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Enhancing Ventilation Monitoring: An Interview with Professor Ola Stenqvist

Professor Ola Stenqvist is a Consultant Anaesthesiologist in the Department of Anaesthesia at Sahlgrenska University Hospital in Gothenburg, Sweden, and a professor in the Department of Anaesthesiology and Intensive Care at Gothenburg University. Professor Stenqvist recently developed two new ventilation monitoring technologies now produced by GE Healthcare, SpiroDynamics and FRC INview.

What Research Interests Led You to Develop SpiroDynamics and FRC INview?

My primary research interests include the monitoring of gas exchange and pulmonary function. I also maintain a particular interest in acute lung injury and acute respiratory distress syndrome. Since the 1980s, I have been working with Datex monitoring systems. I have been particularly interested in trying to reduce the lead-time necessary when conducting research. I felt that it would be ideal to use standard monitoring systems for research. Traditional, static measurement systems create a paradoxical situation: clinicians have to stop the ventilation process in order to study the process. I thought it would be better all around if we didn't have to stop the process after all. This inspired the development of SpiroDynamics and FRC INview.

What do SpiroDynamics and FRC INview do?

SpiroDynamics enables critical care specialists to monitor tracheal pressure and intrinsic PEEP measurements continuously, regardless of the ventilator setting. These measurements are captured using a disposable catheter, which can be easily inserted into standard endotracheal and tracheostomy tubes. Measurements are then taken near the end of the tube, in the trachea, and are used for calculation of lung compliance at the beginning, middle and end of each breath, so the clinician gets a more accurate view of tracheal pressure, PEEP, and compliance at different levels of the breath.

FRC INview provides cycled, automatic functional residual capacity (FRC) measurements without interrupting ventilation. FRC INview is also able to directly measure the end expiratory lung volume, without need for an additional gas source. With this technology, critical care specialists can run a single procedure, or a series of procedures. They can even programme the start of a sampling process, establish a series of measurements and compare current measurements with past measurements.

What Difference will These Technologies Make in the Practice of Ventilation?

SpiroDynamics and FRC INview will make a big difference for both researchers and practicing physicians. In an ideal setting, a clinician can see patient data real-time, in the ICU. These new solutions are easy to use and make data available right away, saving valuable time. In a clinical setting, real-time data on lung pressure allows the clinician to adapt ventilation to the patient's current situation, improving patient outcome.

Previously, there was no practical way to measure this in a clinical setting. SpiroDynamics and FRC INview adapt old technology to enable clinicians to measure lung pressure continuously and lung volumes automatically hour after hour, if they want to. Physicians no longer need to rely on subjective visual observations when determining how to treat their mechanically ventilated patients. SpiroDynamics and FRC INview really are a "window" into the lungs.

What are Your Plans for Future Research?

I hope to continue improving ventilation monitoring possibilities. I will also continue to look for new ways to help interpret information, enabling clinicians to do more with the data available. There are always improvements to be made.

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