PRODUCT BULLETIN

July 22, 2003

SUBJECT: HT50 Ventilator Management of Slope Rise for Pressure Support and Pressure Control Breaths

Introduction to Slope/Rise Adjustment

The most common reason for providing a patient with mechanical ventilatory support is to decrease work of breathing. This can be very challenging if the patient is actively breathing since the patient is in control and the ventilator must move gas in synchrony with the patient's breathing rhythm.

Published research documents that a ventilator's management of flow delivery and the resulting pressure slope/rise during pressure targeted breaths determines how well it manages decreasing work to breathe, volume delivery and patient-ventilator synchrony. Every ventilator manages slope/rise a little differently.

Identifying the Slope/Rise Challenge

The Slope/Rise must be fast enough to support the patients effort and not too fast to minimize overshooting the target pressure. Both patient inspiratory flow demand and patient respiratory mechanics determine how fast pressure will rise at the airway in response to a given flow delivery from the ventilator. Patient flow demand can change from breath to breath and even within a breath due to changes in wakefulness, changes in pain or discomfort or changes in minute volume due to metabolic/cardiac status changes. Complicating the situation is the fact that patient respiratory mechanics can also change dynamically with changes in airway secretions, fluid balance or position. Optimal management of slope/rise requires adjusting ventilator flow delivery with every change in patient inspiratory flow demand or patient respiratory mechanics.

User-Selectable Slope Rise Controls on Newer Ventilators

Some manufacturers have introduced controls that allow the user to select the slope/rise setting. This manual adjustment may cause some fundamental difficulties: To adjust rise/slope effectively, the clinician must be able to correctly analyze graphic waveforms in order to determine if the pressure rise is too rapid or too slow. In addition, the rise/slope the clinician selects is only effective when patient conditions match those that exist during adjustment.

HT50 Ventilator Slope/Rise Management For All Pressure Targeted Breaths

When ventilating a patient with the HT50 there is no need for the clinician to analyze waveforms for the purpose of manually setting slope/rise since there is no user selection required. During pressure support and pressure control, the microprocessor controls slope/rise breath-by-breath with the goal of meeting the target pressure within 200 ms while minimizing overshooting the target pressure.

If you have any questions or need additional information about the HT50 Slope/Rise adjustment, please contact Newport Clinical Education: 1.949.642.3910 ext. 218 or email: clinical@newportnmi.com.

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