

European Respiratory Society Annual Congress 2013

Abstract Number: 1951

Publication Number: 1975

Abstract Group: 2.2. Noninvasive Ventilatory Support

Keyword 1: Ventilation/NIV **Keyword 2:** Respiratory muscle **Keyword 3:** Gas exchange

Title: Effects of patient ventilator asynchrony (PVA) on gas exchange, respiratory muscle load, patient comfort and adherence to non-invasive ventilation (NIV)

Dr. Michelle 9646 Ramsay michelleramsay@doctors.org.uk MD ^{1,2}, Dr. Swapna 9647 Mandal swapna.mandal@gstt.nhs.uk MD ^{1,2}, Dr. Eui-Sik 9648 Suh eui-sik.suh@gstt.nhs.uk MD ^{1,2}, Dr. Joerg 9649 Steier joerg.steier@gstt.nhs.uk MD ¹, Prof. Anita 9650 Simonds a.simonds@imperial.ac.uk MD ³ and Dr. Nicholas 9663 Hart nicholas.hart@gstt.nsh.uk MD ^{1,2,4}. ¹ Lane Fox Clinical Respiratory Physiology Research Centre, Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom ; ² Division of Asthma, Allergy and Lung Biology, King's College London, London, United Kingdom ; ³ NIHR Respiratory Biomedical Research Unit, Royal Brompton Hospital, London, United Kingdom and ⁴ Guy's and St Thomas' NHS Foundation Trust and King's College London, NIHR Comprehensive Biomedical Research Centre, London, United Kingdom .

Body: Introduction:PVA may adversely affect gas exchange, respiratory muscle unloading and patient comfort. We investigated the relationship between PVA, physiological and patient-centred outcomes, hypothesising that PVA would lead to poor ventilatory adherence. Methods:Patients requiring domiciliary NIV were enrolled. NIV was titrated using capnometry and oximetry. PVAs were scored using our standard definitions and quantified as percentage of total breaths analysed. We investigated the relationship between PVA at initiation of NIV and (1) time spent with oxygen saturations <90%; (2) time spent with CO₂ levels > 7kPa; and (3) patient perception of comfort and co-ordination with the ventilator using visual analogue scores. Parasternal electromyogram (sEMGpara%max) was measured as a marker of neural respiratory drive to chest wall muscles and compared to PVA at initiation of NIV. Ventilator adherence data (log hours) was collected at 6 weeks post commencing NIV. Results:20 patients(11 male) participated; 8 chronic obstructive pulmonary disease, 7 obesity hypoventilation syndrome and 5 neuromuscular disease. There was a direct relationship between PVA at initiation of NIV and EMGpara%max (r=0.46; p=0.04). No significant correlation was observed between PVA and overnight gas exchange, patient reported comfort and co-ordination scores or adherence to ventilation. Conclusion:PVA adversely effects respiratory muscle unloading however, it does not negatively impact on ventilatory control or patient perception of comfort on NIV. PVA was not associated with ventilatory adherence questioning its role in achieving successful domiciliary NIV set up.