Inter-arm blood pressure difference and mortality in a general population: the AAA trial
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Introduction
• Difference in blood pressure between arms is associated with increased cardiovascular or all cause mortality in cohorts with established vascular disease or an elevated cardiovascular risk.1

• The Aspirin for Asymptomatic Atherosclerosis (AAA) trial; an intention-to-treat double blind randomized controlled trial, recruited 3350 men and women aged 50 to 75 years living in central Scotland, free of pre-existing cardiovascular disease, to determine the effectiveness of aspirin 100mg daily vs placebo on primary prevention of cardiovascular events. The primary end point was a composite of initial fatal or nonfatal coronary event or stroke or revascularization.2

• Participants had an elevated cardiovascular event risk, defined by an ankle-brachial pressure index (ABI) < 0.95 and were randomised to receive aspirin or placebo. The ABI measurement protocol included a single brachial blood pressure (BP) measurement in both arms; subjects were followed prospectively for ten years.

Methods
• We undertook a post-hoc analysis of the trial data using the bilateral brachial systolic BPs recorded at recruitment.

• Systolic inter-arm differences were calculated. Based on previous research,3 a cut off of ≥10mmHg, was examined for survival differences. Survival was explored using Kaplan-Meier analysis. Cox proportional hazard ratios (HRs) were calculated with and without adjustment for confounding variables (age, gender, smoking, diabetes, cholesterol, BP, ABI and deprivation index).

Results (contd)
• Over ten years there were 362 (10.8%) deaths from all causes and 94 (2.8%) cardiovascular-related deaths. An inter-arm difference ≥10mmHg was associated with increased cardiovascular deaths (HR 1.6 (1.1 to 2.4), p=0.019, Fig 2; adjusted HR 1.5 (1.0 to 2.4)), but not all cause mortality (HR 1.1 (0.9 to 1.4)).

• There were 764 (23%) subjects with hypertension. For this group inter-arm difference ≥10mmHg was associated with increased all cause mortality (HR 1.6 (1.0 to 2.4), p=0.031; adjusted HR unchanged), and increased cardiovascular mortality (HR 2.9 (1.3 to 6.4), p=0.005, Fig 3; adjusted HR 3.1 (1.3 to 7.4)).

Conclusions
• In subjects free of cardiovascular disease, preliminary findings indicate that a systolic inter-arm difference ≥10mmHg: is associated with higher prevalences of peripheral arterial disease is associated with increased cardiovascular mortality
• In hypertensive subjects it is also associated with increased all-cause mortality.

References:

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