Bringing Greater Understanding to Oscillating Positive Expiratory Pressure Therapy — From In Vitro Performance Characterization to Physiological Effects and Clinical Impact

RATIONAL

- Oscillating Positive Expiratory Pressure (OPEP) devices generate positive pressure pulses in the airways.
- By mobilising and clearing mucus, OPEP therapy has the potential to induce changes in airways ventilation and subsequent drug deposition.
- There is a scarcity of published evidence though linking laboratory performance characteristics to physiological effects and clinical impact.
- A specific OPEP device is reviewed in such context in order to provide a more holistic understanding.

METHODS

- Different OPEP devices were reviewed in terms of laboratory waveform performance and specific metrics.
- Such lab data was then linked to previously reported physiological and clinical data for one device, Aerobika®, in order to understand the entire pathway from lab performance to physiology to clinical efficacy.

RESULTS

- Laboratory pressure pulse waveforms from five different types of OPEP devices were shown to differ greatly in profiles and such differences translated into quantifiable differences in Total Pressure Pulse Impact (TPPI) and percentage of exhalation with significant oscillations.
- The OPEP device with the highest TPPI demonstrated physiological changes in airflow distribution and drug deposition patterns in a Functional Respiratory Imaging (FRI) study, which was then linked finally to reported clinical improvements in COPD and post-surgery patients.

CONCLUSIONS

- This laboratory and clinical overview demonstrates appreciable differences in pressure pulse waveforms for differing OPEP devices and then links these to the leading laboratory performing device into reported airway physiological changes and improved clinical outcomes.