Researchers have found that the glitazones pioglitazone and rosiglitazone are not the same for lowering central aortic pressure, even though they are used in those with macrovascular disease. In the ASCOT study, the reduction in central aortic pressure was greatest in those on amlodipine, compared with those on atenolol or placebo, said Dr. Williams. Like all participants in ASCOT, these hypertensive patients were randomized to treatment with either of two regimens: amlodipine, followed by perindopril when a second drug was needed, or atenolol, with the diuretic bendroflumethiazide and potassium supplements added when a second drug was needed.

Throughout treatment, patients on the amiodipine-based regimen maintained a central aortic systolic pressure that averaged 4.3 mm Hg lower than patients treated with the atenolol-based regimen. Central aortic pressure has been shown to be a more independent predictor of cardiovascular outcomes than brachial blood pressure; this study showed for the first time in a large, clinical-outcomes trial that blood-pressure lowering drugs have pro- foundly different effects on central aortic pressures and hemodynamics despite a similar impact on brachial blood pressure,” said Dr. Williams, a professor of medicine at the University of Leicester (U.K.). Amlodipine’s ability to significantly reduce central aortic pressure is likely a major reason why the clinical results from the Euro-Scandinavian Cardiac Outcomes Trial (ASCOT) showed that patients treated with an amiodipine-based regimen had a 16% relative re- duction in the incidence of total cardio- vascular events and procedures, compared with patients treated with an atenolol-based regimen during an average follow-up of 5.5 years (Lancet 2005;366:895-906).

“It’s remarkable that we’re talking about what these drugs do in the central aorta after years of being completely blind,” to these effects, said Dr. Williams. Multiple measures of central aortic pressures were obtained for 2,199 of the patients who were enrolled in ASCOT. These measures were obtained via a commercially available device that cal- culates central aortic pressures after it transcutaneously measures the radial artery waveform through an external transducer wand that is placed on a pa- tient’s wrist. “Systolic pressure is not constant throughout the arterial tree, and central arterial pressure changes may not be measured by brachial cuff blood pressure,” commented Joseph L. Izzo Jr., M.D., professor of medicine and pharmacology at the State University of New York at Buffalo. “We now have a mandate to adapt blood-pressure cuff measurements.”

The results show that BP-lowering drugs have different effects on central aortic pressures and hemodynamics, despite having a similar impact on brachial BP.

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