Effect of Patent Ductus Arteriosus (PDA) and Respiratory Support on Oxygen Saturation in Preterm Babies?

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Background
Oxygen saturations in premature babies are targeted between 91–94%. However presence of a PDA and respiratory support have been attributed to fluctuations in oxygen saturations.

Aim
To study the effect of PDA and respiratory support on frequency and duration of desaturations in premature babies.

Methods
Babies <32 weeks' gestation admitted to the tertiary level neonatal unit were included in this prospective study. Saturations were recorded using the Masimo® pulse oximeters that recorded data every 2 seconds. The data was downloaded and analysed using SPSS® version19. Babies were divided into 4 groups based on the presence of a PDA (>1.5 mm) and respiratory support (ventilation/CPAP) (Table 1).

Results
Thirty six (~6 hour each) recordings were made and ~500,000 records captured. In babies with a PDA the duration of desaturations was significantly longer. Babies on respiratory support had significantly lower saturations and also significantly longer periods of saturation < 90% or < 86%.

Conclusions
In babies with PDA the desaturation episodes are significantly longer but the saturations are consistent. Babies on respiratory support have lower saturations and frequent fluctuations in saturations as compared to babies not on any support.

Study group	No. of measurements	Saturation; Mean(SD)	Dips/hr; Mean(SD)	Average duration of dips (sec); Mean(SD)	Sats<90 (% of recording duration) Mean(SD)	Saturations< 86% (% of recording duration)	Pulse rate; Mean(SD)
(1) PDA+ Resp. support +	117,000	92.60 (2.16)	14.04 (12.67)	30.50 (12.16)	14.7(12.4)	6.8(7.7)	153(14)
(2) PDA+ No resp. support	97,000	95.49 (1.79)	11.77 (7.90)	24.50 (10.95)	4.8(8.9)	1.8(3.4)	147(11)
(3) No PDA Resp. support +	64,800	93.64 (3.08)	22.40 (26.30)	14.17 (8.38)	14.9(17.3)	5.7(7.8)	147(16)
(4) No PDA No resp. support	169,200	94.07 (2.22)	36.51(19.53)	12.07 (6.08)	8.5(9.1)	2.8(4.0)	154(5)