



### ACQUISITION OF TIME-RESOLVED BRACHIAL PRESSURE WAVEFORMS FROM CUFF-BASED PULSE VOLUME RECORDINGS

Poster Contributions  
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Authors: *Timothy S. Phan, Jumana Dakka, Amer Ahmed Syed, Izzah Vasim, Harry G. Oldland, Uzma Kewan, Scott R. Akers, Julio A. Chirinos, University of Pennsylvania, Philadelphia, PA, USA*

**Background:** Time-resolved brachial pressure (BP) waveforms are informative regarding pulsatile arterial hemodynamics. In contrast to technically-demanding arterial tonometry (AT), noninvasive cuff-based pulse waveforms recordings (PVR) can be acquired without special training. Although similar in morphology, PVRs and BP waveforms are variably and nonlinearly related. We assessed whether PVRs can be processed to reproduce pressure waveform morphology, using a nonlinear algorithm that uses information obtained purely from oscillometric BP devices.

**Methods:** In 35 subjects (mean age=62), sequential recordings of brachial PVR (VaSera, Fukuda Denshi) and AT were acquired. An algorithm was applied to PVR to obtain PVR-based pressure (PVR<sub>p</sub>) waveforms. Comparisons were made between PVR, PVR<sub>p</sub> and AT waveforms for (1) Form Factor (FF); (2) Systolic Pressure-Time Integral (SPTI); (3) Diastolic Pressure-Time Integral (DPTI)

**Results:** FF, SPTI and DPTI of PVR were significantly different than the reference AT waveform ( $p < 0.001$ ; paired t-test). In contrast, the algorithm yielded FF, SPTI and DPTI for PVR<sub>p</sub> that were not significantly different than AT ( $p > 0.05$ ; paired t-test) and much more closely approximated reference waveforms (Figure).

**Conclusions:** Significant differences in PVR morphology exist compared with AT waveforms. However, BP waveforms can be obtained noninvasively and in an operator-independent manner using cuff-based devices if appropriate non-linear processing of PVR is performed.

