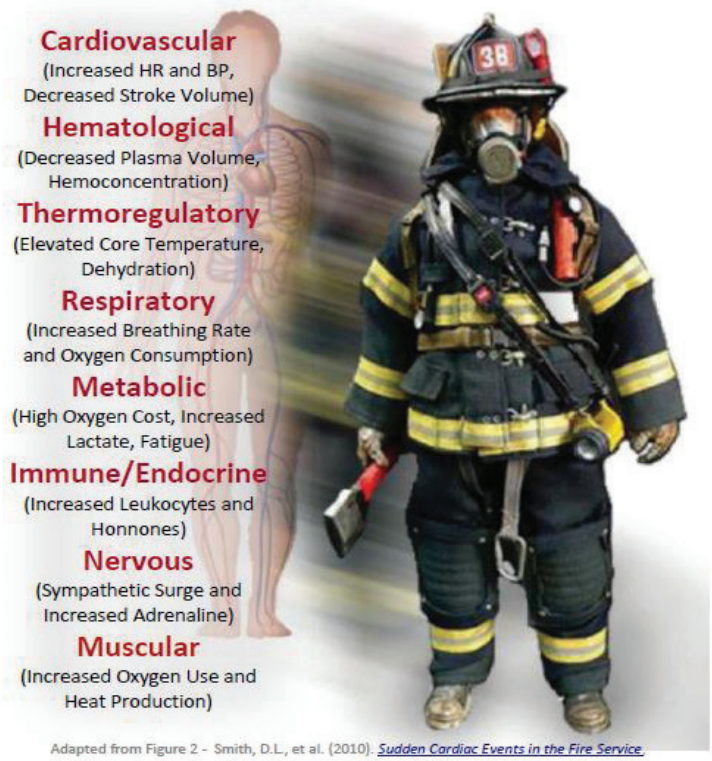
A HEALTHCARE PROVIDER'S GUIDE TO
FIREFIGHTER PHYSICALS

YOUR PATIENT IS A FIREFIGHTER!

- Firefighters face unique occupational health risks due to the demands of their job.
- Firefighters routinely operate in harsh work environments with:
  - o excessive heat
  - o dense smoke
  - o emotionally charged situations
  - o extreme physical challenges
  - o toxic chemicals
- Firefighters wear more than 70 pounds of equipment.
- Firefighters breathe compressed air.
- Firefighters represent a distinct subset of the general population.

Firefighters As Tactical Athletes

Physiological Demands of Firefighting



Adapted from Figure 2 - Smith, D.L., et al. (2010). Sudden Cardiac Events in the Fire Service. First Responder Health and Safety Laboratory, Skidmore College.

These extreme physical, mental and environmental stresses increase the firefighter's risks of morbidity and mortality for:

Cardiovascular events:

Cardiovascular events are the leading cause of on duty deaths among firefighters[1] and, for every line of duty death, there are an estimated 17 non-fatal cardiac events on duty among firefighters[2].

Musculoskeletal injuries:

The National Fire Protection Association estimates firefighters get more than 71,000 injuries a year[3].

Behavioral health issues:

Of firefighters, 46.8% have considered suicide and 15.5% have had an attempt during the course of their career[4].

Cancer:

In 32 states and in 9 Canadian provinces, several types of cancer are considered work-related.[5]

Family history and lifestyle habits obviously add to these risks.

The purpose for this document is to assist the healthcare provider in the evaluation, treatment, and ongoing surveillance of the health and wellness of firefighters. The recommendations in this document are supported by ongoing clinical research of firefighters' health and by the extensive experience and expertise of the providers caring for them. These recommendations are offered as assistance for healthcare providers making clinical decisions regarding the medical fitness and/or treatment of firefighters. They are not to take the place of your medically reasonable, appropriate and necessary medical evaluation of the firefighter. As with any clinical references, they should be used with the understanding that ongoing research may result in new information and revised recommendations.

For more information: **fstaresearch.org/GetChecked**
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FSTAR
FIREFIGHTER SAFETY THROUGH ADVANCED RESEARCH

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PHYSICAL EXAMINATION CHECKLIST

RECOMMENDED YEARLY SCREENING

- ☐ Vitals: BP, HR, RR, Wt, Body Fat Percentage
- ☐ Multi-System PE: skin, mouth, thyroid, vascular, neurologic and musculoskeletal
- ☐ Labs: CMP, CBC, Lipid Panel, TSH, Urinalysis, HbA1c
- ☐ Testing: 12-lead EKG, eye exam, hearing test, oxygen saturation
- ☐ Family History: CVD, sudden cardiac death, diabetes and cancer
- ☐ Personal Health Behaviors: tobacco use, alcohol, exercise, dietary habits

CARDIOVASCULAR HEALTH AND FITNESS

Significant cardiovascular demands of firefighting lead to acute coronary events that account for 45% of deaths among on-duty firefighters, in contrast to 15% of all deaths occurring on conventional jobs. Myocardial infarction is the leading cause of death of firefighters, and these events occur almost exclusively in susceptible firefighters with underlying cardiovascular disease (CVD). It is therefore prudent to thoroughly screen for, and aggressively treat, all CVD risk factors, including diabetes, in this very high risk group of patients.

- ☐ Ischemia is best evaluated by an imaging exercise stress test (nuclear or echocardiography) beginning at age 40 or earlier for clinical suspicion. Exercise stress testing without imaging is not recommended as it may fail to identify one-third of those who may need cardiac intervention (angioplasty or bypass surgery).
- ☐ Consider Coronary Artery Calcium CT scan to evaluate occult coronary artery disease.
- ☐ Echocardiography is recommended once as a baseline to evaluate significant cardiac structural abnormalities, including LVH and HCM.

CANCER

Chronic exposures to heat, smoke, and toxic flame retardants through inhalation, ingestion, and skin absorption put firefighters at risk for many cancers. The National Institute for Occupational Safety and Health (NIOSH) performed a multi-year study of nearly 30,000 firefighters to better understand the potential link between firefighting and cancer. The firefighters studied showed higher rates of certain types of cancer than the general U.S. population in digestive, oral, respiratory, and urinary cancers. Providers should be especially vigilant to conduct cancer screening efforts in these particular areas. The following cancer screening recommendations for firefighters do exceed those of the USPSTF guidelines for the general population. It is because of our extensive clinical experiences dealing with firefighter health issues that we are strongly advocating for these screening tests in this high risk group. We rely on your medical judgment to prescribe the most appropriate screenings in this unique patient population.

- ☐ Colonoscopy or other appropriate colon cancer screening beginning at age 40.
- ☐ Annual PSA with digital rectal exam between 40-45. Sufficient information regarding the risk and benefits of screening and treatment should be discussed.
- ☐ Annual pap smear.
- ☐ Annual mammograms beginning at age 40. Discuss screening at an earlier age if there is a family history or any patient concern.
- ☐ Annual testicular exam and instruction about self-examination.
- ☐ Annual head to toe skin examination and appropriate dermatology follow-up.
- ☐ Urinalysis annually for microscopic hematuria.

MUSCULOSKELETAL INJURIES

The high intensity and dynamic work environment of firefighting leads to a high incidence of musculoskeletal injuries. Low back injuries represent approximately 50% of all job related musculoskeletal injuries among firefighters. These include strains, sprains, and intervertebral disc injuries, often leading to significant morbidity with the possibility of permanent disability. Obesity and deconditioning are strong predictors of musculoskeletal injuries.

- ☐ Address underlying musculoskeletal issues. Assess for full range of motion, low back strength and flexibility as well as core muscle strength.
- ☐ Refer as necessary for treatment.
- ☐ Encourage flexibility and core strengthening exercises.

BEHAVIORAL HEALTH

The mental and physical stress of firefighting and repeated exposure to trauma can lead to depression, anxiety, acute stress reactions, post-traumatic stress, and suicidal ideation. Self-medication with alcohol and drugs can result in substance abuse disorders.

- ☐ Behavior health screening.
  1. Prime MD: http://www.psy-world.com/prime-md_print1.htm
  2. AUDIT & CAGE for Alcohol Screening: http://pubs.niaaa.nih.gov/publications/arh28-2/78-79.htm

LUNG DISEASE

In the line of duty, firefighters are often exposed to carbon monoxide and other inhaled toxins, or irritants that may lead to acute respiratory issues such as hypoxemia or bronchoconstriction. Repeated exposure may cause chronic pulmonary disease and abnormal lung function. Changes in lung function and the development of lung disease may be detected with baseline and periodic assessment and should include the following tests.

- ☐ Spirometry: Baseline and annual pulmonary function testing in those with a history of respiratory health problems and in healthy individuals; to include FEV1, FVC, and the absolute FEV1/FVC ratio.
- ☐ Chest x-ray: Baseline chest x-ray in those with any respiratory symptoms or disease and in healthy individuals. Repeat chest x-rays every 5 years or sooner if medically indicated.
- ☐ Consider low dose CT for screening for lung cancer in high risk individuals.

SLEEP DISORDERS

Sleep disorders are highly prevalent in firefighters and include sleep apnea, insomnia, shift-work disorder, and restless leg syndromes. It is imperative to screen firefighters for these disorders since they substantially increase the risks for motor vehicle accidents, cardiovascular disease, diabetes, depression, and anxiety in firefighters.

- ☐ Assess sleep and use of sleep medications.
- ☐ Screen for sleep apnea and consider sleep study as indicated.
- ☐ Helpful screening tools include:
  1. Epworth Sleepiness Scale: http://bami.us/Sleep/SleepScale.html / yoursleep.aasmnet.org/pdf/Epworth.pdf
  2. STOP-Bang questionnaire: http://www.stopbang.ca/osa/screening.php
  3. Berlin questionnaire: https://www.fairview.org/fv/groups/internet/documents/web_content/s_062202.pdf
  4. Diagnosis of obstructive sleep apnea (OSA) algorithm: guideline.gov/algorithm/6582/NGC-6582_1.pdf

INFECTIOUS DISEASES

Firefighters are often first on the scene of an emergency and may be exposed to HIV, hepatitis (A, B and C), TB and other infectious diseases.

- ☐ Establish immunity by vaccination record review and/or titers and update vaccines including Tdap, MMR, HBV, and Varicella. Consider hepatitis A vaccine.
- ☐ Baseline and periodic screening for HIV, HBV, HCV and other communicable diseases.
- ☐ Provide annual influenza vaccine.

SUPPORTING DOCUMENTS

Standard on Comprehensive Occupational Medical Program for Fire Departments NFPA 1582, http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=1582

The International Association of Fire Chiefs wishes to acknowledge and thank the following contributors and reviewers for their tireless effort and volunteering their expertise to the development of this Healthcare Provider's Guide to Firefighter Physicals.

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REFERENCES

To access over 35 targeted research references used as the basis for this document, visit www.fstaresearch.org/resource/?FstarId=11576

1. Rita F. Fahy, et al. Firefighter Fatalities in the United States - 2015. National Fire Protection Association, Fire Analysis and Research Division; June 2016. http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/fatalities-and-injuries/firefighter-fatalities-in-the-united-states

2. Denise L Smith, et al. Extreme sacrifice: sudden cardiac death in the US Fire Service. Extreme Physiology & Medicine20132:6; February 2013. http://extremephysiolmed.biomedcentral.com/articles/10.1186/2046-7648-2-6

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4. IH Stanley, et al. Career prevalence and correlates of suicidal thoughts and behaviors among firefighters. J Affect Disord. Nov 2015 http://www.ncbi.nlm.nih.gov/pubmed/26339926

5. IAFF. Presumptive Law Coverage for Cancer. http://www.iaff.org/hs/phi/disease/cancer.asp

ADDITIONAL RESOURCES

NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments NFPA 1582, http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards?mode=code&code=1582

IAFF/IAFC Wellness Fitness Initiative, https://www.iafc.org/docs/default-source/uploaded-documents/healthwell-wfi3rdedition.pdf?sfvrsn=0

FSTAR FIREFIGHTER SAFETY THROUGH ADVANCED RESEARCH

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