Artery Research
Vol. **25**(**S1**); 2019, *p.* S105
DOI: https://doi.org/10.2991/artres.k.191224.094; ISSN 1872-9312; eISSN 1876-4401
https://www.atlantis-press.com/journals/artres

# P63 Accuracy (Validation) of Central Blood Pressure Measurement Using the Sphygmocor Xcel-cuff Device

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## ABSTRACT

**Background:** Numerous devices purport to measure central aortic BP as distinct from conventional brachial BP. This study aimed to determine the accuracy (validation) of the Sphygmocor Xcel-cuff device (AtCor Medical, Sydney, Australia) for measuring central BP.

**Methods:** 330 patients (mean age 61.3 ± 10.6 years) undergoing coronary angiography had simultaneous measurement of invasive aortic BP and non-invasive cuff-derived central BP using the Xcel device (total $n$ = 552 individual comparisons). Methods were undertaken according to Artery Society guidelines and several calibration techniques to derive central SBP were examined.

**Results:** Central SBP was significantly underestimated, and with wide variability, when using the default calibration of brachial cuff SBP/DBP (−7.7 ± 11.0 mmHg). Similar wide variability was observed using other calibration methods (cuff 33% form-factor MAP/DBP, −4.4 ± 11.5 mmHg; cuff 40% form-factor MAP/DBP, 4.7 ± 11.9 mmHg; cuff oscillometric MAP/DBP, −18.2 ± 12.1 mmHg). Only calibration with invasive aortic integrated MAP/DBP resulted in a mean difference ± SD (3.3 ± 7.5 mmHg) within the minimum tolerable error of ≤5 ± ≤8 mmHg. The difference between brachial cuff SBP and invasive aortic SBP was 3.3 ± 10.7 mmHg. A subsample ($n$ = 151) analysis to determine the accuracy of central-to-brachial SBP amplification, showed this to be over-estimated by the Xcel device (4.3 ± 9.1 mmHg, $p$ = 0.02).

**Conclusion:** Irrespective of calibration technique, the Sphygmocor Xcel-cuff device does not pass the Artery Society accuracy (validation) criteria for non-invasive measurement of central BP. Further accuracy refinements of this device are required.



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