

Multicenter Trial of Neonatal Pulse Oximeter Sensor Usage: a Difference Between Manufacturers

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Introduction

Pulse oximetry is routine for monitoring oxygenation in neonates. If the pulse oximeter sensor is designated for single-patient use and it is short-lived, the cost of monitoring can be high. Since pulse oximetry monitoring of sick newborns is often lengthy, the use of long-lived sensors would benefit the management and costs of patients in intensive care. A reduction in sensor consumption with the use of Masimo LNOP sensors was reported in one population of infants [*Resp Care* 1998;43(10):860] but this study compared Masimo sensor consumption with Nellcor sensor consumption on the N200 technology. The authors desired to verify the repeatability of this experience with Masimo LNOP sensors in a larger, multicenter study, with each company's latest technology.

Methods

31 sick newborns were enrolled; 16 used Masimo LNOP Neo sensors and 15 used the Nellcor N-25 sensors. Infants were randomly chosen for monitoring with either the Masimo SET Radical or the Nellcor N-395 and N-3000 pulse oximeters. They remained on this monitor/sensor combination throughout the study. The time of sensor placement and replacement were noted along with the reason for changing the sensor. The standard care practices for pulse oximetry were followed, per each institution's use protocol.

Results

A total experience of 485.8 days on matched groups of 31 infants was accumulated in two NICUs and a step-down nursery of two independent hospitals in Germany. On average, the Masimo LNOP Neo sensors with version 3.0 had over twice (2.34 times) the useful life of the Nellcor N-25 sensors on the N395. The % difference in use between the two institutions was not significant (2.49 times versus 2.3 times improvement in useful life).

	 LNOP Neo	Nellcor N-395/N-3000
Average sensor life (days/patient)	9.6	4.1

Authors' Discussion and Conclusions

“We found a more than two-fold increased in sensor life (Masimo vs. Nellcor). This difference was consistent between various caregivers in multiple settings and corroborates the experience of another, more limited study. **A cost savings should result from use of Masimo versus Nellcor pulse oximeter sensors in neonatal care.**”