

POPULATION HEALTH RESEARCH BRIEF

Cardiac and asthma visits to the emergency room during the recent air quality event: Canada wildfire smoke

Sharon Larson, Georgia Montone, Stephanie Kjelstrom

Approximately 75 million people in the United States experienced dangerous air conditions earlier this month because of the Canada wildfires, with smoky conditions lingering for days. Smoke was reported to have delivered some of the poorest air quality measures in decades to northeastern U.S. cities including New York, Washington, and Philadelphia.¹ During this period, air quality in the region reached “very unhealthy” to “hazardous” levels, according to measures reported on the Environmental Protection Agency’s AirNow reporting tool.² Philadelphia reported the worst air quality in the world for parts of one day during this period.³ Both short- and long-term exposure to wildfire smoke is a danger to public health because of particle pollution. These particles act as respiratory irritants, and exposure to high concentration can cause coughing, shortness of breath, wheezing, and other respiratory symptoms. The effects of particle pollution can be mild (eye and respiratory irritation) to severe (exacerbation of asthma, heart failure, or premature death).⁴

The Main Line Health Center for Population Health Research (CPHR) at Lankenau Institute for Medical Research compared the health system’s emergency department visits the week before (May 28 to June 4, 2023) to the week during the wildfire smoke (June 5 to June 12, 2023). CPHR’s findings indicate there were significantly more chief complaints for asthma from patients (Figure 1) and significantly more primary diagnoses of asthma and heart failure during the smoke event (Figure 2).

Conclusions

There was a significant increase in emergency department use during this period. While it is not possible to specifically determine that the increase was caused by the smoke in this short analysis, some conditions clearly were present at a higher level during the week in which particle pollution was highest. Health providers and members of the community can use available warnings to plan for protection from the pollution. These measures may include simple remedies such as remaining indoors with windows and doors closed and using high-quality masks when outdoors. Providers should discuss medical supports that may be indicated during these events.

Figure 1. Proportion of emergency department encounters by relevant chief complaint and week

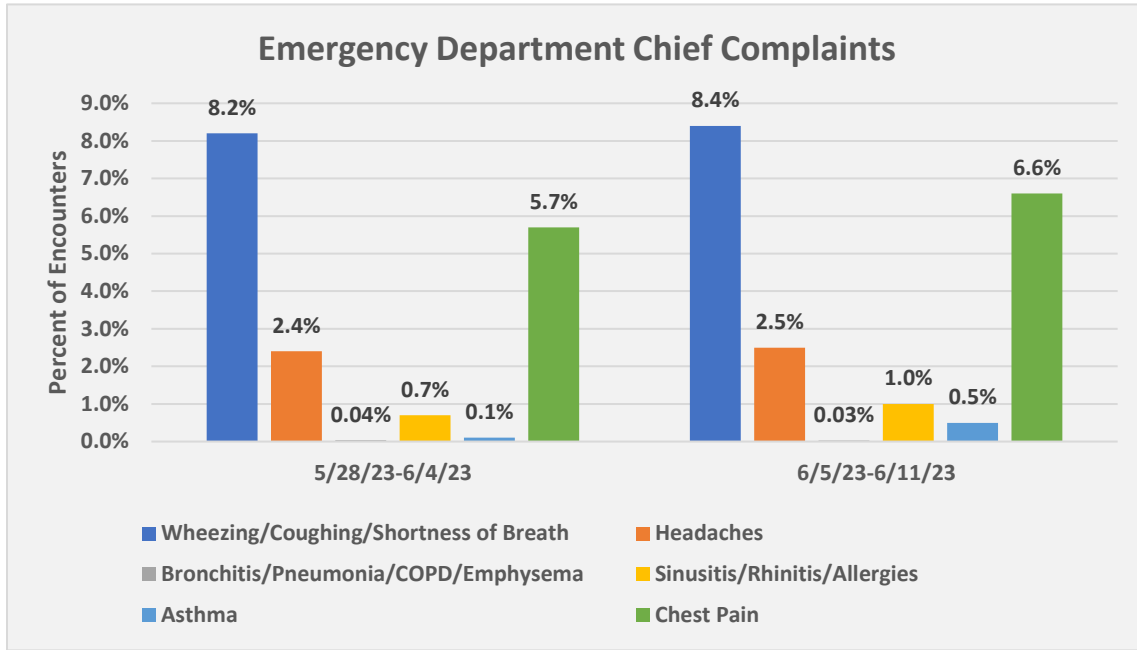
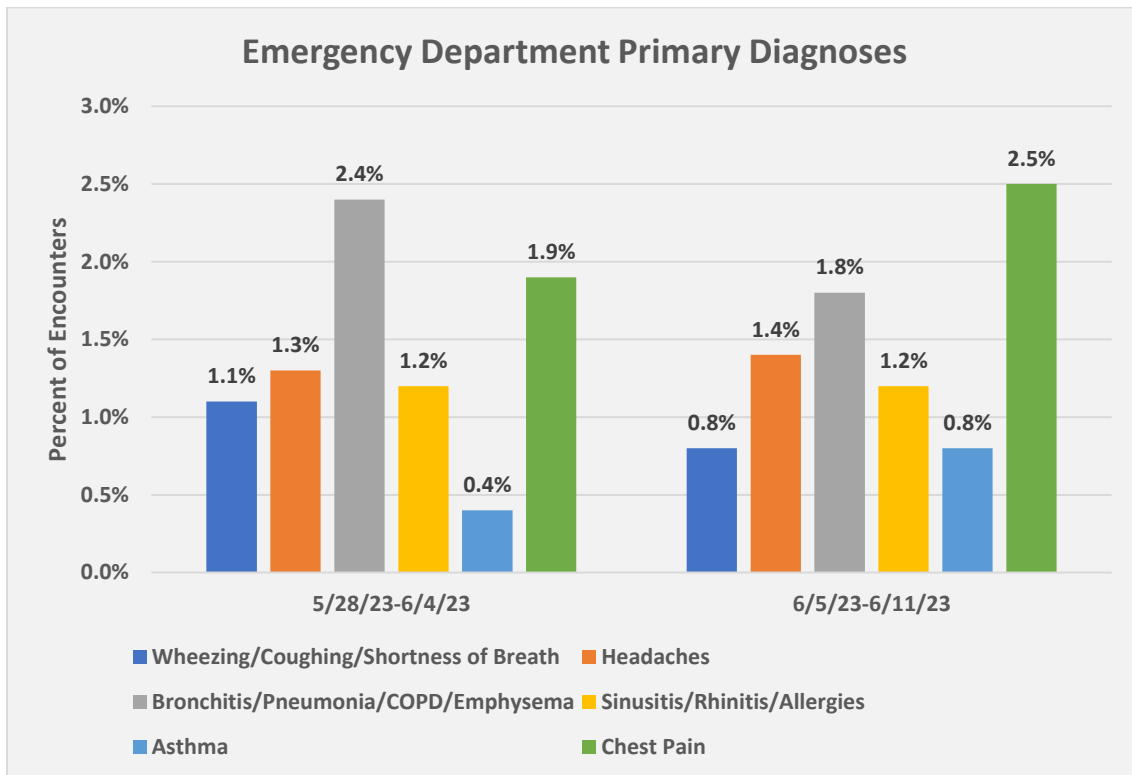


Figure 2. Proportion of emergency department encounters by relevant primary diagnosis and week



References

¹ Gilmore, G. (2023, June 15). *Canada wildfire smoke forecast: haze returns to Philadelphia skies*. CBS News Philadelphia. <https://www.cbsnews.com/philadelphia/news/canada-wildfire-smoke-update-and-air-quality-forecast-june-2023-philadelphia-pa-nj-del-lehigh-valley/>.

² Environmental Protection Agency and Partners (2023, June 11). *Trends*. AirNow. <https://www.airnow.gov/?city=Wynnewood&state=PA&country=USA>.

³ Berman, P., Gilmore, G., & Snyder, D. (2023, June 9). Philadelphia's air quality improving as wildfire smoke moves through. CBS News Philadelphia. <https://www.cbsnews.com/philadelphia/news/how-long-will-smoke-last-air-quality-get-better-philadelphia-pa-nj-del/>.

⁴ EPA (2022, November 22). Health Effects Attributed to Wildfire Smoke. EPA: United States Environmental Protection Agency. <https://www.epa.gov/wildfire-smoke-course/health-effects-attributed-wildfire-smoke>.