EVALUATION OF PEAK INSPIRATORY PRESSURE AND INHALED TIDAL VOLUME DURING PC-PSV WITH VARIABLE PRESSURE SUPPORT ON THE DRÄGER V500

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Methodology: The Hans Rudolph HR 1101 Electronic Lung Simulator was interfaced, using a size 7.5 ETT, to the Dräger V500. Settings on the HR 1101 series Resistance 12 cm H2O/L/sec, Compliance 30 mL/cm H2O, Rate 15 minute, Amplitude 5, Load Effort Normal. The Dräger V500 was placed in PCV-PS with VariablePS active, PEEP 5 cm H2O, Tube Compensation off, Slope 0.20 seconds, Inspiratory Flow Termination 25%, Pressure Support of 10, 15 and 20 cm H2O. Variances of 30% and 60% were set on each pressure support setting with 30% and 60% variances, PIP and Inhaled Tidal Volume (VI) were measured on the Dräger V500 for each breath.

Results: Data points were measured on each breath for a total of 460 breaths. Each change in variance percentage was allowed to stabilize for five minutes before data were collected. Corresponding pressures and volumes were recorded from the Dräger V500 screen and each pressure and volume was entered into an Excel worksheet.

Conclusion: VariablePS provided a varying level of pressure support at each percent setting. The pressure support means were within 1 cm H2O of the set PIP (PEEP + pressure support). Volumes were highly variable depending on the amount of pressure support set and the percentage of variation applied to the pressure support. When set at 30% Variance, PIP was as low as 20% and has high as 40%. When set at 60% Variance, PIP was as low as 50% and as high as 60%

Discussion: VariablePS accomplished varying tidal volumes and pressures based on the variances set on the ventilator. Our findings demonstrated that the variance set generally trended on the higher side of the mean. Overall VariablePS was able to deliver varying levels of pressure support in a bell shaped curve allowing for a variable tidal breathing pattern. Research thus far has been focused on bench testing and animal models. Additional research is needed on human subjects to determine if the benefits are similar for human subjects. When using VariablePS, clinicians need to consider the PIP and volume that could be generated when a greater variability percentage is set using PCV-PS with VariablePS.