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## CLINICAL EVALUATION OF THE NEW BMU 40 IN-LINE BLOOD ANALYSIS MONITOR

**Background:** Accurate information about different blood parameters is essential in maintaining haemodynamics, perfusion and gas exchange during cardiopulmonary bypass (CPB). For this purpose a precise, accurate and continuous measurement and monitoring, which is preferably visually available, is needed. The objective of this clinical study was to compare the newly developed continuous in-line blood parameter monitoring system (CIBPMS) BMU 40 with a reference laboratory analyser with regards to the precision and accuracy of blood parameters measurement.

**Methods:** Thirty adult patients underwent elective cardiac surgery utilizing CPB and mild hypothermia (32°C). At five predetermined time points (S1 – S5) arterial and venous blood samples were analysed using the BMU 40 for five different parameters (paO<sub>2</sub>(37°C), paO<sub>2</sub>(act.), SvO<sub>2</sub>, Hb(ven) and Hct(ven)) and these results were compared to the gold standard laboratory analyser ABL 700. Results: A total of 150 paired blood samples were included to compare means, to analyse correlation, to calculate measures of bias, precision, limits of agreement and 95% confidence intervals.

**Results:** Revealed good agreement between the two devices for all parameters. Bias ± precision of S2 – S5 paO<sub>2</sub>(37°C) were 2.17 ± 9.61; paO<sub>2</sub>(act) 2.58 ± 9.54; SvO<sub>2</sub> -1.44 ± 2.35; Hb(ven) 0.01 ± 0.42; Hct(ven) 0.04 ± 1.29. Statistically significant differences were detected for SvO<sub>2</sub> (p<0,00001) at S1. Correlations after this first time point (S1) improved following an in vivo calibration. Conclusion: The BMU 40 is a precise, accurate and reliable continuous in-line blood parameter measuring system that can be easily be used within a standard CPB set-up. However, present data suggest an in vivo calibration of the BMU 40 should be performed.