

Clinical Evaluation of a Prototype Motion-Artifact-Resistant Pulse Oximeter in the Recovery Room

Dumas C, Wahr J, Tremper KK. *Anesthesia & Analgesia* 1996;83(2):269-272

Introduction

Pulse oximetry is a part of standard anesthetic care. Under conditions of low perfusion or patient motion, spurious desaturation reports or outright oximeter failure can result. This study compares the frequency and nature of spurious pulse oximetry readings between a conventional pulse oximeter (CPO) and an oximeter utilizing Masimo SET pulse oximetry technology under various patient motion conditions seen in the recovery room including gross arm motion, shivering or Parkinsonian tremors, and fist clenching.

Methods

Fifty (50) adult surgical patients were selected from a group of patients that typically experience a high-alarm rate with routine postoperative pulse oximetry. Pulse oximetry was monitored with a conventional pulse oximeter (Nellcor N-200) and a Masimo SET pulse oximeter. Alarm frequency, defined as SpO₂ < 90% or complete signal loss, was evaluated.

Results

	Masimo SET	Nellcor N-200
SpO ₂ Diff. from reference > 10%	1 event/ 2 seconds	42 events/ 2,189 seconds
No Signal	13 events/ 107 seconds	41 events/ 1,508 seconds
False Alarms	11 minutes	75 minutes

Authors' Discussion and Conclusion

“Although the Masimo SET technology performed well in studies using healthy volunteers, evaluations in clinical settings have not been reported. Therefore, this investigation involved preliminary comparison of a prototype Masimo SET device with a CPO in the PACU. Therefore, of 1400 min of monitoring 50 patients, the CPO was alarming falsely for 75 min (5.4%) vs 11 min (0.8%) for the Masimo SET prototype. This represents a sevenfold decrease in audible false alarming. **This study showed a marked decrease in loss of signal, false alarms and false alarm duration with the Masimo SET device compared to a conventional pulse oximeter.**”