

Usefulness of Pulse Oximetry Using the SET Technology in Critically Ill Adult Patients.

Levrat Q., Petitpas F., Bouche G., Debaene B., Mimoz O. *Ann Fr Anesth Reanim.* 2009 Jul-Aug;28(7-8):640-4.

Background

Pulse oximeters are routinely used in severely ill patients to detect hypoxemia early. In various clinical situations, however, conventional devices may be unable to display valid values or any value whatsoever. The usefulness of the Signal Extraction Technology (SET) in these situations has not yet been investigated.

Methods

Twenty-five adult patients requiring norepinephrine, regardless of the reason or dosage, or having a defective signal with a conventional oximeter were equipped with both their conventional saturation sensor (Oxymax Nellcor) and a SET saturation sensor (Masimo) connected to its monitor. Saturation values displayed by each pulse oximeter and the SaO₂ measured concomitantly by CO-Oximetry were gathered on inclusion and then whenever one of the two sensors did not display a value, or when the difference between the values was greater than five saturation points, or at any time a blood gas analysis was done.

Results

During the study period, 83 measures were collected. Using the Bland and Altman method, SaO₂ estimates by the SET system were more accurate than those by the conventional system (bias \pm 2 S.D. of 0.0% \pm 3.1% vs 2.1% \pm 11.0%, respectively), even when only valid values (values accompanied by a satisfactory quality index) were considered (0.0% \pm 2.7% vs 1.2% \pm 7.0%).

Conclusions

In situations at risk of producing defective signals when using conventional sensors, the SET system provided more valid SaO₂ estimates.