

## Study identifies superior hypertension treatment, efficacy between sexes

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(Medical Xpress)—In a recent subgroup analysis of the largest blood pressure treatment trial in history, University of Alabama at Birmingham (UAB) researchers found that women and men react the same to non-diuretic-based antihypertensive therapies like an ACE inhibitor (lisinopril) or calcium channel blocker (amlodipine), as well as a diuretic therapy (chlorthalidone) given to treat hypertension and reduce its cardiovascular complications.

The study, published in the May issue of the journal *Hypertension*,

sought to determine which drugs better treated hypertension and prevented cardiovascular disease and its complications in women. The researchers found that diuretics are superior in reducing the cardiovascular complications of hypertension when used as the initial treatment.

"These findings are significant because hypertension is highly prevalent, difficult to control and associated with a high incidence of cardiovascular disease complications in older women, and cardiovascular disease is the leading cause of sickness and death among women in developed countries," said the study's lead author Suzanne Oparil, M.D., professor of medicine in the UAB Division of Cardiovascular Disease. "This analysis is also important because very few cardiovascular studies have looked specifically at women and the best ways to prevent and treat their cardiovascular disease. Most analyses have been geared to men."

The study used data from the National Institutes of Health Heart Lung and Blood Institute-sponsored Antihypertensive and Lipid-Lowering to Prevent Heart Attack Trial (ALLHAT), the largest antihypertensive trial and the second largest lipid-lowering trial in the United States. The overall research objective of ALLHAT was to compare long-term effects of antihypertensive treatment with a diuretic, a [calcium channel blocker](#) or an ACE inhibitor when used as initial treatment with step-up drugs added as needed, as well as to assess long-term effects of a cholesterol-lowering statin for the lipid component.

Previously published research had shown that the diuretic was best in preventing heart disease in the entire study group compared to the [calcium channel blocker](#) and ACE inhibitor, more effective than the other drugs in preventing [heart failure](#) and more effective than the calcium channel blocker or ACE inhibitor in preventing stroke and other cardiovascular disease outcomes.

"We know that lowering elevated blood pressure reduces cardiovascular disease complications and death in the overall population but, until now, have not had data documenting the specific benefits of antihypertensive treatment on reducing the [cardiovascular complications](#) of hypertension in women," Oparil said. "In addition, we have not had outcome data comparing the effects of common non-diuretic-based therapies to diuretic therapy in women. This study fills those gaps of information."

Oparil said the similarity of the treatment effects by gender is robust because of the large sample size of the data. Forty seven percent of the ALLHAT cohort – 42,418 patients were enrolled between 1994 and 1998 – was female. They had a mean age of 67 years at enrollment.

Participants were assigned treatment by a computer-generated randomization. The goal blood pressure in each randomized group was lower than 140/90 mmHg. The primary outcome the authors monitored was a combined number of fatal coronary heart disease or nonfatal heart attack incidents among study participants. There were four major secondary outcomes assessed by the researchers: death from all causes; fatal and nonfatal stroke; heart disease with coronary revascularization and/or hospitalized angina; or cardiovascular disease with stroke, other treated angina, heart failure and peripheral arterial disease.

"We found that blood pressure decreased substantially during the first year of the study and showed modest further decreases over subsequent years in both genders in all treatment groups, although the decreases in systolic blood pressure were slightly less in women than in men across treatment groups," Oparil said. "And, diastolic [blood pressure](#) showed only minor differences between genders."

No differences in cardiovascular disease outcomes by gender were detected for the initial trial (five years) or extended follow up (eight to 13 years). In the initial trial period, there were significantly higher rates

of heart failure, stroke and combined [cardiovascular disease](#) incidence for the patients taking the ACE inhibitor (lisinopril), as compared to those taking the diuretic (chlorthalidone). There were significantly higher rates of heart failure for the patients taking calcium channel blocker (amlodipine) compared to those on the diuretic. These findings did not persist through the extension period with the exception of the heart failure result.

"We also found that men and women had similar and significantly higher stroke mortality during the extension period for the [ACE-inhibitor](#) group versus the diuretic group," Oparil added.

She said these findings should be considered when physicians develop a [treatment](#) plan for patients with newly diagnosed hypertension.

"When choosing first-step drugs, this evidence clearly suggests both men and women can benefit by starting with a diuretic," she said.

**More information:** [hyper.ahajournals.org/content/61/5.toc](https://hyper.ahajournals.org/content/61/5.toc)

Provided by University of Alabama at Birmingham

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