

Cardiovascular disease-related hospital admissions jump on second day after major snowfall

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Hospital admissions for cardiovascular diseases decline on days with major snowfalls compared to days with no snowfall, but they jump by 23% two days later, according to a new study led by researchers from Harvard T.H. Chan School of Public Health.

"With [global climate change](#), major snowstorms may become more frequent and severe," said lead author Jennifer Bobb of the Group Health Research Institute in Seattle, who worked on the study as a postdoctoral researcher in the Department of Biostatistics at Harvard Chan School. "Understanding trends in hospitalizations related to snowfall will help us develop ways to protect [public health](#) during harsh winter conditions."

The study will be published online January 30, 2017 in the *American Journal of Epidemiology*.

The researchers analyzed data for 433,037 adults hospitalized at the four largest hospitals in Boston (Beth Israel Deaconess Medical Center, Brigham and Women's Hospital, Boston Medical Center, and Massachusetts General Hospital) during the months of November through April, for the years 2010-2015. They focused on admissions for cardiovascular diseases; cold-weather related conditions such as frostbite; and falls and injuries.

"This was a complex data science endeavor that required coordination and linkage of electronic medical records across hospitals," said senior author Francesca Dominici, professor of biostatistics and senior associate dean for research at Harvard Chan School.

Other findings included:

- Cold-weather-related disease admissions increased by 3.7% on high snowfall days (greater than 10 inches of snow), compared to days with no snowfall.
- Cardiovascular disease admissions were higher on days of moderate (5 to 10 inches), rather than high, snowfall.
- Admissions for falls increased 18% on average during the six days following a moderate snowfall, compared to days with no [snowfall](#).

Health hazards posed by snowfalls may have previously been unrecognized, according to the researchers. A possible explanation could be that people who are most susceptible to cardiovascular events and falls stay indoors during heavy snowfalls and avoid potential hazards, say the researchers.

They write that the two-day delayed jump in admissions for cardiovascular events after heavy snowfalls could reflect delays getting to the hospital during snow emergencies.

The mechanisms by which snowstorms lead to adverse [cardiovascular events](#) that are not fully understood, noted the authors. Snow shoveling may be one such factor. This possibility derives from prior studies of "snow-shoveler's infarction," which found that heavy snow shoveling resulted in cardiorespiratory demands that were comparable to or higher than the demands of maximal treadmill testing.

More information: , OUP accepted manuscript, *American Journal Of Epidemiology* (2016). [DOI: 10.1093/aje/kww219](https://doi.org/10.1093/aje/kww219)

Provided by Harvard T.H. Chan School of Public Health

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