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DOES VOLUME LIMIT REDUCE EPISODES OF HYPOCARBIA?

P. Mallya[1], L. Gillespie[2]

[1]Neonatology, University Hospital of North Tees, Stockton, [2]Neonatology, Sunderland Royal Hospital, Sunderland, UK

Background: Current evidence suggests hypocarbia is associated with the development of brain injury. Therefore ventilation strategies that reduce excessive CO_2 removal could be beneficial.

Aims: To assess whether introducing a volume limit facility resulted in fewer babies with recorded episodes of hypocarbia (pCO_2< 4.6 kPa).

Methods: Infants receiving mechanical ventilation from 01/09/2008-31/08/2009 were identified and data was collected for the 48 hours following initiation of mechanical ventilation. This was compared with audit data from 2006 prior to the introduction of the volume limit mode. Data was analysed using unpaired t test.

Results: 67 infants received mechanical ventilation during the above period. Five infants were excluded (charts incomplete). There were 36/62 infants with no recorded episodes of hypocarbia in the first 48 hours compared to only one infant from the 2006 audit. Volume limit function was used in 45/62 infants.

	Tidal volume limit on (n=45)	Tidal volume limit off (n=17)
Median gestational age	27 weeks	28 weeks
Median birth weight (grams)	1120	1630
Recorded hypocarbia episodes	16(36%)	10(59%)
Median tidal volume in all babies (95%CI)	5.3ml/kg(5.21-5.37) p<0.0001	5.7ml/kg(5.55-5.83)
Median tidal volume in <28 weeks (95%CI)	5.53ml/kg(5.4-5.6) p<0.0001	6.25ml/kg(6.04-6.5)
Median PCO2(95%CI)	6.19kPa(6.08-6.38) p<0.0001	5.65kPa(5.21-5.92)

[2008-2009 Audit data]

Conclusion: Overall, there was a marked improvement in CO_2 control especially when volume limit function was used. This may have been due to multiple factors including increased staff awareness and volume limit facility.