group would have addressed and possibly prevented?</td>
<td>1</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Would you consider sponsoring and / or attending a short presentation on fire and life safety in the home?</td>
<td>11</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>15</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

The groups met with, corresponding to the table, are:

1) Primrose Homeowners Association, Blue Springs, MO.,
2) Weatherstone Homeowners Association, Blue Springs, MO.,
3) Woodbury Homeowners Association, Grain Valley, MO.,
4) Hidden Point Homeowners Association, Blue Springs, MO.,
5) Sunnyside Garden Apartments, Blue Springs, MO.,
6) Friendship Manor (Senior Living), Blue Springs, MO.

7) Email responses.

Responses to the fourth question relating to topics of interest are summarized in the results section.

The remaining three questions deal with determining what components should be included in a community risk program? First, it was important to determine common risks or trends specific to CJC. This was done by evaluating response data for fire and EMS. Information was retrieved from the following databases and evaluated for trends, using a sample period of 1/1/08 – 9/23/10:

- CJC NFIRS Reporting – Total Calls Appendix E,
- Imagetrend EMS Reporting - specific call types and age groups – Appendix C,
- Imagetrend Report Summary – Falls by age – Appendix G. (In an effort to limit appendix size in the falls report, pages were left out. Appendix G shows the beginning of the report, the beginning of the 55 and older, and the last two pages of the report.

There were 1095 falls documented.)

A personal interview was conducted on 3-22-2011 with CJC EMS Division Captain Mike Wallace. The interview focused around two questions: What are the primary EMS calls and what are the concerns about chest pain/stroke education and reaction? This allowed for additional component considerations for medical emergency education.

The next step was to compare local data found in the reports mentioned above to information available for state and national statistics. This was done by an internet search for reports and literature describing trends for both fires and EMS calls, looking, specifically, for fall
information. The following, along with other literature, showed supporting State of Missouri Data:

Missouri Unintentional Injury Indicators – Appendix F.

Missouri NFIRS Report/ 2007 – Appendix D,

Finally, literature from recognized data sources was used to determine national level concerns. This was supported through internet searches of applicable medical community and fall prevention programming databases and information. Information was gathered and compared from leading fire reporting entities such as the National Fire Protection Agency and United States Fire Administration.

There was consideration given to the newer concerns by the public. Information from NOAA and the National Weather Service was used to confirm the unusually severe weather patterns. As mentioned, there have been significant storms creating a heightened sensitivity to weather awareness and severe weather preparedness. Questions relating to weather were some the topic of some of the discussions at these events.

The next question looked at what other agencies were doing in their programs. This was done by creating a basic survey (Appendix H) using Survey Monkey to determine agency size, whether or not they had a community risk reduction program, and the components included in their program. The survey was sent to a number of emergency service e-mail groups including the Fire Marshal’s Association of Missouri at fmam-online@googlegroups.com and the National Fire Academy EFO group at NFAED@yahoogroups.com. The results are listed in Appendices I and J.
RESULTS

The information gathered through procedures supported initial ideals about common causes of fires and EMS related responses. In addition, comparisons between local, state, and national level trends and risk concerns confirmed that CJC responses are consistent with recognized trends and can accurately direct an effective program.

The first research question focused on target audiences. It was believed that a comprehensive program should address as many risks and specific audiences as possible, within presentation time frames and delivery mediums. It was discussed earlier that CJC communities are primarily residential and most fire and EMS responses are related to the adult resident population. The research shows that the resident population of CJC’s coverage areas falls into the “adult” definition of 18 years old and older. Information in Appendix A shows CJC’s coverage areas have approximately 70% of the population at 18 years and older. In addition, approximately 26 percent are age 50 and older.

Disappointingly, the information gathered from the email questionnaire and survey was limited. Family schedules, time of year, etc. entered into attendance numbers. If considered as a representative sample, the information indicated that residents would be interested in some form of formal presentations on fire safety and medical emergencies.

The results of the informal discussion questions are:

1) Have you had a fire or medical incident involving you or your family?

   31 of 84 said yes = 37% have used CJC services.

2) Was it the type of incident that a program delivered to your adult group would have addressed and possibly prevented?

   18 of 31 said yes = 58% said an education program may have helped.
3) Would you consider sponsoring and / or attending a short presentation on fire and life safety in the home?

74 of 84 said yes = 88% would attend or host a program delivery.

4) If you were to attend a short fire and life safety program focused on adult learning, what topics would you be interested in?

The most common information requests were:

- 84% Smoke detector / CO detector information,
- 79% Weather awareness and preparedness information,
- 81% Fire Extinguisher Use.

This creates an interesting consideration in developing a program; the medium used and the time allowed for the presentation is going to be critical in program success. The information will be required to make as much an impact as possible, with as many topics as possible covered, in a limited amount of time.

Comparisons of age groups to response typed showed a higher rate of cooking fires, specific to residential properties, and the highest number of EMS response is related to falls in the older population.

The remainder of the information analyzed is directly related to what components should be included. The comparisons between local, state, and national trends relative to fire causes confirmed that a primary cause of fires is kitchen and cooking related.

The comparison of response types for fires versus EMS was in an effort to confirm needs and develop more all-hazard approach presentations that include emergency medical risks to our communities. As a baseline example, in a period from January, 2008 to September, 2010, 80% of CJC’s 17,681 responses (Appendix E) were medical, most of which were adult related including
motor vehicle accidents. Of the 14,134 EMS calls run in this time period, 47% (6600) of the patients were 55 and older. (Appendix C)

The highest number for a specific type of response was related to falls. In the time period listed, there were 1093 falls. It is believed that some responses to incidents coded and entered as “traumatic injury” or “other” are also fall related, making this number actually higher. The only incident type with a higher number was “non emergent transfers”. Of the fall related responses, 72% (783) were patients 55 and older. Our older population will continue to increase. According to the U.S.Census Bureau, the number of elderly will “rise from 1 in 8 in 1994 to 1 in 5 in 2030. Overall, the oldest old are projected to be the fastest growing part of the elderly population into the next century.” (http://www.census.gov/population/www/pop-profile/elderpop.html)

The third question was used in an attempt to draw on other agencies and the programs they developed. Of the information obtained smoke detectors, fall prevention and escape plans were the three top components of those that had a program. Of the 4 departments surveyed that were in comparable size to CJC, all had a full program fire prevention division. Three has a community risk reduction plan. The most common topics were smoke detectors, escape plans, and extinguishers. This was out of character for the fire related trending found in this research. While the smoke detectors and escape plans are important, there was no suggestion of cooking safety.

The final question was based on the information gathered from the surveys and meeting done in CJC communities. In an effort to not only address the standard topics, i.e. smoke detectors and escape plans, but also specific topics of interest to CJC residents. Informal discussion questions during HOA and resident meetings were used to determine what emergencies residents have had and what education components they would like to hear about in
formal presentation to their groups. Additionally, there was a short email survey sent to listed HOA officers, but only 4 responded.

During the procedures, the only indication directing research inquiries towards cardiac / stroke awareness and reaction was the interview with Captain Wallace.

DISCUSSION

As mentioned early in this report, CJC is a low volume service. There are no prevalent trends or large scale public concerns to help guide design of a community risk reduction program. A program for CJC will be largely focused on awareness and prevention. While it seems a positive sign that CJC will be able to develop a proactive program, it will have to be constantly monitored and adjusted. There could be a tendency for the program deliverer to become complacent and uninterested. The CJC program will also have difficulty assessing success. The research did confirm some component considerations, but these can only be a segment of the total package.

Of the approximately 18,000 responses in the sample period: 1-1-2008 through 9-23-2010, approximately 80% were emergency medical responses. The fire service in general has seen a constant and consistent shift in the fire / EMS ratio, forcing changes in cultures and adding additional components of focus. In this aspect CJC is no different. Owens et al. (2006) “the overall rate of ED visits for injurious falls among the elderly was 57.4 visits per 1,000 persons 65 years and older” Since emergency department visits are directly related to EMS resource management, this number is significant. As Appendix C shows, CJC has the highest number of EMS responses related to falls and 72% of those are patients 55 and older (Appendix G).
Another disturbing conclusion is the number of chest pain patients that are transporting themselves to the hospital. In the interview with Captain Wallace, he stated “a large number of these patients are also waiting for an average of 24 to 36 hours before seeking medical treatment, either by emergency department or by ambulance.” Two of the primary components for community risk reduction step out “out of the box” in standard fire service thinking. They have to address subjects such as fall prevention, chest pain / stroke awareness and reaction, and weather awareness.

When we look at an overall program, we have to step back into the box and include fire related topics. In regards to fire, the highest percentages of fires are in residences. Cooking fires have been listed as the primary cause of residential structure fires. A report published in 2010 by the NFPA reports that in 2009 residential structures were the primary property type at 28% and the highest in civilian death (89%), injury (87%), and property damage (86%). (Ahrens, 2010) In CJC statistical data, residential structure fires are the primary property type (62%) and cooking fires are the most common cause (24%). Cooking and kitchen safety must also be included.

The third, and somewhat new consideration, is weather awareness. As mentioned earlier, 2011 has been severe in regards to both winter and spring weather. NOAA reported record snowfalls in February, 2011. “an equally impressive snowfall of 12-18 inches fell along the Interstate 70 corridor, causing the first ever state-wide closure of Interstate 70 from Tuesday night into early Wednesday.” (http://www.crh.noaa.gov/eax/?n=20110201blizzsno) The spring weather has also been severe. Tornados and severe thunderstorms have been prevalent through the months of March, April, and May in the Midwest, with one of the worst events in 50 years striking Joplin, Missouri. This tornado claimed 139 lives.
These recent events have created a concern with CJC residents about weather preparedness and severe weather alerting such as sirens and weather radios. These are components that enter into an all hazards approach and venture away from the fire prevention only mindset.

RECOMMENDATIONS

The following recommendations are based on the ideas learned from the face to face discussions with resident groups, literature research, and information comparisons for local, state, and national fire and life safety concerns:

1) The Central Jackson County Fire Protection District (CJC) should develop an effective Community Risk Reduction Program for the residents they protect. While there are no outstanding trends, there are some common causes of fire and EMS response that it is believed can be reduced, i.e. cooking fires, falls (primarily in the senior population), and severe weather awareness and safety.

2) CJC’s fire marshal and fire prevention division should determine, and update, all information relevant to any resident group in the protected area. This should include homeowner’s associations, apartment complex management, senior living and extended care facility staff. This will allow more efficient and accurate access to a larger segment of the resident population creating a larger audience for information delivery. This should equate to a reduction in responses.

3) The following components should be included:

   Smoke / CO detectors,

   Home escape plans,
Kitchen safety,

Cooking safety – indoor and outdoor,

Fall prevention / trip hazard awareness,

Fire extinguisher use,

Early cardiac and stroke event signs and symptoms recognition,

Severe weather preparedness.

4) Although not really addressed in this project, components, or delivery adjustments, should be included that would allow for commercial applications in CJC area protected businesses. This could include office and light industrial evacuation, fire safety, and weather safety.

5) CJC’s fire prevention division, in addition to program development, should include an assessment tool to adequately monitor program success. It is the hope that the current records management will remain in place, accomplishing a large section of information retrieval and evaluation.

6) CJC should develop a plan to continually monitor response matrices and evaluate future call loads for newly developing trends. This will allow for program additions and adjustments such as swimming pool safety.
REFERENCES


