

# Caution urged in the use of blood pressure lowering treatment for heart disease patients

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Caution has been urged in the use of blood pressure lowering treatment for heart disease patients after a study in more than 22 000 patients with coronary artery disease found that too low blood pressure was associated with worse outcomes. The analysis from the CLARIFY registry is presented today at ESC Congress and published in *The Lancet*.

Professor Philippe Gabriel Steg, principal investigator of the CLARIFY registry, said: "The optimal blood pressure target in patients with hypertension continues to be debated, especially in those with coronary artery disease (CAD). ESC guidelines recommend lowering blood pressure to values within the range 130–139/80–85 mmHg for patients with CAD to reduce the risk of further cardiovascular events."

He added: "Some argue 'the lower, the better' but there is a concern that patients with CAD may have insufficient blood flow to the heart if their blood pressure is too low."

The current analysis of the CLARIFY registry assessed the relationship between blood pressure (BP) achieved with treatment and cardiovascular outcomes in CAD patients with hypertension.

The study included 22 672 patients with stable CAD who were enrolled between November 2009 and June 2010 from 45 countries into the CLARIFY registry and treated for hypertension. The primary outcome was the composite of cardiovascular death, myocardial infarction, or stroke. Secondary outcomes were each component of the primary

outcome, all-cause death, and hospitalisation for heart failure.

Systolic and diastolic BPs before each cardiovascular event were averaged and categorised into 10 mmHg increments. Hazard ratios (HRs) were estimated with multivariable adjusted Cox proportional hazards models, using the 120–129 mmHg systolic BP and 70–79 mmHg diastolic BP subgroups as reference.

The investigators found that after a median follow-up of five years, a systolic BP of 140 mmHg or more and a diastolic BP of 80 mmHg or more were each associated with an increased risk of cardiovascular events.

Professor Steg said: "These results were expected, and are in line with ESC recommendations to reduce blood pressure below these levels in patients with CAD."

Systolic BP less than 120 mmHg was also associated with increased risk for the primary outcome (adjusted HR 1.56 [95% confidence interval (CI) 1.36–1.81]) and all secondary outcomes except stroke. Likewise, diastolic BP less than 70 mmHg was associated with an increase in the risk of the primary outcome (adjusted HR 1.41 [1.24–1.61] for diastolic BP 60–69 mmHg and 2.01 [1.50–2.70] for less than 60 mmHg) and in all secondary outcomes except stroke.

"We found that systolic blood pressure less than 120 mmHg was associated with a 56% greater risk of the composite primary outcome of cardiovascular death, myocardial infarction, or stroke," said Professor Steg. "Diastolic blood pressure between 60 and 69 mmHg was associated with a 41% increased risk of the primary outcome, with risk rising to two-fold when diastolic blood pressure fell below 60 mmHg."

He added: "This large study of hypertensive CAD patients from routine

clinical practice found that systolic BP less than 120 mmHg and diastolic BP less than 70 mmHg are each associated with adverse cardiovascular outcomes, including mortality. The findings support the existence of a J-curve phenomenon, where the initial lowering of BP is beneficial but further lowering is harmful."

Professor Steg concluded: "Our results suggest that the ESC recommendation remains valid and physicians should exercise caution when using BP-lowering treatment in patients with CAD. This should however not detract from our efforts to diagnose and treat hypertension which remains massively underdiagnosed and undertreated worldwide."

**More information:** Vidal-Petiot E, Ford I, Greenlaw N, Ferrari R, Fox KM, Tardif JC, Tendera M, Tavazzi L, Bhatt DL, Steg PG, for the CLARIFY Investigators. Cardiovascular event rates and mortality according to achieved systolic and diastolic blood pressure in patients with stable coronary artery disease: an international cohort study. *Lancet*. 2016.

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