

Wildfire Smoke May Worsen Lung Cancer Survival

Patients exposed to higher levels of fine particulate matter had a 20% greater risk of cancer-related death.

June 3, 2025 By [Liz Highleyman](#)

Exposure to smoke from wildfires may have a detrimental effect on survival for people with lung cancer, according to study findings presented at the [2025 American Society of Clinical Oncology \(ASCO\) Annual Meeting](#) in Chicago. Patients who were exposed to higher levels of fine particulate matter from wildfire air pollution had a 20% greater risk of cancer-related death.

“The research tells us that there are small particles in the air that could make lung cancer worse,” Surbhi Singhal, MD, of the University of California Davis Comprehensive Cancer Center, said in a [news release](#). “As wildfires become more frequent and intense in California and other parts of the U.S., we need targeted health strategies to protect cancer patients and others with serious health problems. These results highlight the urgent need to protect vulnerable populations living in wildfire-prone regions.”

Air pollution from wildfires contains tiny harmful particles known as PM2.5, meaning fine particulate matter less than 2.5 micrometers in diameter, which can penetrate deep into the lungs. Prior research has shown that PM2.5 exposure is associated with a greater risk of developing cancer, but its impact on survival of patients who already have lung cancer is unclear.

The researchers identified all patients diagnosed with non-small-cell lung cancer (NSCLC) in the California Cancer Registry between 2017 and 2020. The cohort included more than 18,500 people with a mean age of 70 years. Daily PM2.5 exposure was estimated based on air quality monitoring, satellite observations, meteorological modeling, predictive smoke modeling and low-cost sensors. Exposure was estimated as average daily PM2.5 levels during the year after NSCLC diagnosis.

The study showed that, overall, higher mean daily PM2.5 exposure during the 12 months after diagnosis was associated with a 20% increased risk of cancer-related death. This rose to 36% for patients no prior history of tobacco smoking and to 55% for never-smokers with Stage IV (metastatic) disease, compared with a smaller 17% rise for current or former smokers. That is, although smoking is the biggest risk factor for lung cancer, wildfire smoke exposure had a relatively greater effect on nonsmokers. Surprisingly, however, current or former smokers with

Stage IV lung cancer who received immunotherapy actually had improved cancer survival with more days of high PM2.5 exposure.

“In this large population-based NSCLC cohort, wildfire-dominated PM2.5 exposure after diagnosis was independently associated with increased risk of cancer-related death,” the researchers concluded. “As the size and frequency of wildfires increases, our findings have important public health and clinical implications for patients with NSCLC.”

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