

Effect of Talking on Mean Arterial Blood Pressure: Agreement Between Manual Auscultatory and Automatic Oscillometric Techniques

Dingchang Zheng*, Roberto Giovannini and Alan Murray

Newcastle upon Tyne, United Kingdom

It is recommended that talking must be avoided during blood pressure (BP) measurement. However, there is little quantitative clinical data available on the comparison of the effect of talking on both manual and automatic techniques. This study aimed to provide these data.

Twenty healthy subjects (15 male and 5 female; age from 27 to 64 years) were studied. Manual auscultatory systolic and diastolic blood pressures (SBP and DBP) were obtained by a trained observer. For each subject, three repeat BP measurement sessions were performed, with two BP measurements in each. One was measured under resting condition and the other under talking condition. During the measurement the oscillometric cuff pressure was also recorded digitally during deflation. Manual mean arterial pressure (MAP) was estimated from manual DBP plus one third the pressure change from DBP to SBP. Automated MAP was determined from the cuff pressure at the peak of the 6th order polynomial model envelope fitted to the sequence of oscillometric pulse amplitudes. The average MAP from the three repeat sessions was used as the reference value for that subject. The effect of talking on both manual and automated MAPs was quantified and compared.

Talking increased both manual and automated MAPs significantly by 5.4 mmHg (mean±SD: 89.6±6.6 vs 94.9±6.9 mmHg) and 5.2 mmHg (86.6±7.7 vs 91.8±8.1 mmHg) respectively in comparison with those from the resting condition (both $P < 0.001$). The increases of manual and automated MAPs were not significantly different ($P = 0.8$), and they were moderately correlated with a regression slope of 0.87 and R square value of 0.4.

In conclusion, by analysing the recorded oscillometric pulse waveform, an increase in manual auscultatory MAP with talking has been confirmed with a shift of the peak of the oscillometric pulse waveform envelope to higher pressures. This provides scientific support for measurement protocols asking subjects not to talk during the measurement.