

None of the most common blood pressure medications increased the risk of depression, some lowered the risk

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None of the 41 most common high blood pressure medications increased the risk of depression, while nine medications appeared to lower it, according to a study from Denmark, published today in *Hypertension*, an American Heart Association journal.

Depression is common among patients with [high blood pressure](#) (also called hypertension), heart disease and stroke, and this is the first study to systematically investigate whether individual blood pressure medications might influence the risk of developing depression.

"It was highly surprising that none of the 41 most-used anti-hypertensives was associated with increased risk of developing depression and that some within each of the three classes of anti-hypertensives showed protective effects against depression," said Lars Vedel Kessing, M.D., D.M.Sc., lead author of the study and professor of psychiatry at the Psychiatric Center Copenhagen

and the University of Copenhagen, Faculty of Health and Medical Sciences in Denmark.

Researchers analyzed real-life data on more than 3.7 million adults who took any of the 41 most-commonly prescribed high blood pressure medications, as reported in health records across several Danish health registries from 2005 to 2015. Thirty-seven of these medications are approved for use in the U.S. by the U.S. Food and Drug Administration. Patients who had been diagnosed with depression or previously prescribed antidepressants were excluded.

The four main categories of blood pressure-lowering medications were reviewed: angiotensin agents (angiotensin converting enzyme inhibitors, ACE inhibitors and angiotensin II receptor blockers, or ARBs); calcium antagonists; beta-blockers; and diuretics.

The analysis found:

- None of the 41 most common high blood pressure medications increased the risk of depression.
- Nine medications—a few within each category—significantly lowered depression risk: 2 of 16 angiotensin agents, 3 of 10 calcium antagonists and 4 of 15 beta-blockers.
- Diuretic medications showed no impact on depression risk.

The nine individual high blood pressure medications found to significantly lower depression risk are enalapril and ramipril (angiotensin agents); amlodipine, verapamil and verapamil combinations (calcium antagonists); and propranolol, atenolol, bisoprolol and carvedilol (beta-blockers). All nine are approved for prescribing in the U.S.

"It is possible that the mechanism involved in decreasing the risk of depression is the anti-inflammatory effect among these nine medications," Kessing continued. "In the future, it will be important to compare the inflammatory properties of these nine hypertensives that lowered depression risk." (Low-grade inflammation is common in high blood pressure and [heart disease](#), as well as in depression.)

"Our study's findings could help guide prescriptions for patients with high blood pressure who are at risk of developing depression, those with prior depression or anxiety, and patients with a family history of depression," said Kessing. "However, if a patient is doing well with their current blood pressure prescription, there is no reason to switch. If depression develops, a medication switch may be considered to one of the nine anti-hypertensive medications that lowered depression risk."

The findings of this study are likely generalizable to other populations. However, limitations of the study include it relied on a clinical diagnosis of depression, that it was not a controlled clinical trial that randomly selected which medication [patients](#) receive, and that the impact on [depression](#) risk was analyzed for each high blood pressure [medication](#) individually; they were not tested side by side or as combinations of one or more other antihypertensive medications.

More information: Lars Vedel Kessing et al, Antihypertensive Drugs and Risk of Depression, *Hypertension* (2020). [DOI: 10.1161/HYPERTENSIONAHA.120.15605](#)

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