

## SHORT-TERM EXPOSURE TO AMBIENT AIR POLLUTION AND BLOOD PRESSURE IN THE FRAMINGHAM HEART STUDY

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**Background and Aims:** The association between exposure to ambient particulate matter (PM) air pollution and blood pressure (BP) is uncertain. We investigated the association between short-term average levels of PM<sub>2.5</sub> and black carbon (BC) and BP in the Framingham Heart Study (FHS) Offspring cohort, hypothesizing that higher short-term exposure would be associated with higher BP.

**Methods:** In a repeated measures prospective cohort study, systolic (SBP) and diastolic (DBP) BP and clinical and demographic information were obtained at the FHS Offspring Exams 7 (1998-2001; 1966 eligible participants [n]) and 8 (2005-2008; n=1604). PM<sub>2.5</sub> (mean daily level 9.9 µg/m<sup>3</sup>) and BC (mean 0.84 µg/m<sup>3</sup>) concentrations were measured at a central monitoring site near downtown Boston, Mass. Subjects living beyond 40 km from the monitor were excluded. We assessed the association between 1, 2, 3, 5, 7, 14, 21, and 28-day moving averages (MAs) of the pollutants' concentrations and the BP outcomes. We used a linear mixed effects model with a random intercept for each subject to analyze the overall association between pollution exposure and BP measurements, adjusting for age, sex, body mass index, use of lipid-lowering and antihypertensive medications, diabetes, cardiovascular disease, smoking, season, apparent temperature, and date.

**Results:** A 1 µg/m<sup>3</sup> higher 7 day MAs of PM<sub>2.5</sub> was associated with a 0.010 (p=0.92) lower SBP and 0.078 (p=0.17) lower DBP. For BC, a 1 µg/m<sup>3</sup> higher 7 day MA was associated with a 0.23 (p=0.86) lower SBP and a 0.98 (p=0.18) lower DBP. Results for other MAs were similar.

**Conclusions:** In this cohort of largely suburban community-dwelling middle-aged-to-elderly white adults, there was no association between short-term exposure to PM<sub>2.5</sub> or BC and BP. Future analyses will incorporate additional FHS exams and more precise exposure assessments, as well as assess the association between chronic exposure to traffic related pollutants and BP.