need for respiratory support and / supplemental oxygen at 36 weeks corrected age). All infants were monitored at 36–37 weeks gestational age. Data analysis is underway.

Intended Outcome and Impact: While it is too early to frame meaningful conclusions, we hypothesise that in infants born preterm, cerebral tissue oxygenation will be affected by body position, cerebral haemodynamics and sleep state. The results will help clarify the relative impact of these variables on cerebral tissue oxygenation so that clinical care can be directed towards optimising the neurodevelopmental outcomes of preterm infants.

**P015 | Telemonitoring in users of long-term non-invasive ventilation: Feasibility and determining clinical limits**

V. Jeganathan1,2; S. Conti1,2; L. Rauletla1,2; A. Rigoni1; K. Saravanan1; M.E. Howard1,2; L. Hannan1,2; D.J. Berlowitz1,2,3

1Victorian Respiratory Support Service, Austin Health, Heidelberg, Australia; 2Institute for Breathing and Sleep, Heidelberg, Australia; 3University of Queensland – Northside Clinical Unit, Faculty of Medicine, Chermside, Australia; 3Physiotherapy, The University of Melbourne, Australia

**Background:** Potential benefits of telemonitoring of home ventilator data include ready identification of poor adherence and increasing ventilator dependence, the use of ventilator data to guide alterations to ventilator settings, and the ability to identify a potentially deteriorating patient or malfunctioning ventilator. This is, however, associated with a potential increase in resource utilisation to manage and monitor large volumes of ventilator data, while there is currently no evidence of improved clinical outcomes. There is currently no normative data in stable patients on long-term ventilation, making it difficult to interpret and action home ventilator data. This study aims to determine the feasibility and utility of remote ventilator monitoring in a cohort of users of home non-invasive ventilation.

**Methods:** Single centre, prospective observational study, enrolling adults who are clinically stable on long-term non-invasive ventilation. Patients are switched to a ventilator with telemonitoring capabilities (either Philips Respironics A30 or Philips Respironics DreamStation BiPAP) for two months. Ventilation settings are unaltered. Raw data are collected and stored using Philips Respironics’ proprietary web-based platform, EncoreAnywhere. Raw xml data files were provided directly from Philips Respironics.

**Progress to date:** Twenty participants were recruited and raw data obtained for 13 of these. Of these 13, 10 are male with an average age of 63 years. Four patients did not tolerate the new ventilator. The reliability of remote monitoring uploads has been variable. Data failed to upload in real time in eight patients, mainly due to modem connectivity issues. Three patients’ had large amounts of data missing from the (local) device and online. The average daily usage across all participants with more than five days of data during the monitoring period has been 7.5 hr/day with an average coefficient of variance of 20%. The average minute ventilation was 8.6 L/min with an average coefficient of variance of 6.3%.

**Intended outcome and impact:** The study has demonstrated the technical challenges related to the reliability of remote uploads but also the potential utility of monitoring adherence data remotely. Other device data will be examined in order to explore normal data ranges and variability in clinically stable patients. These will be the first steps towards determining the role and feasibility of telemonitoring in home mechanical ventilation.

**P016 | High flow nasal cannula (HFNC) therapy in hypercapnic respiratory failure at an Australian tertiary hospital**

R. Johnston1; G. Tay1,2,3; K. Hay2; J. Anderson4; D. Henderson1; D. Curtin1

1The Prince Charles Hospital, Chermside, Australia; 2QIMR Berghofer Medical Research Institute, Herston, Australia; 3University of Queensland – Northside Clinical Unit, Faculty of Medicine, Chermside, Australia; 4Sunshine Coast University Hospital, Birtinya, Australia

**Background:** Humidified high flow nasal cannulae (HFNC) therapy has been shown to be effective in the treatment of hypoxic respiratory failure, however its role in hypercapnic respiratory failure is not well defined. Previous research has demonstrated physiological improvements in small patient populations. HFNC is increasingly available and used in clinical practice. Our aim was to evaluate patterns of use and the effectiveness of HFNC in hypercapnic respiratory failure in our hospital.

**Method:** We conducted a retrospective audit of the utilisation of high flow nasal cannula (Fisher and Paykel AIRVOTM) in hypercapnic respiratory failure (PaCO2 > 45 mHg) at an Australian tertiary hospital over a 6-month period. Patients were identified through ICD-10 code J96.02 with data collected from electronic and chart records. The decision to use HFNC was a clinical one determined by the treating clinician. Indications of use included weaning from non-invasive ventilation (NIV), primary ventilatory therapy, as an alternative to NIV in event of intolerance or in patients inappropriate for NIV due to ceiling of care. The effectiveness of HFNC will be assessed by comparison of baseline arterial blood gas PaCO2 and pH with post-treatment values. Baseline and post treatment values will be compared using paired t-tests. Other evaluations will include length of hospital stay, 30-day readmission, 90-day mortality and escalation of treatment or treatment failure.

**Progress to date:** A total of 34 patients received HFNC treatment for hypercapnic respiratory failure during the study period, of whom 14 received both NIV and HFNC (7 had HFNC as the initial treatment). At baseline, 21 (62%) had acute hypercapnic respiratory failure (pH < 7.35) and 13 (38%) were compensated (pH ≥ 7.35). Preliminary blood gas analysis showed mean baseline pH was 7.34 and post treatment pH increased significantly to 7.38 (p = 0.006). The mean baseline CO2 level was 58 mmHg, reducing to 54 mmHg during HFNC treatment (p = 0.04). Analysis of secondary outcomes is ongoing.

**Intended outcome and impact:** In patients with hypercapnic respiratory failure, including those with mild acidemia, HFNC shows
improved pH and PaCO₂ in preliminary statistical analysis. The therapy could be particularly useful for those patients who are unable to tolerate or are inappropriate for NIV therapy. This audit aims to evaluate current practices and provide data to support treatment efficacy with a view to commencing a randomised control trial comparing HFNC to NIV confirming the safety of HFNC in hypercapnic respiratory failure.

P017 | Abstract Withdrawn

P018 | Incidence of allergen specific and total IgE positivity in children undergoing adenotonsillectomy

M. Lam1,2,3; L. Kitipornchai1,3; N. Ball1,3; L. Sarkissian1,3; T. Sands2; S. MacKay1,3

1Illawarra ENT Head and Neck Clinic, Wollongong, Australia; 2Illawarra Health and Medical Research Institute, Wollongong, Australia; 3Wollongong Hospital, Wollongong, Australia

**Background:** Adenotonsillar hypertrophy is widely recognised as a contributing factor to sleep disordered breathing (SDB) in children. Allergic rhinitis is an IgE-mediated disorder that is clinically diagnosed based on symptoms of rhinorrhea, nasal obstruction, itching and sneezing. Total and specific serum IgE testing has emerged as a useful adjunct in identifying triggers and the severity of disease, if present. There is a significant association between IgE positivity with residual snoring or sleep symptoms in children post-adenotonsillectomy.

**Methods:** A single centre, prospective, consecutive cohort study of 64 paediatric patients with SDB undergoing adenotonsillectomy was conducted. Caregivers completed two questionnaires, the Sleep-Related Breathing Disorder scale of the Paediatric Sleep Questionnaire (PSQ) and Mini Rhinoconjunctivitis Quality of Life Questionnaire (MiniRQLQ), at baseline and 6 weeks post-operatively. Total and specific IgE testing was undertaken at the time of surgery. Outcomes of surgery as measured by these questionnaires were recorded and compared between patients who had clinical and laboratory proven allergic rhinitis.

**Progress to date:** 37 patients had either total or specific IgE positivity (57.8%). Regardless of IgE testing patients who significantly improved PSQ and MiniRQLQ scores post-adenotonsillectomy ($p < 0.0001$). There was a higher incidence of residual sleep symptoms in patients with IgE positivity for both questionnaires, but this was generally not significant. In patients with both clinical findings of allergy and IgE positivity there was a significantly higher pattern of PSQ ($p = 0.03$) and MiniRQLQ ($p = 0.02$) scores post-operatively.

**Intended outcome and impact:** This consecutive, prospective analysis demonstrates a higher rate of atopy and allergy than the baseline population rate. Adenotonsillectomy is effective in improving the quality of life for both sleep-specific and rhinitis-specific symptoms. IgE testing is a useful adjunct when combined with clinical findings of allergy and can be a predictor of residual sleep symptoms post-adenotonsillectomy.

P019 | Patients with heart failure have abnormal breathing in exercise and sleep

B. Liu; M. Ellis; K. Nilsen; A. Gunatilaka; M. Naughton

Alfred Health, Melbourne, Australia

**Background:** Cheyne Stokes breathing (CSB) and exercise oscillatory ventilation (EOV) are abnormal breathing patterns described in patients with heart failure, with shared proposed underlying mechanisms. The presence of both EOV and CSB is associated with more advanced cardiac disease and poorer prognosis. This study aims to assess the prevalence of CSB and EOV in a population of patients with advanced heart failure undergoing cardiac transplant assessment, and the association between abnormal breathing patterns with other variables such as hospital admissions, left ventricular ejection fraction (LVEF), pulmonary hypertension, and transplant-free survival.

**Methods:** A retrospective medical record audit was undertaken for all patients with heart failure who underwent both cardiopulmonary exercise testing (CPET) and polysomnography (PSG) as part of a cardiac transplant assessment between 1 Jan 2015 and 31 May 2019.

**Progress to date:** Keyword search of lung function database returned 86 patients with heart failure who underwent CPET. Data from the exercise test will be input into an algorithm identifying whether EOV is present. Of these patients, 80 also underwent PSG assessment.

**Intended outcome and impact:** CSB is expected to be common in patients undergoing heart transplant assessment. The literature suggests prevalence is between 21% and 37%, which may be higher in a population of patients with more severe heart disease undergoing transplant assessment. The prevalence of severe CSB (central apnoea-hypopnoea index of >30/hr) will be assessed and expected to be much lower.

EOV is significantly associated with severe CSB in the current literature and this result is expected in our population. The presence of EOV is also expected to be correlated with poorer outcomes. Identifying patients with CSB and/or EOV is important as each breathing disorder alone is correlated with mortality, and the combination confers a worse prognosis.

P020 | Physiological profile assessment of falls risk in obstructive sleep apnoea – a 3-month intervention study

A. Oh1,2; D. Stevens1; S. Mukherjee1,2; C.L. Chai-Coetzer1,2; A. Vakulin1; J. Carberry3; M. Crotty2,3; C. Barr4

1Adelaide Institute for Sleep Health, Flinders University, Bedford Park, Australia; 2Flinders Medical Centre, Bedford Park, Australia; 3College of Medicine and Public Health, Flinders University, Bedford Park, Australia; 4College of Nursing and Health Sciences, Flinders University, Bedford Park, Australia

**Background:** Hospitalisation due to falls in the elderly is an increasingly common problem. Aside from the physical injuries resulting