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### abstract

#### *Central systolic blood pressure and pulse pressure in the management of hypertension: clinical relevance for stroke prevention*

In the presence of pressure amplifications from the central aorta to the periphery such as in the young, central hemodynamic might provide additional value in the prediction of cardiovascular events, particularly stroke. In 2403 general population subjects enrolled in the Strong Heart Study, central systolic blood pressure, compared with brachial systolic pressure, predicted more strongly fatal and nonfatal cardiovascular events (319 events, hazard ratios 1.15 vs. 1.10 for each 10 mm Hg increase in pressure), including 54 strokes. Even though the guidelines recommended 5 classes of antihypertensive drugs have similar effects on brachial blood pressure, they may have differential influence on central blood pressure. In the ASCOT-CAFE study, reductions were similar in the brachial systolic blood pressure and pulse pressure of the amlodipine and atenolol groups, but significantly larger in the central systolic blood pressure and pulse pressure of the amlodipine group compared to the atenolol group, 4.3 mm Hg and 3.0 mm Hg, respectively. The difference in central hemodynamics between these two treatment regimens, among other factors such as the difference in 24-hour blood pressure control and long-term blood pressure variability, also in favor of amlodipine, might contribute to the more favorable results in the amlodipine group in clinical outcomes, particularly the 23% reduction in the risk of stroke. In conclusion, the assessment of central hemodynamics has clinical implications in cardiovascular risk stratification and in the choice of antihypertensive drugs.