

Cardiovascular Disease in US Firefighters

A Systematic Review

Elpidoforos S. Soteriades, MD,† Denise L. Smith, PhD,‡§ Antonios J. Tsismenakis, MA,*¶||
Dorothee M. Baur, MD,*¶ and Stefanos N. Kales, MD, MPH*¶*

Abstract: Cardiovascular disease (CVD) is the leading cause of on-duty death among firefighters (45% of on-duty fatalities) and a major cause of morbidity. CVD in the fire service also has adverse public safety implications as well as significant cost impacts on government agencies. Over the last decade, our understanding of CVD among firefighters has significantly improved and provides insight into potential preventive strategies. The physiology of cardiovascular arousal and other changes that occur in association with acute firefighting activities have been well-characterized. However, despite the strenuous nature of emergency duty, firefighters' prevalence of low fitness, obesity, and other CVD risk factors are high. Unique statistical approaches have documented that on-duty CVD events do not occur at random in the fire service. They are more frequent at certain times of day, certain periods of the year, and are overwhelmingly more frequent during strenuous duties compared with nonemergency situations. Moreover, as expected on-duty CVD events occur almost exclusively among susceptible firefighters with underlying CVD. These findings suggest that preventive measures with proven benefits be applied aggressively to firefighters. Furthermore, all fire departments should have entry-level medical evaluations, institute periodic medical and fitness evaluations, and require rigorous return to work evaluations after any significant illness. Finally, on the basis of the overwhelming evidence supporting markedly higher relative risks of on-duty death and disability among firefighters with established coronary heart disease, most firefighters with clinically significant coronary heart disease should be restricted from participating in strenuous emergency duties.

Key Words: CVD, risk factors, firefighters

(Cardiology in Review 2011;19: 202–215)