

## Useful Life of Pulse Oximeter Sensors in a NICU

Thomas A, Holmes M, Vogt J, Gangitano E, Stephenson C, Liberman R. *Respiratory Care* 1998;43(10):860

### Introduction

Although multiple types of pulse oximeter sensors are available, disposable sensors are most commonly used in the NICU. During lengthy hospitalization, the sick newborn may utilize many pulse oximeter sensors due to sensor failure, hygiene, or unsightliness. Increasing the useful life of adhesive pulse oximeter sensors would directly reduce the costs of NICU care. A new pulse oximeter technology and family of sensors have been introduced using novel materials, however, sensor longevity had not been previously studied.

### Methods

The authors studied 16 sick newborns in their NICU. The gestational ages ranged from 25 to 41 weeks and weights ranged from 465 to 3,600 gms. All infants were intubated or on supplemental O<sub>2</sub>, thus, requiring oxygenation monitoring. A prototype Masimo SET pulse oximeter (Masimo Corporation, Irvine, CA) and a Nellcor N-200 oximeter (Nellcor Puritan Bennett, Pleasanton, CA) used the Masimo LNOP Neo sensor and Nellcor N-25 sensor, respectively. The start time and the time a sensor was replaced or removed, along with the reason for replacement or removal, were recorded on a data collection sheet at the infant's bedside. Both sensors were removed, the site assessed, and the sensors repositioned every 12 hours per hospital policy.

### Results

56 sensors were used for a total of 211 days on the 16 infants.

	Masimo SET LNOP <sup>®</sup> Neo	Nellcor N-25
Number of sensors used	19	37
Average sensor life (days)	11.1	5.7
% of sensors lasting throughout patient stay	81%	6%

### Authors' Discussion and Conclusions

“We have used Masimo oximetry for 16 months and have been impressed with the longevity of the Masimo sensors. Reasons for the phenomenon include that the Masimo sensors are constructed of water-resistant material, whereas, the N-25 utilizes a cotton/elastic application tape. The cotton absorbed perspiration, bodily fluids, bath water, and parenteral fluids. Within days, the N-25 would exhibit an odor noticeable by the parent or staff which often dictated disposal. Whereas, the surfaces of the Masimo sensor can be cleaned of debris with an alcohol wipe allowing repeated applications. **The disposal of the Masimo adhesive sensors was almost exclusively due to the neonate no longer needing monitoring and not because of Masimo adhesive sensor failure ... If the sensor cost to the hospital was identical, a nearly twofold savings could be realized with the Masimo SET neonatal pulse oximeter sensors.**”