Thoracic and Sleep Group (Qld) Projects for 2020

Below are some project titles and brief descriptions of the projects that are available through the Thoracic Sleep Group (Wesley Hospital). If you are interested in finding our more information or applying for a project, please contact Phil Teuwen (pteuwen@tsgq.com.au) and also please CC. scorers@tsgq.com.au, ensuring you provide an indication of the project you are in and provide relevant details as outlined on the HMNS website – https://hmns.uq.edu.au/current-students/honours-research-project.

Title: Automatic Sleep Study Analysis
Description: The use of automatic sleep study analysis is growing throughout the industry, however it's utility may be overly relied on and replacing human analysis. Equipment manufacturers do cite sponsored literature that favourably compares computer analysis to human analysis, with these studies done under concordance type conditions not in clinical practice. It is unclear how automatic analysis should be used in clinical practice throughout the industry. We have a very large data set of data available for analysis. This includes both human and computer analysis data, under both clinical and concordance conditions. Additionally we have data from our scientists analysing both blank and computer analysed data under concordance conditions.

We seek to investigate:
- any bias/ improvement computer analysis may provide to human analysis
- assess automatic analysis to human analysis in clinical practice and assess human to human analysis in the same conditions
- assess automatic analysis to human analysis in concordance conditions

This would be the first study looking into the utility of automatic analysis in routine clinical practice, and the impact that automatic analysis has on human concordance scores that we are aware of.

Title: Screening for CPAP Adherence
Description: CPAP is the gold standard treatment for OSA. However patient compliance to therapy can at times be difficult. The literature suggests compliance levels between 50-90% over the first few months of therapy, with these values declining over time after this time. Validated screening tools do exist to potentially identify patients who may be at a higher risk of poor compliance to therapy. This study looks to create and validate a novel screening tool for use in clinical practice, customised from those tools previously validated. In future this project may be expanded upon, with interventions made based on the results of this questionnaire. We have compiled a significant amount of literature and have created a draft of this novel questionnaire. This study should look to review this questionnaire and then seek to validate it.

Title: FeNO and nFeNO
Description: FeNO is a measure of airway inflammation. Nasal FeNO (nFeNO) is a new measurement/parameter of FeNO. This technology is not yet widely used as it is quite new. As such, normal ranges are not yet well established. This study would look to contribute to the understanding of the nasal FeNO in clinical practice. Literature review and study design are have not yet been established.

Title: FeNO and nFeNO and CPAP
Description: CPAP is delivered to the upper airway via mask interface. One style of mask interface is a nasal mask. Humidification may be used to warm the air so as to not dry out the nasal passages and airways. The interplay between FeNO, nFeNO and CPAP is not well understood. This study would

look to contribute to the understanding of the impact, if any, that CPAP may have on FeNO and nFeNO and vice versa. Literature review and study design are have not yet been established.

Title: Sleep Study Analysis Concordance and the Diagnosis of Hypersomnolence
Description: Sleep scientists analyse sleep study data, this analysis contributes significantly to a sleep disorder diagnosis. It is well known that there can be significant variances between the analysis performed by different scientists. This study looks to assess the impact of this variance on the clinical outcomes specifically with investigations into hypersomnolence which rely heavily on sleep study analysis during the investigations. We would also like review the concordance with and without the original overnight sleep study data being available.