

## **New Generation Pulse Oximetry Signal Quality Indicators Are Not Universally Reliable.**

Goldstein M.R., Furman G.I., Sindel B.D., Yang L.L., Ochikubo C.G., Pernia M.L. Lawas-Alejo P., Martin, G.I. *J Perinatol* 2003; 23: P41.

### **Purpose**

The new generation pulse oximeters incorporate technologies designed to reduce motion and low perfusion artifact. Despite improvement, there are instances where pulse oximeters cannot give a valid reading. Signal aberrations with clinical intervention (diaper changes, heel sticks, etc.), low perfusion beyond responsible monitoring, and severe motion artifact are legitimate reasons to not report a saturation. Various indicators of pulse oximeter function have been developed to warn of these circumstances. The Nellcor N395, and N595 employ a pulse search (PS) indicator to indicate the inability of the oximeter to determine a pulse signal and a motion indicator (MO) to indicate motion that might affect the signal. The Masimo Radical uses Low Signal IQ (LoSIQ) to discern situations that may be beyond the oximeter's ability to resolve a saturation.

### **Methods**

The dependability of these indicators to signal an inability to accurately monitor was quantified. In all, 21 neonates were monitored for a total of 7548 minutes. The three oximeters probes were placed on different extremities and rotated to eliminate bias. The total number of false desaturations under 85% was quantified by the presence of normal saturation data on the other oximeters and clinical observation.

### **Results**

Results along with data of the effectiveness of the PS, MO, and LoSIQ were tabulated.

### **Conclusion**

Despite the fact that the Nellcor devices appear to employ two different techniques to identify false desaturation, clinical use demonstrates that MO lights consistently during PS. While the Masimo LoSIQ indicator is able to discern false desaturation, the Nellcor PS and MO are neither specific nor sensitive to false desaturation.