

# 2019 NPCR FLORIDA SUCCESS STORY

## Florida Cancer Registry: David J. Lee, PhD

### *Cancer Risk in Florida Firefighters*

# NATIONAL PROGRAM OF CANCER REGISTRIES SUCCESS STORY

**SUMMARY:** Firefighters face many carcinogenic exposures and are at increased risk for several cancers including multiple myeloma, non-Hodgkin's lymphoma, and testicular cancers (LeMasters et al, 2006). In order to evaluate cancer risk among Florida firefighters, a University of Miami (UM) research team conducted a linkage between the Florida State Fire Marshal's Office, which maintains firefighter certification records (1972-2012, n=109,009 records), the Florida Department of Health's Florida Cancer Data System (FCDS) records (1981-2014, n=3,332,958 records), and the Florida Department of Vital Statistics (VS) records (going back to 1972). Results from this linkage indicated that male Florida firefighters are at increased risk for melanoma, thyroid, prostate, testicular, and late-stage colon cancers. Male firefighters who were younger than age 50 were at greater risk for melanoma, thyroid, prostate, and testicular cancers compared to firefighters age 50 and older. Female Florida firefighters are at increased risk of brain and thyroid cancers. The use of accessible high-quality cancer data maintained by state cancer registries were integral in addressing the study aims to better understand the cancer burden in this occupational group.

**CHALLENGE:** Linkage between these three data sources requires a minimum of identifying information to make a match. Because of a Florida State statute, the Fire Marshal's Office was originally prohibited from providing Social Security Number (SSN) to the FCDS to conduct the linkage. As a result, was only able to pursue a deterministic linkage which identified only 51 firefighters with cancer, an insignificant number when compared to a similar linkage conducted by our research team 15 years ago that yielded 1,022 linked firefighters with cancer (Ma et al 2006).

**SOLUTION:** To help address this issue of missing data, the FCDS facilitated a linkage between the Fire Marshall's data and LexisNexis©, a national dataset of legal, government, business and high-tech information sources (<https://www.lexisnexis.com/en-us/gateway.page>). This linkage allowed us to fill in some of the missing data on sex, address, and date of birth, as well as provide SSN for almost 80,000 firefighters.

During this time, successful efforts were made to modify Florida statutes allowing the Fire Marshal's Office to release SSN to the FCDS. This allowed us to conduct another linkage with LexisNexis© and obtain missing data on an additional 30,000+ firefighters for whom we originally lacked sufficient data to link with LexisNexis©. Using this augmented firefighter dataset, the linkage with the FCDS and VS records was performed again.

**RESULTS:** The resulting linked dataset included 3,928 Florida firefighters with an incident primary cancer (n=3,760 males and n=168 females). Using this dataset, the UM research team used a case-control approach for evaluating risk of site-specific cancers. These analyses revealed that male firefighters were at increased risk of melanoma (adjusted odds ratio=1.56; 95% confidence interval=1.39-1.76), prostate (1.36; 1.27-1.46), testicular (1.66; 1.34-2.06), thyroid (2.17; 1.78-2.66) and late-stage colon cancer (1.19; 1.00-1.41). Female firefighters showed significantly elevated risk of brain (2.54; 1.19-5.42) and thyroid (2.42; 1.56-3.74) cancers and an elevated risk of melanoma that approached statistical significance (1.68; 0.97-2.90). Among male firefighters, there was additional evidence of increased cancer risk in those younger than the age of 50 versus 50 years and older for thyroid (2.55; 1.96-3.31 versus 1.69; 1.22-2.34), prostate (1.88; 1.49-2.36 versus 1.36; 1.26-1.47), testicular (1.60; 1.28-2.01 versus 1.47; 0.73-2.94), and melanoma (1.87; 1.55-2.26 versus 1.42; 1.22-1.66) cancers.

**SUSTAINING SUCCESS:** The results are largely consistent with a recent pooled meta-analysis (Jalilian et al 2019). Expanded surveillance in larger cohorts with more precise exposure indicators can help continue identifying the risks of cancer among firefighters and the causes of those risks, which will help with potential risk mitigation strategies. Cohorts with larger numbers of female firefighters can also improve our understanding the unique risks they face. Findings from the linkage will be used to educate Florida firefighters and policymakers regarding cancer risk in this occupational group. Findings will be distributed directly to firefighters as part of an ongoing educational initiative to reduce cancer morbidity and mortality. Cancer registry linkages in other states, or perhaps nationwide, could provide an unparalleled resource for evaluating these risks.

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