Agreement between USCOM and Vicorder haemodynamic measurements in pregnancy

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Objective. To evaluate the agreement between maternal haemodynamic measurements assessed with USCOM® and Vicorder® machines.

Materials and Methods. Overall, 344 assessments from 172 participants between 30+0 and 39+6 weeks gestational age (156 healthy controls, 11 participants with small for gestational age and 5 with fetal growth restriction) at a tertiary level maternity unit were considered. The agreement between USCOM® and Vicorder® results was evaluated for heart rate (HR), cardiac output (CO), stroke volume (SV) and total peripheral resistance (TPR). The assessment was based on Bland-Altman plots with 95% limits of agreement (LOA) for the mean difference (MD) between Vicorder® and USCOM®, reporting also the intraclass correlation coefficient (ICC).

Results. ICCs were generally low (ranging from 0.21 to 0.29), except for HR (ICC = 0.76, $p < 0.001$). USCOM® provided, on average, higher values for HR (MD = -0.30 bpm [-18.65; 18.05]), CO (MD = -0.47 L/min [-3.77; 2.82]) and SV (MD = -5.13 mL [-48.80; 38.54]) and lower for TPR (MD = 72.7 dynes × sec/cm^5 [-610.54; 755.07]), compared to Vicorder®.

Conclusions. The agreement between USCOM® and Vicorder® measurements is low, with wide LOA for all measurements, emphasising a high risk of bias. Therefore, standardisation of reference ranges in relation to the device under investigation should be used, and adjustment according to gestational age where there is a change in that parameter over time.