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## P17 Comparisons of Carotid-femoral Pulse Wave Velocity Obtained from the Surface-distance Measurement and from the Population-derived Distance Formula: Associations with Macro- and Microvascular Alterations in Older Adults

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## **ABSTRACT**

**Introduction:** Inaccurate determination of arterial path-length by surface-distance (SD) measurement is an inherent source of error in calculating carotid-femoral pulse wave velocity (CFPWV). A recent development in calculating arterial path-length by a simple distance formula (DF) for CFPWV has been shown to not only remove intercentre measurement variability but also strengthen the association between CFPWV and traditional cardiovascular risk factors [1]. We determined whether the association of macro- and microvascular alterations with CFPWV derived from the distance formula (CFPWV-DF) would be stronger than that with CFPWV derived from the surface-distance measurement (CFPWV-SD).

**Methods:** CFPWV-DF and CFPWV-SD were obtained from 489 older adults ( $67.2 \pm 8.8 \text{ yrs}$ , 154 F, 244 CVD). Macrovascular [carotid lumen diameter (LD), carotid inter-adventitial diameter (IAD), carotid intima-media thickness (IMT), carotid total plaque area, and ankle-brachial pressure index] and microvascular [reactive hyperaemia index and urinary albumin-creatinine ratio (UACR)] parameters were also obtained.

**Results:** CFPWV-DF was significantly lower than CFPWV-SD (9.27  $\pm$  2.38 vs 9.88  $\pm$  2.55 m/s, p < 0.001), which resulted from a longer arterial path-length estimated by SD than DF (495.4  $\pm$  44.8 vs 465.3  $\pm$  20.6 mm, p < 0.001). The significant associations observed between CFPWV-SD and LD (r = 0.264), IAD (r = 0.303), and IMT (r = 0.165) were similarly observed between CFPWV-DF and LD (r = 0.253), IAD (r = 0.303), and IMT (r = 0.183, all p < 0.001). This was also the case with UACR (r = 0.163 and r = 0.141, both p = 0.001). Other parameters did not show any association in either CFPWV.

**Conclusion:** The association of macro- and microvascular alterations with CFPWV-DF was not stronger than that with CFPWV-SD, suggesting that arterial path-length determination methods may not influence interactions between vascular biomarkers and CFPWV.

## REFERENCE

- [1] Weir-McCall JR, Brown L, Summersgill J, Talarczyk P, Bonnici-Mallia M, Chin SC, et al. Development and validation of a path length calculation for carotid–femoral pulse wave velocity measurement: A TASCFORCE, SUMMIT, and caerphilly collaborative venture. Hypertension 2018;71:937–45.
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