2010

Critical Health and Safety Issues in the Volunteer Fire Service





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INTRODUCTION

Firefighters, emergency medical technicians, and other emergency responders face danger everyday from exposure to smoke and toxins, deadly temperatures, and stress as well as issues surrounding personal protective equipment, vehicle safety, and personal health. Although publicized firefighter fatalities are more often associated with burns and smoke inhalation, heart disease, including heart attack and stroke, account for the largest number of line-of-duty firefighter fatalities each year.¹

Both the National Fire Protection Association (NFPA) and the United States Fire Administration (USFA) have been tracking on-duty firefighter fatalities since 1977. According to USFA statistics, 30 firefighters died in 2009 due to heart attack.²

While sudden cardiac death is the leading cause of line-of-duty deaths among firefighters, other factors affecting firefighters' health, wellness, and safety result in multiple deaths and injuries every year. The USFA has established goals to reduce loss of life among firefighters. In order to achieve this goal, emphasis must be placed on reducing the risk factors associated with cardiovascular disease as well as on the mitigation of other issues affecting the health and safety of the nation's firefighters.

In an effort determine the specific issues affecting firefighter health and wellness, the National Volunteer Fire Council (NVFC) developed an online survey to determine personal health, well-being, and safety practices and perceptions among volunteer first responders. The survey was sent to NVFC members and to fire service personnel nationwide, with a total of 1,244 respondents. Of the individuals who completed the survey, 94.2 percent are currently or have in the past worked as volunteer firefighters. Analysis pertains to respondents who are current or were former volunteers.

While the response rate was impressive, it is important to note that the participating population was not a scientifically random sample, which means every member of the desired population did not have an equal chance of participating in the survey. Other respondent demographics include:



Population Served by Fire Departments



- > Nearly half (47 percent) of respondents were from the Southeast region of the US.
- > Because response rates were so low in the South west and Western states, results should be interpreted cautiously when considering generalizing the findings of the survey.

² www.usfa.dhs.gov

¹ Fahy, Rita, et al. *Firefighter Fatalities in the United States – 2009 and U.S. Fire Service Fatalities in Structure Fires, 1977-1999.* National Fire Protection Association, 2010.



Experience in the Fire Service

- > 38.5 percent of respondents currently work in the career fire service in addition to their volunteer experience. 7.9 percent of respondents have worked in the career fire service in addition to their volunteer experience.
- > On average, respondents had 21.5 years of service. The range of years of service was between less than a year to 64 years.

Gender

> 91 percent of respondents were male.

Ethnicity

 Nearly all participants identified themselves as White (96.7 percent).



- > The largest group of respondents are 45 to 54 years of age (34.8 percent).
- > Very few respondents were under the age of 21 (2 percent).

Education

More than half (53.2 percent) of respondents had some college and 17.4 percent were college graduates.

Household Income

> 21 percent of respondents reported a household income of less than \$50,000 per year, 54 percent reported between \$50,000 and \$100,000, and 25 percent reported a household income of more than \$100,000.

FIREFIGHTER HEALTH BELIEFS

Realizing the need for special attention to health and safety issues is the first step in creating a culture that embraces strong health and safety practices. As part of the NVFC's survey, first responders were asked the following about their perceptions of their health and the health of other firefighters compared to other professions:

On average, how long do you believe firefighters live compared to the general population in the United States?



Firefighters need physical fitness more than the average worker.



In general, the physical health of firefighters in my department is...



The majority of respondents perceive the health of firefighters in their department as average or better.

However, when respondents were asked if they believed firefighters have higher rates of heart disease or cancer than the average person in the United States:

- > 78.4 percent of respondents believed that firefighters have higher rates of heart disease than the average U.S. population
- > 79.5 percent of respondents believed that firefighters have higher rates of cancer than the average U.S. population.

These statistics show that firefighters believe that they have higher rates of heart disease and cancer than the general population. In fact, the leading cause of fatality in America (and the world) is heart disease, which causes approximately one quarter of deaths annually.³ Almost half of line-of-duty firefighter fatalities result from heart attack and stroke each year. It is important to note that firefighters are victims of heart attack when they are not on the scene as well.

Additionally, more than half (67.7 percent) of respondents believe firefighters live shorter lives than the general U.S. population, and nearly all respondents agreed that firefighters need physical fitness more than the average worker. These results suggest that the fire service is well aware of the need for higher fitness and health levels than that needed for other professions.

³ Heron MP, Hoyert DL, Murphy SL, Xu JQ, Kochanek KD, Tejada-Vera B. Deaths: Final data for 2006 [PDF–2.3M]. National Vital Statistics Reports. 2009;57(14). Hyattsville, MD: National Center for Health Statistics.

GENERAL HEALTH ASSESSMENT

Survey respondents were asked to provide information about their current overall health. Their responses may have been informed by conversations with their physician (72.1 percent of respondents had been to their doctor for a routine physical in the past year) but provide a snapshot of how the respondents themselves view their own health.



Self-perceived Health Status

Most respondents reported their overall health as Good (50.6 percent). They reported an average of about three days in the last 30 that their physical health was not good.



Self-perceived Weight Status

Most respondents (74.1 percent) saw themselves as overweight. Less than a quarter of respondents saw themselves as about the right weight.



Body Mass Index (BMI) was calculated using the formula:

[Weight in pounds \div (height in inches) ²] x 703 = BMI

Categories used are those suggested by the National Institutes of Health (NIH):

Underweight = <18.5

Normal weight = 18.5-24.9

Overweight = 25-29.9

Obesity = BMI of 30 or greater

Approximately one third (34.9 percent) of respondents were in the overweight category, 52.1 percent of respondents fell within the obese categories, and only 12.6 percent of respondents were in the normal weight range according to NIH classification. Of those who are classified as overweight or obese, 71.8 percent reported that they are currently trying to lose weight. To lose weight, 56.4 percent reported that they have changed their diet with the goal of losing weight, and 64 percent reported that they have been using exercise and physical activity to lose weight. Approximately one third of American adults are obese, which is double the percentage from three decades ago.⁴ Over half of the firefighters participating in the NVFC survey were classified as obese. Americans classified as overweight or obese account for 68 percent, compared with 87 percent of respondents.⁵ Obesity is a risk factor for many chronic diseases, including heart disease, diabetes, hypertension (high blood pressure), high cholesterol, stroke, arthritis, and certain cancers.⁶ Taking steps to maintain a healthy weight through a well-rounded, nutritious diet and regular physical activity is extremely important to maintaining a healthy fire department. Addressing this risk factor can help reduce the overall risk of many of the emerging health issues within the fire and emergency services. There is a clear and pressing need for weight control programs within the fire service.

⁴ Carroll, et al. "Prevalence and Trends in Obesity Among US Adults, 1999-2008." JAMA. 2010;303(3):235-241.

⁵ Ibid.

⁶NIH, NHLBI Obesity Education Initiative. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Available online: <u>www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf</u> (PDF-1.25Mb).

CRITICAL HEALTH AND SAFETY ISSUES

The results of the NVFC survey allowed the NVFC to identify several health and safety issues that are affecting our nation's firefighters. These issues include health-related factors such as cardiovascular disease, physical activity levels, alcohol and tobacco use, diabetes, and stress. Additionally, several safety issues were identified, including safety measures utilized by fire departments, usage and policies surrounding personal protective equipment, and vehicle safety issues. As a nation, we rely on our emergency responders to protect and save lives and property in times of natural or man-made disasters and other emergencies. In order to do so, they must first be physical and mentally healthy, safe, and able to respond.

Mental Health

Most people are aware of the physical demands that first response activities place on firefighters and other first responders. But it is important to also realize the impact that fighting fires and responding to emergencies has on the mental wellbeing of emergency personnel. Firefighters and EMS providers face behavioral health risks such as anxiety, depression, burnout, and post-traumatic stress disorder, among others. Mental health cannot be separated from physical health; many mental health issues are linked to increased physical health problems. It is critical that the emergency services community recognize the importance of mental wellbeing and create a culture within the department that makes behavioral health a priority.

During the Past Week...

The responses are measured by the Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D screener is used in research and by clinicians to help individuals gauge their depression quotient. Respondents are asked about depressive behaviors or thoughts during the past week. If a respondent agrees with 4 or more of the responses, then they are considered to be in the concerned range for depression. More than one third (33.9 percent) of the survey respondents scored a 4 or more on the CES-D, placing them in this range.

Emergency responders may hesitate to seek help with mental health concerns because of fear of it being seen as a weakness. However, depression, anxiety, and other mental conditions are more common than might be expected. An estimated 26.2 percent of American adults suffer from a diagnosable mental disorder in a given year,⁷ and yet only 29 percent of people with depression reported contacting a mental health professional in the past year.⁸ The good news is that depression and mental health are some of the most treatable conditions once help is sought.⁹

⁸ Brody, et al. "Depression in the United States Household Population, 2005-2006." NCHS Data Brief, Number 7, September 2008. ⁹ Substance Abuse and Mental Health Services Administration's National Mental Health Information Center. "Mood Disorders." <u>http://mentalhealth.samhsa.gov/publications/allpubs/ken98-0049/default.asp#are</u> (Accessed August 6, 2010).

⁷National Institute of Mental Health. "Statistics." <u>http://www.nimh.nih.gov/health/topics/statistics/index.shtml</u> (Accessed August 6, 2010).

Stress

Stress is part of life, an instinctual response to pressure and dangerous situations. In the modern world, a moderate amount of stress can give individuals motivation to complete tasks. However, prolonged stress or frequent, intense stress can produce negative health consequences. Health problems can include an increased risk of obesity, heart disease, depression, anxiety, and other illnesses, as well as unhealthy behaviors such as overeating, smoking, or substance abuse.¹⁰

Firefighters face the same stressors as most other adults in addition to those unique to being a first responder. They are faced with the stress of frequent intense, potentially life-threatening situations for themselves and their department members. Volunteer firefighters are juggling families, careers, firefighting, and other responsibilities. The survey sought to learn how stress was related to the individuals' duties as a firefighter.

During the past 12 months, how much stress did you experience while carrying out your duties in the fire service?

- > More than half of respondents (54 percent) said that they experienced some or a lot of stress.
- > 37 percent of respondents said that they experenced at least a little stress, while only 9 percent said none at all.

During the past 12 months, how much did stress associated with being a firefighter interfere with your ability to perform your duties in the fire service?

- > Most survey respondents (84 percent) said a little or none at all.
- > 17 percent of respondents said that stress interfered with their ability to perform their duties some or a lot.

During the past 12 months, how much did stress associated with your home environment interfere with your ability to perform your duties in the fire service?

> Results were the same as when asked about stress related to firefighting. Most survey respondents (84 percent) said a little or none at all, and 17 percent of respondents said that stress interfered with their ability to perform their duties some or a lot.

Firefighters who may be coping with the aftermath of a disaster, including fires that result in severe injury and death, have normal reactions as they struggle with the disruption and loss caused by the disaster. Firefighters may not see themselves as needing mental health services and are unlikely to request them for fear of conveying signs of weakness. Outreach from family or department members may be necessary to seek out and provide mental health services to individuals who may be affected by a disaster.

Sleep

A good night's sleep is a simple way to reduce the risk of both disease and injury. Insufficient sleep (less than 7-8 hours per night for adults) is associated with a number of chronic diseases and conditions such as diabetes, cardiovascular disease, obesity, and depression. In addition, lack of sleep is responsible for motor vehicle and machinery-related accidents, causing substantial injury and disability each year.¹¹ Sleep-deprived people who are tested using a driving simulator or by performing a hand-eye coordination task perform as badly as or worse than those who are intoxicated.¹²

Despite the necessity of sleep to have productive and safe days, a Centers for Disease Control and Prevention study indicated 11.1 percent of American adults reported insufficient sleep or rest for all of the preceding 30 days.¹³

¹² National Institute of Neurological Disorders and Stroke. "Brain Basics: Understanding Sleep." <u>www.ninds.nih.gov/disorders/brain_basics/understanding_sleep.htm#how_much</u> (Accessed August 6, 2010).

¹³ Centers for Disease Control and Prevention. "Perceived Insufficient Rest or Sleep Among Adults – United States, 2008." (<u>www.cdc.gov/mmwr/preview/mmwrhtml/mm5842a2.htm</u>). MMWR58(42);1179-1179.

¹⁰ National Cancer Institute. "Psychological Stress and Cancer: Questions and Answers." <u>www.cancer.gov/cancertopics/factsheet/Risk/stress#r1</u> (Accessed August 6, 2010).

¹¹ Centers for Disease Control and Prevention. "Sleep and Sleep Disorders: A Public Health Challenge." <u>www.cdc.gov/sleep</u> (Accessed August 6, 2010).

NVFC survey respondents were asked about the quality and quantity of their sleep:



Most nights I get enough sleep...

Reported Problems with Sleep



- > Nearly half of respondents (48 percent) felt their sleep was inadequate.
- Less than a quarter of respondents (23.3 percent) reported sleeping well.
- > The most common sleep related problem reported was being overly tired in the morning (31.3 percent).
- > Nearly a quarter of respondents (23.8 percent) reported loud snoring or gasping during sleep, and 9.4 percent reported that their breathing stops or decreases during sleep, both of which can be symptoms of sleep apnea.
- More than a quarter of respondents reported having trouble falling asleep (26.3 percent) or staying asleep (28.2 percent)

The physical and mental demands placed on first responders often require increased concentration and focus in order to complete a call safely. In addition to the concern of vehicle and fireground accidents, lack of sleep contributes to many of the physical health concerns that afflict first responders, including heart disease. Sufficient sleep should be seen as a key part of a well-rounded, healthy lifestyle and made a priority along with exercise and healthy eating.

Disease

Findings from the NVFC survey indicate that the health issues facing firefighters are similar to those facing the American population. The issues of chronic disease and related risk factors have not only captured the attention of the fire service, but also the attention of most employers, the federal government, and the health care industry due to rising health care costs, decreased productivity, and compromised health status among employees and citizens.

Risk factors predispose individuals for certain chronic diseases and are divided into two categories: modifiable and non-modifiable. A non-modifiable risk factor, such as age, gender, or genetics, cannot be changed. Conversely, modifiable risk factors, such as physical activity, tobacco use, and diet, can be changed. Many modifiable risk factors transcend the leading causes of death and disability in the U.S. Therefore, improving one's modifiable risk factors – by increasing physical activity or making healthy food choices, for example – could decrease the likelihood of several chronic diseases.

The nature of the job of first responder brings an increased risk for many health concerns. The strenuous duties of emergency response places increased demands on firefighters' bodies, which may not be physically prepared for the strain. In addition, firefighters are normal people who have injuries and infections, family histories of disease, and other conditions not related to being a first responder.



Of those surveyed, more than a third (37.5 percent) reported high blood pressure. Blood pressure is the force of blood against the walls of the arteries. It is normal for blood pressure to rise and fall throughout the day. However, when it stays elevated over time it is called high blood pressure, or hypertension. High blood pressure is dangerous because it makes the heart work too hard and contributes to atherosclerosis (hardening of the arteries).¹⁴ Lowering blood pressure by making lifestyle changes or through medication can lower the risk of heart disease and heart attack.

In addition, 34.2 percent of survey respondents indicated that they have high cholesterol. Cholesterol is a waxy substance produced by the liver or consumed in certain foods. There are both "good" and "bad" forms of cholesterol. When there is too much "bad" cholesterol in the body, it is deposited in arteries, including those of the heart, which can lead to narrowing of the arteries, heart disease, and other complications. Making lifestyle changes such as modifying your diet, reducing your weight, and increasing your level of physical activity can help reduce high cholesterol levels. More than one in ten (13 percent) of respondents reported having either type I or type II diabetes. Almost 24 million people in the United States have diabetes, and approximately 65 percent of people with diabetes die from heart disease or stroke. Among the primary risk factors for type II diabetes are being overweight, sedentary, over the age of 45, and having a family history of diabetes. Unfortunately, people with type II diabetes can live for years without realizing that they have the disease. While people with diabetes can exhibit noticeable symptoms, such as frequent urination, blurred vision, and excessive thirst, most people diagnosed with type II diabetes do not show these overt warning signs at the time that they develop the disease. Often, type II diabetes only becomes evident when people develop one or more of its serious complications, such as heart disease, stroke, kidney disease, eye damage, or nerve damage that can lead to amputations.

Early detection is crucial to helping prevent longterm damage to the body. The sooner diabetes is detected; the sooner lifestyle changes can be made to help counter the disease. Individuals who think they are at risk of developing diabetes should take precautions, such as losing weight and eating right, to help prevent the disease. These precautions can also help lower cholesterol and blood pressure.



Family History of Disease

¹⁴ Centers for Disease Control and Prevention. "High Blood Pressure." <u>www.cdc.gov/bloodpressure/</u> (Accessed August 9, 2010.)

One of the major risk factors for most health conditions is family history of disease. While one of the only risk factors that is uncontrollable, being aware of this risk and taking measures to lead an otherwise healthy lifestyle can minimize the potential for disease. Once risks are known, individuals can work with their doctor or healthcare provider to develop a personalized wellness plan. Getting screened regularly to catch diseases at an early stage is crucial to reducing potentially life-threatening conditions.

Survey respondents were asked to provide their family history of disease. The most commonly reported family disease was high blood pressure (64.2 percent) followed by high cholesterol (41.4 percent) and diabetes (37.5 percent). More than a quarter of respondents (27.4 percent) reported a family history of heart disease.

Being aware of the risks and making changes in lifestyle now can lead to a healthier, longer life, free of cardiovascular disease, diabetes, and other conditions. Physical activity, a nutritious diet, and healthy lifestyle choices (such as not smoking) can greatly reduce the risk of all of these health issues.

Physical Activity

Regular physical activity offers many benefits to individual health. Aerobic, endurance-type activities undertaken on a regular basis will strengthen the heart and blood vessels, improve body composition, and lower blood pressure and blood cholesterol, which can help lower the risk of heart disease and other health concerns. Strength training exercises have been shown to increase the strength of muscles, maintain the integrity of bones, and improve balance, coordination, and mobility.¹⁶ In addition, strength training can help reduce the signs and symptoms of many chronic diseases, including arthritis.¹⁷ The Centers for Disease Control and Prevention recommend a minimum combination of aerobic exercise and muscle-strengthening activities, spread out over most days of each week:

AEROBIC

2 hours and 30 minutes of moderate-intensity activity (i.e. brisk walking)

OR 1 hour and 15 minutes of vigorous-intensity activity

OR An equivalent mix of moderate- and vigorous-intensity activity

STRENGTH TRAINING

Two sessions per week training all major muscle groups (legs, hips, back, abdomen, chest, shoulders, arms)

This chart represents the minimum amount of physical activity recommended to maintain a healthy lifestyle. Individuals trying to lose weight will need to follow a more rigorous fitness schedule.

It is possible to meet the CDC's guidelines for exercise by integrating physical activity into leisure time activities. For instance, dusting, vacuuming, and gardening are considered light-intensity activities; lawnmowing, scrubbing floors, and washing windows are considered moderate-intensity activities; and moving furniture, playing singles tennis, and jogging are considered vigorous-intensity activities. Realizing that less time needs to be spent on moderate- and vigorous-intensity activities will also help maximize the amount of time allotted for exercise.¹⁸

All exercise does not have to be performed at once. Even breaking cardio and strength training sessions into ten minute increments can meet the require-

¹⁷ Centers for Disease Control and Prevention. "Growing Stronger - Strength Training for Older Adults." <u>www.cdc.gov/physicalactivity/growingstronger/index.html</u> (Accessed August 9, 2010).

¹⁸ Centers for Disease Control and Prevention. "How much physical activity do I need?" www.cdc.gov/physicalactivity/everyone/guidelines/adults.html (Accessed August 9, 2010).

¹⁶ Centers for Disease Control and Prevention. "Physical Activity and Health." <u>www.cdc.gov/physicalactivity/everyone/health/index.html</u> (Accessed August 9, 2010).

ments. As long as the workout lasts at least 10 minutes and makes the heart pump faster, it counts as aerobic exercise. For health benefits, muscle strengthening activities need to be done until it is difficult to do another repetition without help.¹⁹

While some volunteer departments might not have fitness requirements in the department, it is of critical importance for first responders to be healthy and fit at or above national recommendations. Firefighters'

bodies are put under extreme amounts of strain; they are exposed to high temperatures, potentially toxic fumes, and regularly lift heavy weight. Regular strength and aerobic training can help reduce the number of injuries on the fire ground. In addition, maintaining a fitness routine helps reduce high blood pressure and high cholesterol and reduces the risk for many of the diseases to which first responders are susceptible.

The NVFC survey asked respondents about their weekly exercise routines outside the fire station:



Exercise Outside the Fire Station, Most Weeks

Nearly a quarter (24.4 percent) reported exercising most days outside of the station. However, 64 percent of participants reported exercising outside of the station never or only some days.



Believe Exercise Equipment at their Station is Adequate



More than a third of respondents (38.8 percent) reported that they never exercise at their fire station, even though half of respondents reported having weights (54.3 percent) and/or cardio equipment (52.2 percent) at their fire station. More than a third (37.6 percent) of respondents reported their station had no exercise equipment. Nearly a third of respondents considered the exercise equipment at their fire station inadequate. Volunteer departments may not have adequate – or any – equipment in the station due to lack of funds or availability of space.

Tobacco Use

Tobacco use is the single most preventable cause of disease, disability, and death in the U.S. The use of tobacco products accounts for more than 443,000 deaths annually; an additional 8.6 million people suffer from chronic illness caused by smoking.²⁰

¹⁹ Ibid.

²⁰ Centers for Disease Control and Prevention. "Tobacco Use: Targeting the Nation's Leading Killer." www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2010/tobacco_2010.pdf (Accessed August 9, 2010).

Approximately 10 percent of survey respondents reported that they are current cigarette users, and about 12 percent use smokeless tobacco. However, it is important to note that individuals tend to underreport negative behaviors.

Cigarette Use

- > 69.5 percent of respondents reported ever having tried cigarettes.
- > Only 10.1 percent of respondents reported being current smokers.
- > These findings are consistent with the respondent's perception of the prevalence of smoking in their department.



What Percent of Your Department Uses Cigarettes?

Smokeless Tobacco

- > 34.1 percent of respondents reported ever using chewing tobacco, snuff, or dip.
- > 11.9 percent of respondents reported currently using chewing tobacco, snuff, or dip.

What Percent of Your Department Uses Smokeless Tobacco

Smoking and using smokeless tobacco increases the chances of getting many different forms of cancer, as well as being a risk factor for other chronic diseases. Lung cancer is the most common kind of cancer caused by smoking. A smoker is at greater risk of getting cancer of the lips, mouth, throat, or voice box. Smokers also have a higher risk of getting esophagus, stomach, kidney, pancreas, cervix, bladder, and skin cancer. Smoking is a major risk factor for cardiovascular disease. If smokers have heart or blood vessel problems and they smoke, they are at even greater risk of having continued or worse health problems. Cigarette smoke increases blood clotting and may damage the lining of the heart's arteries and other blood vessels. Smokers are at high risk for lung disease; the younger a person is when he or she begins smoking, the greater the risk of getting lung disease.²¹

Despite the risks, thousands of young people and adults being smoking every day. About 1,000 youth and 1,800 adults begin smoking on a daily basis.^{22,23} It is important to create a no-smoking culture at the fire station to encourage smokers to quit and discourage anyone from starting to smoke.

There are many organizations and local, state, and federal government policies that prohibit smoking in buildings. These policies create clean indoor air for non-smokers and underscore the need for policies to support healthy living. Clinical interventions are available to people who want to stop smoking. Many of these interventions are initiated with the assistance of a physician who can prescribe nicotinereplacement therapies and provide access to "help lines" to assist the smoker in quitting.



²¹Centers for Disease Control and Prevention. "Smoking and Tobacco Use: Health Effects of Cigarette Smoking." <u>www.cdc.gov/tobacco/</u> <u>data_statistics/fact_sheets/health_effects/effects_cig_smoking/#children</u> (Accessed August 9, 2010).

²² Substance Abuse and Mental Health Services Administration. "Results form the 2008 National Survey on Drug Use and Health: Detailed Tables." (http://oas.samhsa.gov/NSDUH/2K8NSDUH/tabs/Sect4peTabs10to11.pdf).

²³ Substance Abuse and Mental Health Services Administration. "Results form the 2006 National Survey on Drug Use and Health." (<u>http://oas.samhsa.gov/NSDUH/2K7NSDUH/tabs/Sect4peTabs10to11.pdf</u>).

Alcohol Use

Heavy alcohol consumption can increase the risk of many health problems, including liver cirrhosis, cancers of the upper gastrointestinal tract, injury, violence, and death. It can also increase the risk of hypertension, or high blood pressure, which in turn increases the risk of heart disease, stroke, congestive heart failure, kidney disease, and blindness. Even less than heavy alcohol consumption (more than one drink per day for women and two for men) is associated with significant risks, including motor vehicle accidents, injuries, high blood pressure, stroke, violence, some types of cancer, and suicide.

Of the NVFC survey respondents, two thirds of respondents (66.7 percent) had consumed alcohol in the past 30 days. The Dietary Guidelines for Americans defines drinking in moderation as having no more than one drink per day for women and no more than two drinks per day for men. This refers to the amount consumed on any single day and is not intended as an average over several days. A standard drink is equal to 13.7 grams of pure alcohol or:²⁵

- > 12-ounces of beer
- > 8-ounces of malt liquor
- > 5-ounces of wine
- > 1.5-ounces or a "shot" of 80-proof distilled spirits or liquor (gin, rum, vodka, whiskey, etc.)

Binge drinking was defined as 5 or more drinks on an occasion. Of those responding to the question, nearly half (48 percent) reported binge drinking one or more times in the past 30 days and 12.4 percent reported 5 or more episodes of binge drinking in the



Number of Binge Drinking Episodes in Past 30 Days

past 30 days. This is more than double the national average of those reporting binge drinking in the past 30 days. ²⁶

Of those responding to the question, 5 percent reported having driven a vehicle when they believe they had "perhaps had too much to drink." Only 0.3 percent of respondents reported any impairment in their duty responsibilities related to alcohol use. Although these percentages are low, future efforts should be focused on reducing this percentage to zero.

The effects of alcohol are further reaching than in the moment that a firefighter is impaired on the job. Excessive alcohol use is a risk factor for a myriad of diseases and illnesses. In order to perform their jobs well today and in the future, firefighters should not drink or drink only in moderation.

Injury

Twice as many firefighters are injured performing fireground duties than civilian injuries each year.²⁷ Firefighting is a dangerous job, and the risk of injury or possibly death exists on every call – and even during training. Each year, tens of thousands of firefighters are injured while fighting fires, rescuing people, responding to emergency medical incidents, responding to hazardous materials incidents, or training for their job.²⁸ While many of these injuries are minor, some are debilitating. In addition to the personal toll that injury takes, the fire service is weakened when first responders are unable to continue their work.

²⁴ Source: U.S. Department of Health and Human Services and U.S. Department of Agriculture. Dietary Guidelines for Americans 2005, Chapter 9: Alcoholic Beverages.

²⁵U.S. Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2002, September 4). "Results from the 2001 National Household Survey on Drug Abuse: Volume I. Summary of National Findings." (Office of Applied Studies, NHSDA Series H-17 ed.) (BKD461, SMA 02-3758) Washington, DC: U.S. Government Printing Office.

²⁶ Fire-Related Firefighter Injuries in 2004. U.S Department of Homeland Security, Federal Emergency Management Agency, United States Fire Administration, February 2008.

²⁷ Ibid.

²⁸McElroy, Frank E., ed. Accident Prevention Manual for Industrial Operations: Engineering and Technology. Chicago: National safety Council, 1980. Following safety and equipment codes set forth by groups such as the National Fire Protection Association and focusing on proper training can help reduce injuries. However, at its core, firefighting is a hazardous activity and will always bear the risk of injury and death.

Injuries in the Past 12 Months

Nearly a quarter of NVFC survey respondents (20.8 percent) reported having sustained a fire service related injury in the past 12 months. Most commonly, injuries occurred on the fire ground (24.9 percent) or during training (17.1 percent). Of those who were injured, only 8.5 percent reported completing an injury report for their department and only 6.5 percent reported their injury to workers compensation. The injury data collected is based on those who responded that they are current volunteer firefighters (870 individuals) and who reported an injury in past 12 months. Totals do not equal 100 percent as not all those injured indicated circumstances.

There is a need to identify safety issues and their associated best practices in an effort to mitigate the risk of injury. The Occupational Safety and Health Administration (OSHA), along with business and industry leaders, have advocated safety programs for more than three decades as a method not only of protecting oneself in the workplace, but also at home, and at leisure. Safety practices include engineering out the problem, providing personal protective equipment when a safety problem cannot be engineered out, and using administrative procedures (e.g., training, and standard operating practices) to supplement personal protective equipment and engineering safeguards.²⁹

Leadership of the organization must remember that establishing a culture of safe operations is the primary way to instill a constant awareness of personal safety and practices. As noted above, this arises through an attempt to "engineer-out" as many hazardous situations as possible, the development or enforcement of policies and procedures that indicate the proper way to conduct various tasks and when to avoid a potentially dangerous situation, and training on when and how to use various tools and related personal protective equipment. This approach, used in the safety engineering discipline, has been the primary method used by OSHA to manage accidents, injuries, and illnesses in the general workplace and can easily be adopted into the fire service. In addition, the National Institute of Occupational Safety and Health, which investigates all line-of-duty deaths of firefighters, continually finds the lack of standard operating procedures, proper supervision, training, and the use of personal protective equipment as the primary contributors of firefighter lineof-duty deaths.³⁰

Similarly, there is a concern regarding over-aggressiveness on the fireground. This relates to two major issues.

- 1. The attempt to enter a property or incident scene for rescue or firefighting when there is no potential for saving a life or the structure's damage from the fire is too significant to be handled swiftly and easily without putting firefighters in considerable harm's way - in other words, risking more than there is to save.
- 2. The same can be said for responding at too fast a rate of speed for road, highway, or incident conditions. Speeding (over-aggressive driving) is a major contributor to firefighter deaths and injury.

All of these situations are local in nature and solution. While there are standard operating guidelines that are generic in scope and promoted nationally, they must be modified to the local community, matched to local issues and problems, and pre-planning information must be integrated into the development of standard operating practices to provide as safe a workplace.

²⁹Preventing Deaths and Injuries of Fire Fighters using Risk Management Principles at Structure Fires. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, July 2010.

Emergency Vehicle Operations

Year after year, approximately 25 percent of the firefighters who are killed in the line of duty are responding to or returning from incidents, with the majority of the fatalities resulting from vehicle crashes. This represents the second leading cause of firefighter line-of-duty deaths.³¹

Investigations have found a consistent pattern of driver error, vehicle maintenance, speed, and the lack of seatbelt use to be among the contributing factors. Additionally, numerous firefighters have died working at emergency sites after being struck by vehicles. Death, although the most devastating effect, is only one area of concern. Collisions cause injuries, which cost much in terms of long-term pain, suffering, and expense. These issues affect operations of emergency service organizations. No one becomes a first responder to have a collision that disables them, causes death, or costs the community more money. Each individual has a personal responsibility in the safe operation of emergency vehicles.

One of the hot topics in vehicle safety is seatbelt use. Simply buckling a seatbelt can save lives. While most NVFC survey respondents (80 percent) reported always wearing their seatbelt on a call, it is important to remember the negative behaviors are typically underreported and that any firefighter not buckling up is too many. Nearly all respondents reported always (83.5 percent) or often (9.4 percent) wearing their seatbelts in their personal vehicles on a day to day basis. Again, a seatbelt should be worn every time a responder (or anyone) gets into a vehicle, whether on duty or not.

Seatbelts save over 13,000 lives each year.³² Seatbelts are the best defensive driving tactic that an individual has to protect them in case of a crash. Airbags alone won't work – in fact, if someone is not wearing a seatbelt and is thrown into a rapidly opening airbag, the impact can cause severe injury or death.³³

The NVFC and the USFA developed the *Emergency Vehicle Safe Operations for Volunteer and Small Combination Emergency Service Organizations* guide to help prevent firefighter deaths and injuries from vehicle accidents. This educational handbook includes an emergency vehicle safety self-assessment, examples of standard operating guidelines, and behavioral motivation techniques to enhance emergency vehicle safety. The guide can be accessed at www.nvfc.org/health_safety.

SCBA Use

Personal protective equipment (PPE) is designed as a second level of protection when hazardous situations cannot be avoided. For firefighters, it is designed both to prevent injury or illness (by limiting the impact of a hazard on the body), and to ensure loss reduction (by lessening the impact of injury or illness when it occurs). Today's PPE for firefighters is capable of providing full body protection and has been known to save lives. However, proper care, maintenance, and use of the PPE is critical to optimal performance.

A key piece of PPE is the self-contained breathing apparatus (SCBA). Proper use of SCBAs protects first responders from inhaling potentially dangerous smoke, debris, and toxins, which could otherwise cause significant harm to the lungs, respiratory system, and general health. Unfortunately, almost half (41.9 percent) of NVFC survey respondents reported that they do not always use their SCBAs during a fire. Eleven percent of respondents almost never and 23.6 percent of respondents only sometimes use their SCBAs during salvage and overhaul. SCBA must be used throughout hazardous and potentially hazardous situations in order to protect first responders.

³⁰ Firefighter Fatalities in the United States in 2008.U.S. Department of Homeland Security, Federal Emergency Management Agency, U.S. Fire Administration, September 2009.

³¹ National Highway Traffic Safety Administration. "The top 5 things you should know about buckling up." <u>http://trafficsafetymarketing.gov/ bua/brochures/general</u>/. (Accessed August 10, 2010).
³²Ibid.



In order for SCBAs (and all PPE) to be effective, it must be properly maintained and replaced when necessary. About five percent of respondents reported that their SCBAs do not meet the current regulatory standards. First responders should follow their manufacturer's instructions for cleaning their SCBA The U.S. Department of Labor Occupational Health and Safety Administration also provides step-by-step respirator cleaning procedures at

www.osha.gov/pls/oshaweb/owadisp.show_ document?p_table=STANDARDS&p_id=9782.



SCBA Use, Salvage & Overhaul

MAKING HEALTH AND SAFETY A PRIORITY IN THE DEPARTMENT

Department leadership is often working with individuals with a variety of schedules, backgrounds, and lifestyles. Implementing a department health and wellness program and safety initiative can be daunting or even seemingly impossible. However, there are many resources available at the local and national level to help implement your department's health and safety campaign.

The Wellness Council of America has developed guidelines for building a comprehensive health and wellness initiative. These steps can be applied to health, wellness, and safety issues in the fire service as follows:

- > Step I. Secure senior fire service leadership support. Active endorsement and promotion by senior fire service leadership is necessary for the development of a sustainable and successful health, well ness, and safety program. A clear and ongoing message of support from senior officials will legitimize the importance and initiatives of the program, as well as encourage full participation among the ranks. The goals and objectives that are established for the health, wellness, and safety program must align with the short- and long-term strategies of the fire service. If not, firefighters and fire service leaders will view the program as irrelevant and unimportant. In order to secure and maintain support for the program, senior leadership must embrace the program, actively engage in the program, and clearly communicate its tangible benefits.
- Step II. Create a cohesive health, wellness, and safty committee. The committee will help maintain and expand the initiative within your department and/or region. The committee members' passion and dedication to the goals of the health, wellness, and safety program will help ensure its success.
- Step III. Create an operating plan. All quality orgnizational initiatives operate from detailed, focused, outcome-oriented plans. The regional health, wellness, and safety teams should work

together to establish an effective plan that includes:

- SMART objectives (specific, measurable, achievable, realistic, time specific)
- Implementation strategies and timeline
- Marketing and communication procedures
- Budget
- Evaluation plan
- Future vision of the program
- Step IV. Choose appropriate action. Funding resources may determine the scope of the health, wellness, and safety program. With sufficient funding, multiple avenues to promote and rein force the importance of the program can be implemented. Any program developed and delivered to fire service personnel should incorporate, either through awareness or action, the following preventive measures:
 - Nutrition: Eating a healthy, well-rounded diet can decrease the risk of many diseases, decrease high blood pressure and cholesterol, and increase energy and concentration.
 - **Physical Activity:** Engaging in regular physical or leisure activity produces health benefits and lowers the risk for coronary heart and other diseases.
 - **Safety:** Taking steps to make safety a priority, including always buckling up and donning adequate PPE.
- Step V. Create a supportive environment. This is a long-term process that requires dedication to health, wellness, and safety values, creating a culture that supports safe and healthy behaviors. In a supportive environment, people believe that the organization provides them with encouragement, opportunity, and rewards for healthy lifestyles and safety practices. The spirit that results is contagious. Suggested strategies for creating a supportive environment include:
 - Vending machines with healthy choices
 - Physical fitness areas/equipment
 - No smoking policies
 - Relationships with local fitness clubs/networks for discounted memberships
 - Healthy lifestyle and safe practices award recognition at conferences, awards banquets, etc.

- Introduction of interventions and safety procedures in firefighter orientation packets

> **Step VI. Consistently evaluate outcomes.** Determine what has worked and what hasn't and use the information you collect to gain support for maintaining or improving the program.

Many national programs exist to assist departments in implementing a department health, wellness, and safety program. By educating department members about these health, wellness, and safety programs and initiatives and by making a dedicated effort to improving health and safety practices at the station, departments nationwide are made stronger and more ready to serve their communities.

NVFC Volunteer Firefighter Health and Safety Priorities

The health and safety of our nation's volunteer fire service is a primary concern for the NVFC. Each year, first responders are killed or injured due to factors that could have been avoided with the proper safety and health precautions. To help keep firefighters and emergency personnel strong and prevent tragedies, the NVFC released a series of health and safety priorities to more effectively address the critical health and safety issues impacting the volunteer fire service.

The volunteer firefighter health and safety priorities provide departments with guidance on key issues that need to be addressed in order to keep department members safe and eliminate cases of preventable injury and death. The priorities are set forth in a series of B.E.S.T. practices for the fire and emergency services, divided into four main focus areas:

Behavior

- > Support the physical, emotional, and mental well being of all personnel.
- > Operate all emergency apparatus and privately owned vehicles to conform to the highest road safety standards and enforce the use of seatbelts.
- > Develop, practice, and enforce recommended health and safety standards for all personnel.
- Monitor and ensure that all active emergency scenes maintain the utmost level of safety and fire ground accountability.

Equipment

- > Provide and require the proper use of full personal protective equipment.
- > Maintain all equipment based on established safety recommendations.

Standards and Codes

- > Encourage the use of all smoke, fire detection, and fire suppression devices to include fire sprinkler systems in all structures.
- Vigorously enforce all fire safety codes and ordinances.
- > Obtain apparatus and equipment that meet nation al safety standards.

Training

- > Utilize fire training programs that conform to the highest professional standards.
- > Operate a safe fire training ground at all times.
- > Establish, maintain, and deliver fire safety programs for all age groups.

Departments are encouraged to adopt and adhere to these B.E.S.T. Practices to keep their personnel safe. Find resources and download the B.E.S.T. poster to display in your department at www.nvfc.org/health safety.

NVFC Heart-Healthy Firefighter Program

In a proactive effort to reduce the number of firefighters dying from or affected by heart disease, the NVFC launched the Heart-Healthy Firefighter Program to promote fitness, nutrition, and health awareness within America's fire and emergency services. It is the nation's only heart attack prevention and awareness campaign targeted at all firefighters and EMS personnel, both volunteer and career.

As part of the program, the NVFC provides tools and resources to assist firefighters, EMS personnel, and their families in becoming and staying hearthealthy. More information about each of these resources is available on the Heart-Healthy Firefighter web site at <u>www.healthy-firefighter.org</u>. Some of the tools and resources include:

- > Adopt the Program: The Adopt the Program initiative allows firefighters and departments to register for free with the Heart-Healthy Firefighter Program to access specific tools and information that will help them implement and maintain a heart-healthy lifestyle. Departments are rewarded for member participation.
- Sponsorship Toolkit: Securing Sponsors for Department Health and Wellness Programs takes departments through the steps needed to identify, reach out to, and follow up with potential sponsors and donors of a department health and wellness program. The toolkit contains sample letters and customizable templates to make reaching out to and following up with sponsors even easier. It also includes tips, talking points, and ideas to help departments through the process.
- Heart Fair: The Heart-Healthy Firefighter Program brings its interactive Health Fair to emergency service trade shows across the country. The Health Fair provides resources and information on health and safety as well as free health screen ings for first responders.
- > Web Site: The Heart-Healthy Firefighter Program web site at www.healthy-firefighter.org contains resources to help first responders, their departments, and their families on the road to heart health. The web site offers information on heart basics, fitness, nutrition, and lifestyle choices, as well as tools to help implement and maintain a heart-healthy lifestyle, including the Fired Up For Fitness Challenge, heart-healthy recipes, and motivational firefighter success stories.
- > Fitness Challenge: The Fired Up For Fitness Challenge is an interactive program where firefighters and EMS personnel log their hours of physical activity each day to reach certain benchmark goals over the course of a year. Participants receive incentive rewards as they reach each benchmark.
- > Cookbook: The Heart-Healthy Firefighter Cookbook includes over 60 delicious yet healthy recipes that firefighters and EMS personnel can use either at home or at the station. Many of the recipes were submitted by firefighters who already have committed to becoming heart-healthy.

- > Resource Guide: The Heart-Healthy Firefighter Resource Guide is available both in print and for free download on the Heart-Healthy Firefighter web site. The Guide contains all the information needed to start on the path to a heart-healthy lifestyle. Sections cover essential heart-health information, risk factors, and lifestyle choices.
- E-news: The Heart-Healthy Firefighter E-news is a monthly electronic newsletter that contains program and health news, tips for a heart-healthy lifestyle, upcoming events, and more.
- > Health and Wellness Advocate Workshops: Participants of the NVFC's free Health and Wellness Advocate Workshops learn basic principles behind developing a sound health and fitness program and how they can become advocates for health and wellness within their department. As Health and Wellness Advocates, they will encourage and motivate their fellow fire and emergency personnel to adopt heart healthy behaviors.

Put It Out

In 2009, the NVFC developed the Put It Out smoking cessation campaign to help first responders quit smoking and stay quit. The Put It Out campaign web site provides tools and resources for firefighters and emergency personnel who are ready to take the steps to stop smoking and lead a healthier, smokefree lifestyle. The web site contains sections to assist individuals in quitting smoking, family members in supporting first responders who are quitting, departments in establishing a no-smoking policy and smoking cessation program, and state associations in encouraging their members to adopt a smoke-free lifestyle. Tools and resources include a 'quit calendar,' steps for how to quit, statistics and facts about smoking, sample documents such as press releases and no-smoking policies, outreach letters, motivational tools, and more. Visit the site at www.healthy-firefighter.org/putitout.

Health and Wellness Guide for the Volunteer Emergency Services

The prevalence of cardiovascular illness and deaths and work-inhibiting strains and sprains among firefighters illustrates the need for a comprehensive health and wellness program in every department. Yet department leaders often struggle to implement a program due to reasons such as resistance or lack of motivation from members, the costs associated with implementing a program, and the lack of welldefined requirements. This Guide demonstrates ways to overcome these obstacles, provides direction for developing and implementing a department program, and highlights several existing health and wellness programs and how they have maintained their success over time. View the guide at <u>www.nvfc.org/</u> files/documents/HealthWellnessGuide-2009.pdf.

Emergency Vehicle Safe Operations

Emergency Vehicle Safe Operations for Volunteer and Small Combination Emergency Service Organizations is the result of a cooperative project between the United States Fire Administration (USFA) and the National Volunteer Fire Council (NVFC) and includes recommendations from the USFA and the Department of Transportation Intelligent Transportation System. With vehicle accidents the second leading cause of line-of-duty firefighter fatalities each year, it is clear that this is an issue that needs to be discussed and acted upon.

Emergency Vehicle Safe Operations contains best practices, motivational strategies, and standard operating guidelines to help volunteer and small combination emergency service organizations mitigate the fatalities, injuries, costs, and reduced efficiency associated with vehicle crashes. It includes specific implementation strategies for the volunteer emergency services based on the recommendations from the USFA Fire Service Emergency Vehicle Safety Initiative. Download the guide at

www.nvfc.org/files/documents/EVSO_2009.pdf.

Everyone Goes Home

Recognizing the need to do more to prevent line-ofduty deaths and injuries, the National Fallen Firefighters Foundation launched a national initiative to bring prevention to the forefront. Everyone Goes Home consists of 16 major life safety initiatives that give the fire service a blueprint for making changes. Visit the site at <u>www.everyonegoeshome.org/</u>.

IAFF/IAFC Fire Service Joint Labor Management Wellness-Fitness Initiative

The Fire Service Joint Labor Management Wellness-Fitness Task Force is a partnership between the International Association of Fire Fighters (IAFF) and the International Association of Fire Chiefs (IAFC) to improve the wellness of uniformed fire department personnel. The Task Force issued a holistic, non-punitive model wellness and fitness program for the fire service, called the Wellness-Fitness Initiative (WFI). More information is available at www.iaff.org/hs/wfiresource/default.html and www.iafc.org/wfi.

IAFF/IAFC/ACE Peer Fitness Training Certification Program

The International Association of Fire Fighters (IAFF), the International Association of Fire Chiefs (IAFC), and the American Council on Exercise (ACE) developed a certification program to identify firefighters who have demonstrated the knowledge and skills required to design and implement a fitness program, improve the wellness and fitness of their departments, assist in the physical training of recruits, and assist the broader community in achieving wellness and fitness. A five-day workshop is available to assist the candidate in preparing for the PFT examination.

Peer Fitness Trainers (PFT) - This certification program helps to identify firefighters who have demonstrated the knowledge and skills required to:

- > Design and implement fitness programs.
- > Improve the wellness and fitness of their departments.
- > Assist in the physical training of recruits.
- > Assist the broader community in achieving wellness and fitness (e.g., fitness programs in schools).

Home study materials for the peer fitness trainer (PFT) certification program are available. This certification, developed together by the IAFF, IAFC, and the American Council on Exercise (ACE), provides fire department personnel with the knowledge needed to develop exercise programs for other department personnel. PFTs also learn WFI testing protocols, how to proctor the CPAT and are helpful in promoting wellness and fitness throughout their departments. For more information on the PFT course, visit <u>www.iaff.org/hs/PFT/PeerIndex.htm</u>.

ACE also offers continuing education options to compliment the certification; see www.acefitness.org/getcertified/certification_iaff.aspx.

IAFC Safety, Health, and Survival Section

The IAFC Safety, Health and Survival Section was established to provide a specific component within the IAFC to concentrate on policies and issues relating to the health and safety of firefighters. The IAFC considers health and safety to be one of the most important areas of concern for all fire chiefs and has initiated or participated in a long list of programs related to health and safety. The establishment of this section is a reflection of the importance that IAFC attaches to the responsibility of protecting the fire service's most valuable resource - its personnel.

National Fire Protection Association

The mission of the international nonprofit NFPA, established in 1896, is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. The world's leading advocate of fire prevention and an authoritative source on public safety, NFPA develops, publishes, and disseminates more than 300 consensus codes and standards, including those for firefighter health and safety. For more information, visit <u>www.nfpa.org</u>.

CONCLUSION

Everyone agrees: getting and staying healthy is a great idea. It is especially important for firefighter and EMS providers, whose intense jobs put their bodies under tremendous stress. But there is a gap between knowing that health is important and actually creating a culture of health and safety in the fire and emergency services.

Volunteer firefighters are balancing careers, family, firefighting, and other responsibilities. Implementing a mandatory health and safety program can be challenging. However, leadership can create an example and set the tone in a department or station. By instilling sound safety practices and encouraging healthy lifestyles in new recruits up to life-long members, the entire community is benefited through a strengthened department.

The issues that are affecting firefighters today have been apparent for years. New information and resources have indicated that the culture of change must take place now in order to protect the fire service. Major issues that must be addressed are:

- > Mental Health
- > Disease
- > Physical Activity
- > Tobacco Use
- > Alcohol Use
- > Injury
- > Seatbelt Use
- > SCBA Use

The results of the NVFC survey indicate that firefighters are generally aware of the risks they face and their areas for improvement. As noted, change must start from leadership in order to make health and safety pervasive in the fire service. Through the resources available from national organizations such as the NVFC, IAFC, IAFF, NFFF, and NFPA, as well as the U.S. Fire Administration, these results can be achieved. The challenge is great, but the reward is far greater.