

VOLUME LIMITATION REDUCES EARLY SIGNIFICANT HYPOCARBIA IN PRETERM VENTILATED INFANTS IN A BUSY TERTIARY NEONATAL SETTING

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Background and aims: Hypocarbica in preterm infants affects neurodevelopmental outcome. We showed by repeated audit that preterm ventilated infants were routinely running low CO₂ (< 4.5) (25% in 2008), despite educational interventions. We therefore added volume limitation to our normal pressure controlled ventilation in 2010. We evaluated the impact by auditing blood gas values.

Methods: Audit of blood gas CO₂ levels of preterm ventilated infants managed with volume limitation in comparison to previous audit data from before this change.

Results: 19 infants contributed 109 gases during their first 24 hours of life. 6% of these had a pCO₂ < 4.5 in comparison to 25% from the previous cohort. There was no increase in very high levels of pCO₂ (defined as >7.5).

CO2 value (mmHg)	No Volume limitation (2008)	Volume limitation
<4.5 (very low)	25	6
4.5 - 5.9 (low)	50	38
6 - 7.5 (target)	18	48
>7.5	7	8

[Proportion of gases with target CO₂ values]

Conclusions: Volume limitation successfully reduced the number of blood gases with very low levels of pCO₂ where education had failed. This was achieved without any increase in gases with a high pCO₂. This method has been easily understood by a team experienced only in pressure limited ventilation. Other units that currently pressure ventilate may like to consider this method of helping to achieve targeted CO₂ values without the need to switch to volume ventilation.