



BEST PRACTICES TO IMPROVE SAFETY AND HEALTH OUTCOMES

For Full-time and Volunteer Firefighters
Board of Firefighting Personnel Standards and
Education

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BEST PRACTICES TO IMPROVE SAFETY AND HEALTH OUTCOMES FOR FULL-TIME AND VOLUNTEER FIREFIGHTERS

INTRODUCTION

Studies suggest firefighters are at an increased risk for many health threats, such as heart attacks, cancer and suicide. According to Battalion Chief Matthew Haerter with the Kenosha Wisconsin Fire Department, “Research has been able to now prove and painfully illustrate that all career and volunteer firefighters are at greater risk for work-related cardiovascular events and cancer diagnosis than the typical civilian,” (Horn, 2017: p. A9). This report seeks to provide the Indiana fire service with resources and best practices to proactively combat such health and wellness concerns. To ensure best practices are established and implemented in the fire service, it is critical fire departments establish risk management systems. Data suggests fire departments with risk management systems have fewer injuries and reduced costs from workers compensation claims (Poplin, Griffin, Pollack Porter, Mallett, Hu, Day-Nash, & Burgess).

CARDIOVASCULAR HEALTH

Substantial evidence suggests firefighting can lead to significant cardiovascular strain that may cause sudden cardiovascular events such as heart attacks. According to the National Institute for Occupational Safety and Health (NIOSH), “Firefighters are at risk of dying on the job from preventable cardiovascular conditions (Preventing Firefighting Fatalities, 2007: p. 3). Specifically, the report notes “sudden cardiac death represents the most common cause of a [firefighter] fatality” (Preventing Firefighting Fatalities, 2007: p. 3).

To reduce the risk of cardiovascular disease or deaths in the fire service, NIOSH recommends fire departments and firefighters follow established medical screening guidelines, adopt risk reduction measures during firefighting operations and develop and participate in comprehensive wellness/fitness programs (Preventing Firefighting Fatalities, 2007).

NIOSH BEST PRACTICES TO REDUCE CARDIAC EVENT RISK FACTORS

1. Implement a comprehensive wellness/fitness program for firefighters to reduce risk factors for cardiovascular disease and improve cardiovascular capacity.
2. Ensure adequate staffing levels for operations to prevent over-exertion.
3. Provide medical evaluations to ensure candidates and members are capable of performing job tasks with minimal risk of sudden incapacitation.

4. Ensure physicians conducting the medical evaluations are knowledgeable about the physical demands of firefighting, the essential tasks of firefighting and the consensus guidelines developed by the fire service.

To learn more about NIOSH best practices, read "[NIOSH Alert: Preventing Fire Fighter Fatalities Due to Heart Attacks and Other Sudden Cardiovascular Events.](#)"

CARCINOGEN EXPOSURE

In 2015, NIOSH published its findings from a five-year study of more than 30,000 firefighters across the country "to better understand the potential link between fire fighting and cancer," (Cancer Among U.S. Fire Fighters: p. 1). The report found firefighters had higher rates of certain cancers compared the general U.S. population. The study found firefighters had an increased risk of being diagnosed with, and dying from, cancer. The most common forms of cancer impacting firefighters were digestive, oral, respiratory or urinary cancer. The study also found firefighters were twice as likely as the general population to be diagnosed with malignant mesothelioma, a type of cancer caused by asbestos exposure.

Fire departments should implement proactive measures, such as reducing exposure to carcinogens, in order to mitigate the risk of developing cancer. In 2018, the International Association of Fire Chiefs' Volunteer and Combination Officers Section (VCOS) and the National Volunteer Fire Council (NVFC) released the "[Lavender Ribbon Report](#)," which provides specific actions firefighters can take to reduce risk factors of cancer in the fire service.

BEST PRACTICES TO REDUCE EXPOSURE TO CARCINOGENS, EXCERPTS FROM THE LAVENDER RIBBON REPORT

1. Full personal protective equipment (PPE) must be worn throughout the entire incident, including a self-contained breathing apparatus (SCBA) during salvage and overhaul.
2. Following exit from the immediately dangerous to life or health and while still on air, firefighters should begin immediate gross decontamination of PPE using soapy water and a brush if weather conditions allow. PPE should then be placed into a sealed plastic bag and placed in an exterior compartment of the rig, or if responding in personally owned vehicle, placed in a large storage tote, thus keeping the off-gassing PPE away from passengers and self.
3. Exposed areas of the body (neck, face, arms and hands) should be wiped off immediately using wipes to remove as much soot as possible from head, neck, jaw, throat, underarms and hands.
4. Change clothes and wash the garments after exposure to products of combustion or other contaminants. Do this as soon as possible or isolate in a trash bag until washing is available.

5. Shower as soon as possible after being exposed to products of combustion or other contaminants. “Shower within the hour.”
6. PPE, especially turnout pants, must be prohibited in areas outside the apparatus floor (i.e., kitchen, sleeping areas, etc.) and never in the household.
7. Wipes, or soap and water, also should be used to decontaminate and clean apparatus seats, SCBA and interior crew area regularly, especially after incidents where personnel were exposed to products of combustion.

To learn more about best practice to reduce exposure to carcinogens, visit the following outside studies and reports:

1. Emergency Reporting - [8 Firefighter Occupational Cancer Prevention Best Practices to Implement at Your Station](#)
2. [VCOS and NVFC Lavender Ribbon Report: Best Practices for Preventing Firefighter Cancer](#)
3. [NIOSH Firefighter Resources](#)

SUICIDE PREVENTION

In 2014, the Substance Abuse and Mental Health Services Association reported 42.5 million Americans experience some form of mental illness each year (NSDUH Report). Distinct from the general population, “firefighters, emergency medical technicians (EMTs), and rescue personnel experience a number of work-related stressors and repeated exposure to traumatic events that can put them at even greater risk of suffering from behavioral health issues, such as anxiety, depression, burnout, PTSD, addiction, and suicidal thoughts,” (U.S. Fire Administration, 2016: p. 31).

A 2014 report by the National Fallen Firefighters Foundation reports “that suicide occurs when three factors intersect within an individual and his or her relationship to the surrounding environment: a thwarted sense of belonging, a perception that he or she is a burden, and, most critically, the capacity to engage in lethal action,” (p. 3). However, the report makes the important distinction that “the capacity to engage in lethal action is not simply the possession or access to lethal means....It is even more the capability to overcome our powerful natural instincts toward self-preservation to suppress fear of pain and death..” (p.3). This nuance is critically important to understanding, and preventing, suicide in the fire service, as “learning to confront fear and accept their own mortality” is an “inescapable consequence” of the fire service (p.3). In essence, the report notes, “it may well be that firefighting in itself does not increase a firefighter’s risk for suicide,” but rather, a firefighter’s “capacity to actually take that final action may be greater,” than the general population’s capacity (p.3).

BEST PRACTICE TO IMPROVE SUICIDE PREVENTION, ACCORDING TO THE NATIONAL WILDFIRE COORDINATING GROUP

1. Learn the warning signs of someone who is considering suicide.
2. If concerns arise, don't be afraid to ask someone if they are suicidal. Know the risk factors that may lead to suicidal tendencies and thoughts.
3. Remove the stigma. It's ok to talk about suicide and mental health.
4. Empower staff with the tools, resources and knowledge to address suicide and help those in need.
5. Don't be afraid to seek help. Individuals DO NOT have to be suicidal to call the Lifeline (1-800-273-8255). This resource is used to discuss substance abuse, loneliness, fear, illness, relationships and other issues that impact mental wellness.
6. Check-in even when feeling good. Seeking professional help even during good times maintains consistent, good mental health.

To learn more about mental health best practices visit these outside studies and reports:

1. [Confronting Suicide in the Fire Service: Strategies for Intervention & Prevention](#)
2. [CDC - Taking Care of Your Emotional Health](#)
3. [U.S. Fire Administration - Critical Health and Safety Issues in the Volunteer Fire Service](#)
4. [CDC - Preventing Suicide Fact Sheet](#)

PROACTIVE HEALTH AND SAFETY RISK MANAGEMENT SYSTEM

In 2018, Injury Epidemiology published a study regarding the benefits of a proactive risk management system to a fire department in Arizona. In 2009, the University of Arizona and Johns Hopkins University worked with the Tucson Arizona Fire Department to implement a risk management system consisting of certain physical exercise controls, patient transport controls and fireground controls. As a result of the risk management system, the fire department reported a "13% decline in all reported injuries, a 30% decline in claims frequency, and a 21% decrease in mean worker's compensation claims cost," in the four year period following control implementation (Poplin, Griffin, Pollack Porter, Mallett, Hu, Day-Nash, & Burgess, p. 5).

Best practices to implement a proactive risk management system need to be tailored to individual fire departments. Resources regarding how to create meaningful risk management systems can be found in the following U.S. Fire Administration reports:

1. [National Safety Culture Change Initiative](#)
2. [Risk Management Practices in the Fire Service](#)
3. [Safety and Health Considerations for the Design of Fire and Emergency Medical Services Stations](#)

REFERENCES

- Horn, G., Kerber, S., Fent, K., & Smith, D. (2017, September 1). 10 Considerations: cardiovascular & chemical exposure risks. <https://www.fsi.illinois.edu/research/cardiochem/#!/tools/translation>.
- Moline, J. MD, MSc, and Golden, A. PhD (2020, November), FASNY-Northwell Health Volunteer Firefighter Cancer Study, Occupational Medicine, Epidemiology and Prevention (OMEP) Northwell Health.
- National Fallen Firefighters Foundation (2014) Confronting Suicide in the Fire Service, https://www.everyonegoeshome.com/wp-content/uploads/sites/2/2015/02/Confronting_Suicide_FINAL.pdf
- National Wildfire Coordinating Group (2020), Mental Health Subcommittee, Come together for Suicide Prevention, <https://www.nwcg.gov/sites/default/files/committee/docs/mhsc-sa-suicide-prevention-2020.pdf>
- NIOSH (2007) DHHS (NIOSH) Publication No. 2007-133 —Preventing Fire Fighter Fatalities Due to Heart Attacks and Other Sudden Cardiovascular Events, Publications Dissemination 4676 Columbia Parkway Cincinnati, OH 45226-1998 <https://www.cdc.gov/niosh/docs/2007-133/pdfs/2007-133.pdf>
- NIOSH (2016) Findings from a Study of Cancer among U.S. Fire Fighters <https://www.cdc.gov/niosh/pgms/worknotify/pdfs/ff-cancer-factsheet-final-508.pdf>
- Poplin, G. S., Griffin, S., Pollack Porter, K., Mallett, J., Hu, C., Day-Nash, V., & Burgess, J. L. (2018). Efficacy of a proactive health and safety risk management system in the fire service. *Injury epidemiology*, 5(1), 18. <https://doi.org/10.1186/s40621-018-0148-9>
- Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (February 28, 2014). The NSDUH Report: State Estimates of Adult Mental Illness from the 2011 and 2012 National Surveys on Drug Use and Health. Rockville, MD. <https://www.samhsa.gov/data/sites/default/files/sr170-mental-illness-state-estimates-2014/sr170-mental-illness-state-estimates-2014/sr170-mental-illness-state-estimates-2014.htm>
- US Fire Administration (2016) Critical Health and Safety Issues in the Volunteer Fire Service, https://www.usfa.fema.gov/downloads/pdf/publications/critical_health_and_safety_issues.pdf