More Reliable Oximetry Improves Caregiver Efficiency

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Introduction

The authors' hypothesis was that monitors requiring frequent attention to maintain or verify their accuracy would divert caregivers from other tasks, decreasing efficiency, and increasing cost of care. Likewise, improved monitor accuracy should improve caregiver efficiency and this improvement should be measurable.

Methods

To test the hypothesis, the researchers prospectively evaluated the effects on caregiver activities and patient outcome of two pulse oximetry technologies (Masimo SET and Datex-Ohmeda 3740, the product used by the hospital at the time of the study) on 48 patients post CABG during their ICU period. One of the oximeters was randomly selected to provide the displayed saturation for bedside care ("unblinded" condition). Clinicians were unaware of data from the other oximeter ("blinded" device). No other clinical management processes or protocols were altered for this study. Recording was continued until 4 hours following tracheal extubation or for a maximum of 24 hour. They determined the "down time" in total minutes for each monitor (reported as a percentage of non-functional time, or NFT), the time to weaning of F_iO_2 to 0.40, time to extubation, number of ventilator changes, and the number of ABGs obtained during weaning. Data was reported and analyzed separately when the output of the device was "blinded" or "unblinded" to the caregiver.

Results

The percent of Non-Functional Time (NFT) for the Masimo SET device was significantly less in both cases, when blinded and unblinded to the caregiver, compared to the conventional pulse oximeter device. There were significantly fewer ABGs and the time to F_iO_2 was significantly less when the Masimo SET device was relied upon instead of the conventional pulse oximeter.

Marker	Masimo SET®	CPO	Significance
Unblinded % NFT	0.3 ± 0.4%	5.4 ± 6.6%	p = 0.02
Blinded % NFT	0.4 ± 0.6%	6.6 ± 8.1%	p = 0.02
ABG's / patient	2.0 ± 0.9	3.4 ± 1.6	p = 0.03
Minutes to 40% O_2	135 ± 68	232 ± 130	p = 0.04

Authors' Discussion and Conclusions

The researchers concluded that caregivers had more confidence in the data from Masimo SET compared to the conventional pulse oximeter and this resulted in fewer unnecessary diversions in their care patterns. **"The use of a pulse oximeter employing Masimo SET resulted in significantly less down time, more rapid weaning of F_iO_2 and fewer ABGs than a conventional pulse oximeter when used in ICU patients following cardiac surgery."**

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