

## **Night to night variability of home nocturnal pulse oximetry**

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### **Introduction and Aims**

Nocturnal pulse oximetry (NPO) has demonstrated a positive predictive value for identifying obstructive sleep apnoea (OSA) diagnosed by polysomnography (1). Night to night variability of NPO needs further study following encouraging comparisons in children selected for suspected OSA (2). This study aims to confirm whether single-night NPO is sufficient in detecting abnormal oxygen saturation (SpO<sub>2</sub>) to reduce wait times and alleviate pressure in an expanding paediatric sleep service.

### **Methods**

This was a retrospective analysis of all baseline 2-night home NPO (01/2014 - 02/2015) with a minimum estimated sleep time of 6hrs; children using ventilators or supplemental oxygen were excluded. Mean and minimum SpO<sub>2</sub> and 4% oxygen desaturation indices (ODIs) were documented. SPSS (Version 22) was used to calculate Descriptive Statistics, perform Spearman's correlations and Wilcoxon matched pairs tests.

### **Results**

Data were available from 40 children (17 females, median 6.0 years (1.15-17.15 years)). SpO<sub>2</sub> variables correlated well between nights (Figure 1, Table 1), with no significant differences identified by the Wilcoxon matched pairs test (Table 1). 90% (36/40) of first night NPOs agreed with second night NPOs in identifying a 4% ODI of  $\geq$  or  $\leq$  4 dips/hour.

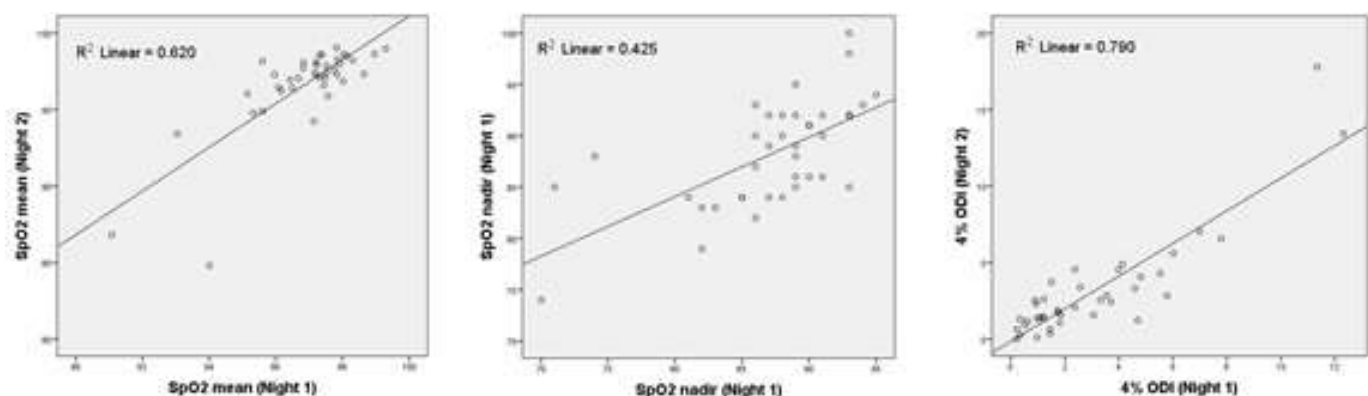


Figure 1: Scatter plots showing correlations between Nights 1 & 2 of SpO<sub>2</sub> mean, nadir and 4% ODI

Table 1: SpO<sub>2</sub> variables from NPO on Nights 1 & 2

	Night 1	Night 2	Spearman's	Spearman's	Wilcoxon	Wilcoxon
	(mean (95% CI)	(mean (95% CI)	p	r	p	z-score
Mean (%)	96.9 (96.4, 97.4)	96.7 (95.8, 97.6)	0.000*	0.657	0.662	-0.437
Nadir (%)	87.5 (85.6, 89.3)	88.4 (86.8, 90.0)	0.000*	0.680	0.384	-0.870
4% ODI (dips/hour)	3.0 (2.1,3.9)	3.1 (1.9,4.2, )	0.000*	0.793	0.957	-0.054

\*Significant correlation at the level of <0.01

### **Conclusions**

There is excellent agreement within baseline two-night NPO suggesting a single-night is sufficient.

### **References**

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2. Pavone M<sup>1</sup>, Cutrera R, Verrillo E, Salerno T, et al. Night-to-night consistency of at-home nocturnal pulse oximetry testing for obstructive sleep apnea in children. Pediatr Pulmonol. 2013;48(8):754-60.