

Extinguishing Cancer in Firefighters

By Michael G. Hamrock, M.D.

The fire service does very admirable work in supporting and caring for cancer-stricken firefighters, but it needs to do a much better job on prevention, since cancer continues to take a devastating toll on U.S. firefighters and their families. In Boston, firefighters have two and a half times the risk of developing cancer than other residents of the city. In the past two months alone, three Boston firefighters were diagnosed with lymphoma, throat cancer, and a lung tumor while two more have started treatments for prostate cancer.

A strong commitment from the fire service on cancer prevention is needed now to reverse these troubling trends. This can be accomplished by establishing local and national firefighter cancer awareness and prevention programs. Promotion and implementation of early screenings, healthful lifestyles, and more effective training will dramatically reduce cancer cases in firefighters.

Chronic exposure to heat, smoke, and toxins put firefighters at very high risk for developing cancer. The by-products of combustion of ordinary household items such as cabinets, mattresses, curtains, insulation, and porch materials can be very carcinogenic. Inhalation, ingestion, and absorption of these toxic substances that make their way into the bloodstream of the firefighter are transported and stored in fat cells and organs. It is here where cell damage occurs that may lead to cancer. To gain a better understanding of this phenomenon, stand next to a firefighter three days after fighting a fire--you can still smell traces of smoke emanating from the firefighter's body.

Daily exposure to diesel exhaust in the firehouse can also precipitate cancer. Analysis of the kitchen and bunk room walls and furniture in firehouses reveals a tremendous amount of diesel exhaust particles. These dangerous particles are inhaled and absorbed every shift and cause significant harm to firefighters.

All of these exposures do contribute to the elevated rates of cancers of the brain, lung, colon, prostate, kidney, and skin found in Boston firefighters. At times, the medical office at the Boston Fire Department resembles an oncology clinic where every three weeks a Boston firefighter is diagnosed with cancer. There are currently 16 active-duty Boston firefighters unable to return to [firefighting](#) assignments because of the effects of cancer. Many firefighters,

unfortunately, do not last longer than five years after their retirement dates because of malignancies.

Firefighter cancer awareness and prevention programs will address and curtail these high cancer rates through medical surveillance, fitness promotion, nutrition counseling, lifestyle modification, quality [training](#), and research.

Medical Surveillance

Firefighters need to be screened more early and often than the general public because of their higher risks for cancer. Every firefighter should obtain a thorough and confidential firefighter physical exam and undergo screening tests for prevention and early detection of these specific cancers annually. These recommended comprehensive exams are outlined below and should be given to the primary care physician to follow closely.

Recommended Firefighter Physical Exam and Screening Tests

Annual Exam Screening Tests

- Blood pressure, pulse
- Respiratory rate, temperature
- Oxygen saturation
- Weight and body fat index
- Thorough skin exam
- Eye exam and hearing testing
- Oral exam
- Heart and lung exam
- Abdominal and testicular exam
- Prostate and rectal exam
- Fecal occult blood testing
- Pelvic and Pap for females
- Vascular and neurological exams
- Mental status exam
- Musculoskeletal exam

Annual Labs and

- Comprehensive metabolic and chemistry panel
- Liver function tests
- Hepatitis profile
- Complete blood count
- Thyroid panel
- Hemoglobin A1c (for diabetes monitoring)
- Fasting lipid profile and blood glucose
- Urinalysis and urine biomarkers
- EKG
- PSA (begin at age 40 for prostate cancer screening)
- Pulmonary function test every 3 years
- Chest X-ray every 3 years
- Colonoscopy (begin age 40 and every 5 years)
- Exercise stress test (begin age 40 and every 3 years)
- Mammograms for females (begin age 35)

Recently, several Boston firefighters have had cancers found early and in treatable stages by their physicians who followed these screening protocols. In addition, [health](#) insurance companies have expressed more interest in working with municipalities to cover these additional screening tests for certain high-risk workers because they understand early detection not only saves lives but is financially advantageous for the health plan and taxpayers as well.

Fitness Promotion

Excess weight and inactivity put firefighters at additional risk for cancer. A structured exercise program for firefighters will improve overall health and job performance and help to reduce cancer and should include doing the following:

- Develop a mentality that firefighters are “athletes” and should train as such.
- Set aside 45 minutes per shift for all members to engage in a firefighter fitness workout.
- Workouts should consist of job simulation-type activities that focus on core muscular strength, endurance, flexibility, and aerobic conditioning.
- Encourage firefighters to do three additional similar workouts every week on their own.
- Set long-term goals of maintaining a healthy weight not exceeding five percent more than when they entered the fire academy.

Nutrition Counseling

The firehouse meals that contain large portions of red meat, saturated fats, and calories that far exceed the USDA total recommended daily allowances contribute to cancer in firefighters. A firefighter can easily gain one pound before leaving the kitchen table and responding to the next call. Some helpful dietary cancer prevention tips include

- Adding more vegetables, fruits, whole grains to your diet and reducing saturated fats.
- Emphasizing antioxidant and detoxifying phytonutrient-rich foods like spinach, squash, cauliflower, broccoli, garlic, and onions.
- Limit meat intake to one serving per week; substitute with more baked or grilled fish.
- Increase intake of calcium, vitamin D, fish oil, fiber, and folate supplements.
- Practice better portion control. An adequate serving of meat should resemble the size of a hockey puck instead of a Frisbee.
- Avoid raiding the fridge after midnight calls; eliminate second helpings.
- Drink at least eight glasses of water a day.
- Eliminate 500 calories a day by avoiding soda, chips, pizza, donuts, and ice cream.

Quality Training

Firefighters need to be continually educated about their occupational health risks, and training programs should be ramped up to include instructions in

- Placing more emphasis on fireground training operations to better prepare and protect firefighters while working in smoky and hazardous environments.
- Monitoring for better compliance with breathing apparatus use, especially during overhauling operations after the fire has been knocked down.
- Regular cleaning of bunker gear.
- Full compliance with the apparatus exhaust-removal systems in the firehouse.
- Benefits of taking a steam or sauna, antioxidant foods and supplements, and a vigorous aerobic workout within 24 hours after a fire to hasten the elimination of toxins from the body.

Lifestyle Modification

Firefighters need to take more responsibility for their own health and cultivate lifestyle changes that will lessen their risks for cancer including:

- Quitting smoking. The combination of smoking with years of inhalation of toxic smoke and gases at fires is a recipe for cancer development.
- Regular use of sunscreen.
- Limiting alcohol intake. Excess alcohol consumption along with smoking greatly increases the risk for throat, esophagus, and gastrointestinal tumors.
- Showering immediately after returning from a fire to help remove the cancer-causing soot from the body.
- Being up to date on the Hepatitis B vaccinations, to lessen the risk for liver cancer.
- Performing monthly testicular self-exams or monthly breast self-exams for female firefighters.

Research

Fire departments need to partner with local teaching hospitals and academic centers to perform research into reducing cancer in firefighters. This partnership should include

- Offering firefighters the latest in cancer screening tests.
- Undertaking a cancer registry for the fire service to better identify and track potential carcinogenic exposures and monitor regional cancer trends.
- Research into improving the technology of firefighter gear to help prevent the absorption of harmful chemicals through the skin.

- Investigating ways to eliminate or neutralize the toxins from the body before they can do their damage.

Many cancers in firefighters can be prevented with these measures. Although it is impossible to eliminate all of the health risks inherent in firefighting work, these escalated rates of cancer are unacceptable. The firefighter cancer awareness and prevention programs will improve the overall health and fitness of all firefighters and reduce cancer on the job. A much more fervent commitment to cancer prevention is needed now.

This article is dedicated to Boston Firefighter Dave Galloway, of Tower Ladder 3, who died at the age of 42 on April 2, 2010 after a long and spirited battle with pancreatic cancer.

Michael G. Hamrock is a marathoner and a former Boston firefighter. He is the Medical Examiner for the Boston (MA) Fire Department and a primary care physician at Caritas Saint Elizabeth's Medical Center in Boston. He is a board member of the Kenney-Quinn-Ford Foundation for Brain Tumor Research.