

Avoiding Hyperoxemia during Neonatal Resuscitation: Time to Response of Different SpO₂ Monitors.

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Aim

To assess the time to obtain reliable oxygen saturation readings by different pulse oximeters during neonatal resuscitation in the delivery room or NICU.

Methods

Prospective study comparing three different pulse oximeters: Masimo Radical-7 compared simultaneously with Ohmeda Biox 3700 or with Nellcor N395, in newborn infants who required resuscitation. Members of the research team placed the sensors for each of the pulse oximeters being compared simultaneously, one sensor on each foot of the same baby. Care provided routinely, without interference by the research team. The time elapsed until a reliable SpO₂ was obtained was recorded using a digital chronometer. Statistical comparisons included chi-square and student's T-test.

Results

Thirty-two infants were enrolled; median gestational age 32 weeks. Seventeen paired measurements were made with the Radical-7 and Biox 3700; mean time to a stable reading was 20.2±7 sec for the Radical-7 and 74.2±12 sec for the Biox 3700 ($p=0.02$). The Radical-7 and the N- 395 were paired on 15 infants; the times to obtain a stable reading were 20.9±4 sec and 67.3±12 sec, respectively ($p=0.03$).

Conclusion

The time to a reliable reading obtained simultaneously in neonatal critical situations differs by the type of the pulse oximeter used, being significantly faster with Masimo Signal Extraction Technology. This may permit for better adjustments of inspired oxygen, aiding in the prevention of damage caused by unnecessary exposure to high or low oxygen.