



## P109 The Influence of Sex on Cuff Blood Pressure Accuracy

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### ABSTRACT

**Background:** Cuff blood pressure (BP) is intended to approximate central aortic BP and accuracy is paramount. Sex differences in BP physiology could influence the accuracy of cuff BP as an estimate of invasive aortic BP, but this has not been explored in-depth and was the aim of this study.

**Methods:** Cuff and invasive aortic BP were measured in 1701 subjects (31.9% female, aged  $63 \pm 12$ ) during coronary angiography from the INvaSive blood PressurE ConsorTium (INSPECT) database. Cuff accuracy was defined as cuff–invasive BP. In a sub-sample ( $n = 376$ , 27% female, aged  $63 \pm 11$ ), invasive brachial BP was recorded to assess systolic (SBP) amplification (invasive brachial–aortic SBP).

**Results:** Invasive aortic SBP was higher in females compared with males (mean [95% CI]: 141.8 mmHg [137.1, 146.3] versus 132.9 mmHg [129.4, 136.4],  $p < 0.001$ ). Cuff SBP significantly underestimated invasive aortic SBP in females compared with males ( $-3.1$  mmHg [ $-5.9, -0.2$ ] versus  $1.4$  mmHg [ $-1.1, 4.0$ ],  $p < 0.001$  for difference). Sex differences remained after adjustment for age and height. In the sub-sample, aortic-to-brachial SBP-amplification was lower in females ( $7.1$  mmHg [ $3.3, 10.8$ ] versus  $10.2$  mmHg [ $5.1, 15.4$ ],  $p = 0.0070$ ). Sex, SBP-amplification, height and age were associated with cuff BP inaccuracy, but only SBP-amplification and age remained associated in multivariable analysis ( $p < 0.05$ ).

**Conclusion:** Females have greater propensity towards cuff BP inaccuracy through underestimation of aortic SBP. Both age and the magnitude of aortic-to-brachial SBP-amplification are related to cuff BP inaccuracy, which provide greater understanding of sex differences in BP physiology and may help improve the accuracy of cuff BP methods.

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