

THE ROLE OF SLEEP STUDIES IN CHILDREN RECEIVING LONG TERM VENTILATION**S. Band**¹, M. Samuels²¹*Keele Undergraduate Medical School, Keele University, Keele,* ²*Academic Department of Paediatrics, University Hospital of North Staffordshire, Stoke-on-Trent, UK*

Background: Follow-up sleep studies are recommended for children on long term ventilation (LTV), yet only one study has looked at their utility. While changes to ventilation are commonly needed, we wanted to identify:

- (i) which measures in the sleep study showed abnormalities, and
- (ii) the frequency and nature of changes made to ventilator settings.

Method: LTV sleep study results over 5.8 years were collated. Recordings included: SpO₂, ECG, heart rate, chest and abdominal movements, transcutaneous and end-tidal CO₂, airway pressure and video (Visilab 3, Stowood Medical, Oxford). Data were obtained on: oxygenation, CO₂, patient-ventilator synchrony, variance of airway pressures from those prescribed, pressure waveform, and outcome.

Results: There were 153 studies from 51 patients: age range 0.1 to 19.8 years (median 11.1). Conditions included: congenital central hypoventilation syndrome (15), sleep related upper airway obstruction (13), neuromuscular disease (11), severe neurodisability (5), craniofacial abnormalities (3), and others (4). Abnormal findings existed in 134/153 (88%) studies. Sixty five out of 152 (43%) had abnormalities in gas exchange, including low baseline SpO₂ in 53, episodic hypoxaemia in 44, and raised CO₂ in 33. Seventeen (11%) had inadequate pressures or synchrony: pressures were satisfactory in 79 / 92 with data; synchrony was seen in 90/94 studies. Changes were made in 47 (31%); an increase in ventilation in 32 and reduction in 15.

Conclusion: This confirms a place for assessing blood gas exchange, airway pressures and adequacy of synchrony in children receiving LTV. Further work needs to identify the appropriate interval for review studies.