Blood pressure difference linked to heart disease risk

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D. Chris Clark checking both arms for blood pressure. Credit: University of Exeter

The University of Exeter Medical School has led an analysis of more than 3,000 people in Scotland who each had blood pressure

measurements taken from both arms, published today in the *British Journal of General Practice*. Researchers say the findings show the importance of routinely measuring blood pressure in both arms.

Up to now, such research has mainly focussed on people who have already encountered heart disease or hypertension. Now, the new research, funded by RCGP, The South West GP Trust, NIHR and the NIHR CLAHRC South West Peninsula (PenCLAHRC), analysed a cohort of people who had been identified as having a greater risk of heart disease or hypertension, but who had not yet had any episode of either. They were healthy, but identified as being at higher risk of cardiovascular disease when recruited to the study.

The team found that a difference in systolic blood pressure measurements between the two arms (of 5mm Hg) was associated with almost double the risk of death from heart-related disease, when the cohort was followed up over a period of eight years. In the analysis, which was based on one pair of blood pressure readings, 60 per cent of the cohort had this difference. The researchers wanted to examine this single check of blood pressure in both arms to reflect currently available measurement methods in general practice. It is known, however, that the proportion of people confirmed to have a blood pressure difference will fall substantially on repeated testing.

Dr Chris Clark, a GP andNIHR Clinical Lecturer at the University of Exeter Medical School, said: "Current guidelines state that blood pressure should be measured in both arms when assessing patients for hypertension, but often this advice is not followed due to time constraints or lack of awareness amongst clinicians. For accuracy, to overcome natural blood pressure fluctuations, it is important to test both arms simultaneously to confirm any difference. However, our previous research has found that if one arm is tested before the other, with just a single pair of measures, it is still possible to identify nearly all those who

will prove to have an inter-arm difference on further testing. This new study confirms that people identified with only a single pair of measurements are still at higher risk of heart disease than those without an inter-arm difference. Repeated assessments to confirm the existence of an inter-arm difference, and suitable lifestyle advice, can then be targeted at individuals identified in this way, and could make a difference to their future health. The next stage of our research is to quantify the extra risk that an inter-arm difference indicates, and after that, to discover the extent to which this can be protected against."

The cohort was from the Aspirin for Asymptomatic Atherosclerosis (AAA) trial, a randomised controlled trial conducted from April 1998 to October 2008. That study, led by the University of Edinburgh and funded by the British Heart Foundation, recruited 3350 males and females aged 50-75 years living in central Scotland and free of pre-existing clinical cardiovascular disease. The study involved taking blood pressure from both arms, and the Exeter team worked with the authors of the AAA trial to analyse their data.

Professor Jeremy Pearson, Associate Medical Director at the British Heart Foundation which funded the initial clinical trial, said: "Differences in blood pressure between arms has previously been linked with an increased risk of dying from cardiovascular disease in those that already have the condition or are at very high risk. But this study found that healthy people without pre-existing heart disease may also have an increased risk. The findings support current guidance that blood pressure should be measured in both arms when assessing someone for hypertension."

More information: The study, Inter-arm blood pressure difference and mortality: a cohort study in an asymptomatic primary care population at elevated cardiovascular risk, is published in the print edition of the *British Journal of General Practice* on April 29, 2016.

Provided by University of Exeter