

DELIVERY ROOM MANAGEMENT

Pulse oximeter sensor application during neonatal resuscitation: a randomized controlled trial

Background

According to neonatal resuscitation guidelines, the fastest way in order to acquire a reliable heart rate (HR) and oxygen saturation (SpO₂) reading in the delivery room management of the newborn, is to attach the sensor to the baby before connecting it to the device. This recommendation is based on 2 studies from O'Donnell that were conducted in 2004. The present study from Louis et al compared again:

- 1.sensor first applied on the newborns wrist and then attached to a pulse oximeter device (STIF) and
- 2.sensor to pulse oximeter first and then to infant wrist (STOF)

but with a current generation pulse oximeter device. Primary outcome was the time needed from completion of application of the sensor to the appearance of the first reliable HR and SpO₂ value. Newborn were divided according to the gestational age as follows: 280/7 to 306/7 weeks, 310/7 to 336/7weeks, and ≥ 34 weeks.

Summary of results

150 infants in total were included in the study. Median time to reliable signal (STIF versus STOF) was 16 (15.7–16.3) versus 10 (8.5–11.5) seconds (P=0.01). The median time was also significantly faster in STOF technique in all 3 gestational age groups. Time from birth to appearance of a reliable signal didn't differ significantly between STIF and STOF group [(61 (52–76) 58 (47–73) seconds respectively P=0.09)]. The need to reapply the sensor was 8 (11) in STIF and 1 (1) time in STOF group (P=0.03).

Strength

A well designed study and the first one that used pulse oximeter devices of the newest generation.

Limitations

No limitations could be found.

Practical conclusion

According to these results it seems that the fastest way to acquire reliable vital parameter readings in the delivery room is when the sensor is first applied to the pulse oximeter device and then to infant. These results are contrary to the neonatal resuscitation guidelines. However, although there was a trend in faster acquired values in the STOF group from birth, time didn't differ significantly.

Louis D, Sundaram V, Kumar P. Pulse oximeter sensor application during neonatal resuscitation: a randomized controlled trial. *Pediatrics*. 2014 Mar;133(3):476-82. doi: 10.1542/peds.2013-2175. Epub 2014 Feb 17.

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