“There is a definite learning curve to any new approach to ventilation”

**DR. MARTIN KESZLER** talks about how neonatal ventilation has progressed throughout the years and how Volume Guarantee can support a positive outcome of neonatal respiratory care.
Dr. Keszler, how exactly do patients benefit from Volume Guarantee (VG) ventilation for pre-term-newborns?

Volume Guarantee is a closed loop feedback mode of ventilation that reduces the variability of delivered tidal volume and thus reduces exposure to excessively large tidal volumes. Because the ventilator automatically reduces inspiratory pressure as the lung becomes more compliant, VG reduces the risk of inadvertent hyperinflation and lung injury due to excessive stretching of lung tissue. VG also results in more stable minute ventilation, so that fewer blood gas determinations are needed. It is a self-weaning mode and has been shown to reduce the total duration of mechanical ventilation.

How widely is volume targeted ventilation for pre-term-newborns used in the United States? Can you compare that to other countries/regions?

Precise data are not yet available, but VG is still relatively infrequently used in the US, whereas it is much more widely used in the Scandinavian countries and Australia. A recent unpublished survey of the 18 National Institutes of Health Neonatal Research Network revealed that only about 30% use VG regularly.

If you compare the Babylog 8000 plus to the Babylog VN500* – what are the most important innovations from your point of view?

Many important advances have been incorporated into the Babylog VN500. The user interface is greatly improved and the range of available modes is expanded. Some modes such as APRV are of unproven value in newborn infants, but potentially useful. The Leak Compensation feature is very attractive. The corrected tidal volume greatly reduces the potential for excessive tidal volume resulting from large leaks around the endotracheal tube. The ability to provide Pressure Support (PS) to the spontaneous breaths during Synchronized Intermittent Mandatory Ventilation (SIMV) is important for the large number of clinicians who prefer to use SIMV as a primary mode of ventilation. The greatly improved High Frequency Oscillatory Ventilation (HFOV) mode, while not available in the USA represents the first true advance in HFOV in over 20 years. Specifically, I am referring to the application of VG to the HFOV mode. This exciting development should eliminate the most troubling aspect of HFOV – namely its propensity for inadvertent over ventilation.

What are the greatest challenges for physicians in switching from other forms of ventilation to Volume Guarantee?

VG represents a true paradigm shift. Neonatologists have long been accustomed to using pressure as the primary control variable but evidence shows that it is in fact the tidal volume that matters most (Volutrauma). Using Volume Guarantee brings that transparency to the field of Neonatology. So, the concept of allowing the inspiratory pressure to adjust while maintaining the set tidal volume helps the clinician move towards a new comfort zone. There has also been a paucity of good data to guide appropriate choice of tidal volume – something that my group has been addressing with a series of studies aimed at filling that knowledge gap.

How intensively is this method taught at medical schools in the United States?

It is not taught at the medical school stage – clinical training is hospital-based, but even there it does not get much exposure, reflecting the relatively infrequent use. Ventilator management is not taught very effectively in many residency programs; to some degree this reflects the reliance on Respiratory Care Practitioners (RCPs) for ventilation management.

What are your own experiences with VG? When did you first start to use it?

I have used VG since shortly after its introduction and have conducted many of the clinical studies that document its benefits. I have written and lectured extensively about the advantages of volume targeted ventilation in general and VG in particular. My early experiences illustrate the fact that there is a definite learning curve to any new approach to ventilation. In those days, there was a fair amount of trial and error in figuring out how to best use this great new technology. With time, the comfort level increases and the necessary data are generated to inform the appropriate choice of tidal volume, the key factor in making VG work.