Extent of High Oxygen Saturations in VLBW Neonates with Respiratory Distress Syndrome and Associated Factors

Arawiran J.M., Curry J.M., Welde L., Alpan G. *Pediatric Academic Societies Annual Meeting* 2013 May 4-7, 2013 Washington, D.C. Abs# E-PAS2013:166

Background

Considerable attention has been paid to maintaining oxygen saturations in premature infants in a predefined range. Reports suggest that preterms receiving supplemental oxygen spend 30-40% of the time higher than the intended SpO2 range. Previous studies of oxygen saturation have typically shown only aggregate data. Data are analyzed under implicit assumption that oxygen saturations are independent between and within different babies.

Objective

This study aims to determine the amount of time that VLBW babies spend above 92% and whether there is a subgroup of patients who are prone to be in the higher range that would merit special attention in quality improvement endeavors.

Design/Methods

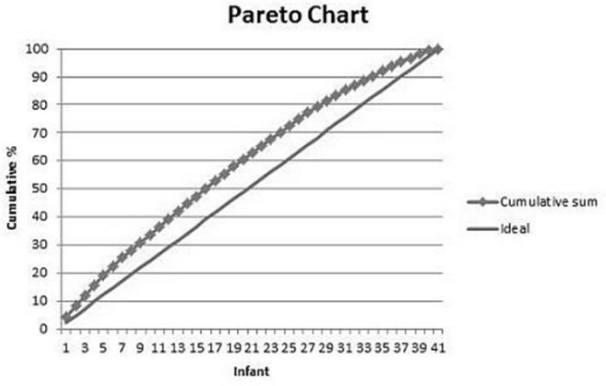
We studied 1481 12-hour nursing shifts in 41 babies <1500g who were receiving supplemental oxygen (>21%). These patients were on Masimo pulse oxymeters. Oxygen saturation data, at 2s intervals, were downloaded and reviewed. We measured proportion of time spent per shift with oxygen saturation 93% (%HiSat). We related %HiSat to mode of ventilation, time of shift, and birthweight. We also used Pareto analysis to check whether the total %HiSat was equally distributed among the babies.

Results

The mean gestational age was 25wks (23-30wks), mean birthweight 742g (420-1310g). On average, 36.9% 17.2% of a shift was spent with oxygen saturation of 93-100%. Birth weight was not related to %HiSat and neither was shift time (day vs. night). Table below shows the result according to the ventilation mode.

Mode of Ventilation	High Freq*	A/C Vent	CPap or BiPap	Nasal Cannula*
%HiSat (mean±SD)%	31.40±16.09	42.2±17.02	40.72±16.54	59.97±14.05

*p value <0.001 vs. all other modes



Conclusions

VLBW babies spend 36.9% of time with O2 sats 93%. Pareto analysis showed that time spent in the high range was equally distributed among all babies. Although %HiSat was (statistically significantly) lower when on HFV than other ventilation modes, the difference has little clinical implications.