

## **"Motion-Resistant" Pulse Oximetry: A Comparison of New and Old Models.**

Barker S.J. *Anesth Analg.* 2002 Oct;95(4):967-72

### **Introduction**

Several pulse oximeter manufacturers have recently developed instruments that are claimed to be resistant to the effects of patient motion. We performed a laboratory volunteer experiment to compare the performances of several of these instruments, as well as some older models, during combinations of motion and hypoxemia.

### **Methods**

Twenty oximeters were studied. A motorized table produced different hand motions, and each motion was studied during both room air breathing and hypoxemia. Pulse oximeters on the nonmoving hand were used to provide control measurements for comparison.

### **Results**

The Masimo SET pulse oximeter exhibited the best overall performance, with a performance index (percentage of time in which the SpO<sub>2</sub> reading is within 7% of control value) of 94%. The Agilent Viridia 24C was next, with an 84% index, followed by the Agilent CMS (80%), the Datex-Ohmeda 3740 (80%), and the Nellcor N-395 (69%). For comparison with older oximeter technology, the Criticare 5040 had an index of 28%.

### **Conclusions**

Recent technology changes have significantly improved pulse oximeter performance during motion artifact, with the Masimo oximeter leading the way. *Implications:* New improvements in pulse oximeter technology have resulted in significantly better accuracy and reliability during patient motion. The Masimo pulse oximeter demonstrated the best performance of the 20 instruments tested.