

# High blood pressure while lying down linked to higher risk of heart health complications

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People who had high blood pressure while lying flat on their backs had a higher risk of heart attack, stroke, heart failure or premature death, according to new research to be presented at the American Heart

Association's [Hypertension Scientific Sessions 2023](#), to be held Sept. 7–10, 2023, in Boston.

The autonomic nervous system regulates [blood pressure](#) in different body positions; however, gravity may cause blood to pool when a person is seated or upright, and the body is sometimes unable to properly regulate blood pressure during lying, seated and standing positions, the authors noted.

"If blood pressure is only measured while people are seated upright, [cardiovascular disease risk](#) may be missed if not measured also while they are lying supine on their backs," said lead study author Duc M. Giao, a researcher and a 4th-year M.D. student at Harvard Medical School in Boston.

To examine body position, blood pressure and heart health risk, the researchers examined health data for 11,369 adults from the longitudinal Atherosclerosis Risk in Communities (ARIC) study. The data on supine and seated blood pressure was gathered during the enrollment period, ARIC visit 1, which took place between 1987–1989.

Participants had their blood pressure taken while briefly lying down at a clinic. The average age of participants at that time was 54 years old; 56% of the group self-identified as female; and 25% of participants self-identified as Black race. Participants in this analysis were followed for an average of 25 to 28 years, up through ARIC visit 5, which includes [health data](#) collected from 2011-2013.

The researchers' findings included:

- 16% percent of participants who did not have high blood pressure—defined in this study as having top and bottom blood pressure measures greater than or equal to 130/80 mm

Hg—while seated had high blood pressure while lying supine (flat on their backs), compared to 74% of those with seated high blood pressure who also had supine high blood pressure.

- In comparison to participants who did not have high blood pressure while seated and supine, participants who had high blood pressure while seated and supine had a 1.6 times higher risk of developing coronary heart disease; a 1.83 times higher risk of developing [heart failure](#); a 1.86 times higher risk of stroke; a 1.43 times higher risk of overall [premature death](#); and a 2.18 times higher risk of dying from [coronary heart disease](#)
- Participants who had high blood pressure while supine but not while seated had similar elevated risks as participants who had [high blood pressure](#) while both seated and supine.
- Differences in blood pressure medication use did not affect these elevated risks in either group.

"Our findings suggest people with known risk factors for heart disease and stroke may benefit from having their blood pressure checked while lying flat on their backs," Giao said.

"Efforts to manage blood pressure during daily life may help lower blood pressure while sleeping. Future research should compare supine blood pressure measurements in the clinic with overnight measurements."

The study's limitations included that it focused on adults who were middle-aged at the time of enrollment, meaning the results might not be as generalizable to older populations, Giao said.

**More information:** Giao presents Seated And Supine Blood Pressure And Risk Of Cardiovascular Disease And Mortality From The Atherosclerosis Risk In Communities Study at 2:15 p.m. ET on Saturday, Sept. 9, 2023, Presentation #071; Abstract #452

Provided by American Heart Association

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