

Aggressive blood pressure control may prevent common heart condition

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Heart conduction disorders can often lead to serious or fatal complications including complete heart block or heart failure. Left ventricular conduction disease occurs when there is an electrical blockage of the heart's normal electrical conduction system. Treatment to lessen its effects involves implanting a permanent pacemaker, but

there have been no proven preventive strategies for this condition.

In a study published May 3, 2023 in *JAMA Cardiology*, first author Emilie Frimodt-Møller, MD, and senior author Gregory Marcus, MD, MAS, leveraged a prospective trial in which individuals with hypertension were randomly assigned to either more or less aggressive [blood pressure](#) (BP) control. They found that intensive BP control is associated with lower risk of left ventricular conduction disease, indicating left ventricular conduction disease may be preventable.

"This research was motivated by patients who came in with complete heart block where I put in a pacemaker and they asked, 'Why did this happen to me?'" said Marcus, a cardiologist, electrophysiologist and UCSF professor of Medicine. "The answer to this question has not been clear, so we wanted to look at the impact that blood pressure might have on the development of their conduction disease."

The authors performed a post hoc analysis of the multicenter Systolic Blood Pressure Intervention Trial (SPRINT) to determine the association between targeting intensive (BP) control and the risk of developing left ventricular conduction disease. SPRINT originally recruited participants from 102 sites in the US and Puerto Rico and was conducted over a five-year period from November 2010 to August 2015. Participants included in SPRINT were adults 50 years and older with hypertension and at least one other cardiovascular risk factor. Participants with baseline left ventricular conduction disease, ventricular pacing or ventricular pre-excitation were excluded from the analysis.

Participants were randomly assigned to either normal blood pressure control (targeting a [systolic blood pressure](#) less than 140) or a more aggressive BP control (targeting a BP less than 120). As part of the analysis, the authors reviewed the serial ECGs that the participants received over the course of the trial and found that those randomly

assigned to the more aggressive BP control experienced significantly less conduction disease on the left side of the heart.

"This analysis suggests that more aggressive BP control might be a way to prevent this sort of common disease," said Marcus. "More broadly, the use of randomized controlled trial data provides compelling evidence that this common disease is not an immutable fate, but that the risk can be modified."

By contrast, the researchers saw no differences in right-sided conduction disease (manifested by right bundle branch blocks). The authors considered right bundle branch blocks as a "negative control" since the right side of the heart is not directly affected by BP control and as such, bundle branch blocks are not generally associated with the same severe outcomes as left bundle branch blocks.

The authors note that SPRINT did not examine the role of anti-hypertensive drugs, suggesting further research into associations between specific medications and conduction disease rates may be warranted.

More information: Emilie K. Frimodt-Møller et al, Association Between Intensive vs Standard Blood Pressure Control and Incident Left Ventricular Conduction Disease, *JAMA Cardiology* (2023). [DOI: 10.1001/jamacardio.2023.0845](https://doi.org/10.1001/jamacardio.2023.0845)

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