

An Evaluation of Pulse Oximetry-Pre, during, and Post-Cardiopulmonary Bypass

Lichtenthal P.R., Barker S.J. *Anesthesiology* 2002; 96: A598.

Introduction

There is limited research on the reliability of pulse oximeters during cardiopulmonary bypass (CPB). Cardiac patients present with dysrhythmias, pigmented skin and altered resistance making it difficult to monitor saturation during surgery. The purpose of this study was to compare oximeters on patient undergoing heart surgery with CPB.

Methods

24 patients having heart surgery with CPB participated in this IRB approved study. After induction of Anesthesia 3 pulse oximeters (Nellcor 200, Nellcor 395, Masimo Radical) were placed on the patients fingers and shielded from each other. During the study the pulse oximeters transmitted information to an automatic data logger. Results were divided into Pre, During and Post bypass times ,and were expressed as percent drop-out time. Which is the time when there is no figure on the screen, or it is flashing. Data was divided into light and dark skin patients.

Results

The data during the Pre and Post bypass times showed no difference. During bypass the Masimo was clearly superior (Table 1). Dropout rates for the Masimo during bypass were 2% and 7% for light and dark-skinned patients, respectively, while dropout rates for the other two instruments ranged from 24% to 42%.

Table 1. % Pulse oximeter dropout rates during CPB.			
Oximeter:	Nellcor N-200	Nellcor N-395	Masimo SET
Light skin	42.9 +/- 29.4%	37.6 +/- 27.6%	2.0 +/- 3.7%
Dark skin	42.2 +/- 25.6%	23.5 +/- 29.3%	7.3 +/- 12.3%

Conclusion

The Masimo pulse oximeter provides more reliable SpO₂ data during CPB.