

Comparison of the Masimo Rad-57 Pulse Oximeter with SpCO Technology against a Laboratory CO-oximeter Using Arterial Blood

Mottram C, Hanson LJ, Scanlon PD. *Respiratory Care* 2005;50(11):1471.

Introduction

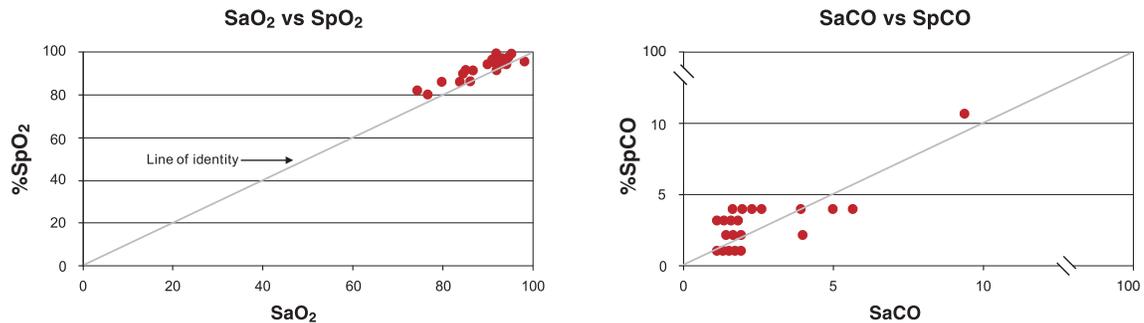
Masimo has developed a new technology called Masimo Rainbow SET, which measures functional oxyhemoglobin (SpO₂), methemoglobin (SpMet) and carboxyhemoglobin (SpCO). The standard diagnosis and treatment of carbon monoxide poisoning uses invasive and costly blood measurements. These researchers at the Mayo Clinic tested the new Rad-57 Pulse CO-Oximeter for corroboration of the standard arterial blood gas sample analyzed on a laboratory CO-Oximeter.

Methods

31 subjects requiring arterial blood gas tests were measured with a Masimo Rainbow SET digit sensor connected to a Rad-57 prior to the drawing of the blood. The SpO₂ and SpCO were recorded during the blood sampling. The blood was analyzed within 15 minutes using a pre-calibrated and quality-controlled Radiometer ABL 725 analyzer according to standard laboratory practice. The data were analyzed using a Student paired t-test.

	SaO ₂ (ABG)	SpO ₂ (Rad-57)	SaCO (ABG)	SpCO (Rad-57)
Mean	90.8 ± 5.4 SD	93.8 ± 4.2 SD	2.0 ± 1.8 SD	2.5 ± 2.0 SD
Maximum	97.5	99	9.3	11
Minimum	74.6	80	0.8	1
P-value		<0.001		<0.015

Results



Authors' Discussion and Conclusions

"The Masimo Rad-57 pulse oximeter measures functional oxyhemoglobin (SpO₂) (p<0.001) and SpCO (p<0.015) accurately... the device does appear to identify elevated SaCO and would be helpful in clinical scenarios where non-invasive assessment of SaCO is beneficial. In the subject where SaCO was very significant, subtracting the SpCO value from the function oxyhemoglobin value (SpO₂) would have yielded a SpO₂ that was clinically useful (SpO₂ 94% - SpCO 11% = adjusted SpO₂ 83%, fractional SaO₂ = 86.7%)."