

Averaging Time, Desaturation Level, Duration and Extent

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Background

Pulse oximeter saturation values are usually obtained by averaging over preceding measurements. This study investigates the dynamics between the averaging time and desaturation level, duration and extent.

Methods and Results

Prospective observational study of 15 preterm infants. Oxygen saturation was recorded for 168 h using a pulse oximeter. The raw red-to-infrared data were reprocessed using seven different averaging times to determine the number of desaturations below four thresholds and for seven different minimal desaturation durations. The total number of desaturations <80% was 339 with an averaging time of 16 s and 1958 with an averaging time of 3 s (minimal event duration >0 s). There was a significantly lower pulse oximeter saturation nadir with the shorter averaging time, while the maximum duration was significantly longer when using a 16 s averaging time.

Conclusions:

When using pulse oximeters, more attention should be given to averaging time and duration of desaturations.