

# Nighttime hypotension predicts vision loss in glaucoma patients

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New research shows that having significantly lower systemic blood pressure in your body at night compared to during the day predicts vision loss in glaucoma patients. The finding could help conserve vision in these patients.

"There have not been a lot of modifiable risk factors for normal tension glaucoma, and this is clearly a potentially modifiable risk factor," said lead author Dr. Mary Charlson, chief of the Division of Clinical Epidemiology and Evaluative Sciences Research and executive director of the Center for Integrative Medicine.

The findings that nocturnal systemic hypotension raises the risk for [vision loss](#) are important because they represent a risk factor that could be changed to improve a patient's outlook. In this case, reducing the extent of the patient's nighttime fall in average systemic blood pressure (which is related to both the systolic and [diastolic blood pressure](#)), has the potential to curb further vision loss.

For example, some patients take eye drops or oral medications that lower their mean blood pressure at night. Patients with nocturnal systemic hypotension might switch to a different medication that does not lower their mean pressure at night.

"It still has to be proven that when you change nocturnal hypotension that you improve long-term outcomes, but the data suggests that it should definitely be looked at," said Dr. Charlson, who is also the William T. Foley Distinguished Professor of Medicine and professor of integrative medicine.

The study, which was published online in May in *Ophthalmology*, tested patients with normal tension glaucoma (NTG), a condition in which the optic nerve is damaged, leading patients to lose some of their visual field despite having normal pressure in the eye—so-called intra-ocular pressure.

Scientists monitored 85 participants' outpatient blood pressure for 48 hours at three six-month intervals. In doing so, they identified patients who had significantly lower MAP at night compared to the day – lower than would be expected from the natural drop in blood pressure that tends to occur during sleep. Patients who had low nocturnal blood pressure also had the highest amount of visual field loss over the year, indicating that nocturnal hypotension increases the risk of [visual field](#) loss.

The finding demonstrates an important overlap between ophthalmology and internal medicine, and raises questions about physicians' focus on lowering blood pressure, Dr. Charlson said.

"The general bias has been that [lower blood pressure](#) is better, and even lower may be even better. But there are reasons that suggest there may be consequences for [blood pressure](#) being too low in normal tension glaucoma [patients](#)," she said.

Provided by Cornell University

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