STRATEGIES FOR SETTING THE PIP LIMIT DURING VOLUME GUARANTEE VENTILATION

K.I. Wheeler^{1,2,3}, C. Wong¹, C.J. Morley¹, P.G. Davis^{1,4,5}

¹Newborn Research, Royal Women's Hospital, ²NMHC CCRC in Newborn Medicine, RWH, ³Ritchie Center for Medical Research, Monash University, ⁴University of Melbourne, ⁵Murdoch Childrens Research Institute, Melbourne, VIC, Australia

In volume guarantee (VG) mode, the Dräger Babylog 8000plus ventilator targets a set expired tidal volume (V_T) by adjusting the PIP between the positive end expiratory pressure (PEEP) and the maximum PIP limit (Pmax). If Pmax is too low, V_T may not be delivered and the ventilator alarms. If too high, infants may be at risk of unnecessarily high inflation pressures and V_T . Three strategies for selecting Pmax were compared.

Infants were eligible if stable on assist control (AC) VG for the previous 24 hours. Three strategies for setting Pmax were compared during 20 minute epochs in random order: F=Fixed unit setting (30 cm H₂O); C=Pmax set 5 cm H₂O above the typical peak pressure reported by the clinical staff; T=Pmax set 5 cm H₂O above the average PIP during triggered ventilation. Ventilator data and measures of cardiorespiratory stability were recorded. Analysis was repeated excluding spontaneous large breaths.

15 infants were studied. Median (IQR) corrected gestation, weight and FiO₂ were 27 (25, 30) weeks, 0.78 (0.73,1.5) kg and 0.23 (0.21,0.31) respectively. Mean (SD) results shown below:

	F (Fixed)	C (Clinical+5)	T (Triggered+5)	Regression (F v C) p value	Regression (F v T) p value
Pmax (cm H₂O)	30 (0)	23 (5)	21 (5)		
PIP (cm H₂O)	19 (5)	17 (5)	18 (6)	0.12	0.52
VT>200% target (all 54197 inflations)	4.0 (3.4)	2.6 (3.1)	3.0 (2.4)	0.03	0.14
VT>200% target (47214 supported inflations)	4.0 (3.3)	2.4 (2.7)	2.4 (1.9)	0.05	0.02

[Results]

Cardiorespiratory parameters were stable at all settings.

Strategies which set Pmax 5cm H₂O above the triggered PIP reduced the proportion of inflations with V_T >200% target.