Clinical Value of the AtCor System for Analysis of the Arterial Pulse

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The AtCor system was developed to be the "Gold Standard" for analysis of the arterial pulse waveform. It employs a Millar applanation tonometer, developed from the high fidelity catheter tip transducer originally used by Murgo for accurate measurement of aortic pulse waveforms at cardiac catheterisation and from Drzewiecki's non invasive applanation (flattening) approach. The tonometer has been shown accurate against directly measured Millar manometry at the radial and carotid sites. It has not been validated for the brachial site, where applanation can't be achieved. The transfer function utilised to generate aortic pressure has been validated against aortic pressure to standards specified by the US Food and Drug Administration and has been cleared as substantially identical under K002742 and K012487 for use under control conditions and with vasoactive agents, and for invasive and non-invasive radial pressure waves. This has been validated by other parties at rest, during exercise, during Valsalva manoeuvres and with different drug therapies. It has been used on a number of major studies including REASON, CAFÉ, OHASAMA and Strong Heart Study. Similar methodology from Johns Hopkins, Baltimore has been used by Wang et al (Hypertension 2010;55:799-805) to show predictive value of central pressure indices and of wave reflection in late mortality at 15 year follow up.

Criticism of the AtCor system is voiced by persons who have relied on brachial arterial applanation tonometry; these have consistently recorded carotid systolic and pulse pressures similar to brachial when diastolic and mean pressures were assumed identical. Problems are explicable on the basis of inability to applanate the brachial artery.

The AtCor system remains the "Gold Standard" for non-invasive measurement of central and aortic pressure waveforms and of parameters derived from the waveforms.