Abstract P006 Figure 2

did not deviate significantly from an exponential distribution ($D(14)=0.733$, $p=0.657$) (figure 2 left).

There is a sharp increase in the likelihood of transitioning from sleep to wakefulness when recordings increase from 93 to 96 minutes, when the estimated percentage of subjects maintaining sleep falls from 75 to 50%. Nevertheless, 25% of subjects will still be asleep at 121 minutes (figure 2 right).

Discussion In pre-term infants, the durations of awakenings are exponentially distributed, as in neonatal animals.¹ The likelihood of awakening does not increase linearly with recording duration, but is gated after approximately 100 minutes, demonstrating cyclicity. Future work will build on these preliminary data to model how demographic and environmental variables (e.g. necessary painful procedures) influence the neonatal sleep-wake cycle.

REFERENCE

1. Blumberg, et al. *PNAS* (2005)

P007 10 YEAR SLEEP SERVICE DELIVERY TRENDS IN A LARGE DISTRICT HOSPITAL

Claudia Maldonado*, Katherine Porter, Phillip Pearson, Elizabeth Walker. *Respiratory Department, Portsmouth Hospitals NHS Trust, Cosham, UK*

10.1136/bmjresp-2019-bssconf.7

Introduction Optimal continuous positive airway pressure (CPAP) use is essential in the successful treatment of

obstructive sleep apnoea (OSA), but optimising CPAP therapy is a challenge.

Methods We set out to outline our CPAP service trends in the last 10 years. We quantified the proportion of patients diagnosed with moderate or severe OSA from studies completed from samples from 2009. We recorded CPAP compliance at first review, and the time it took for patients to reach adequate treatment compliance.

Results We found an increasing trend in studies completed over the last decade, although the proportion of patients diagnosed with moderate or severe OSA did not reflect an increase, with only 20% of patients receiving a diagnosis of moderate or severe OSA recently. The majority of patients (61%) were compliant with CPAP therapy at their first review. Although it took on average 4 to 5 months for patients to reach adequate CPAP compliance, this trend decreased over 10 years. Almost half of patients prescribed CPAP 10 years ago remain under regular biennial reviews, and an average of 20% of patients were intolerant to CPAP.

Discussion Referrals to our service increased over the last decade. Although screening criteria for referrals became more specific for obstructive sleep apnoea, the proportion of moderate and severe diagnoses has shown a downward trend. There is an increasing demand on our service, with more referrals and more complex referrals unrelated to OSA. CPAP compliance remains a challenge, without improvements in compliance trends despite improvements in technology and equipment. Finally, our results highlight that although the majority of

patients reach adequate compliance at their first review, a minority may need numerous reviews until adequate treatment is achieved, and one in five never achieve adequate CPAP compliance. A significant proportion of patients remain under review a decade later.

P008 A NOVEL STUDY ON NOISE FREQUENCIES IN A GENERAL MEDICINE WARD AT A DISTRICT GENERAL HOSPITAL IN THE UK

¹Connor S Qiu*, ¹Gazi Sadnan, ²Yizhou Yu, ¹Emmanuel Adebij, ¹Byrone Mitchell, ¹Darshan Jagannath. ¹St Mary's Hospital, Isle of Wight NHS Trust, Newport; ²Department of Biology, Imperial College London, London

10.1136/bmjresp-2019-bssconf.8

Introduction Excessive noise levels in the hospital environment is a significant cause of patient and staff dissatisfaction. There are numerous studies on noise levels in hospitals, but noise frequencies in hospitals have been studied to a lesser extent. In this pilot study, we aim to identify the pertinent sound frequencies and decibel levels in a general medicine ward in a district general hospital in the UK.

Methods We deployed an industry standard octave-band noise meter (CEL-620B) to monitor the noise generated in the lobby, a side room and a shared bay of the ward at both day and night over a 1 week period. The meter was set up for continuous recording and the data was subsequently hand-curated to avoid bias from disrupted or tampered recordings.

Results Our results show that hospital noise levels can often exceed 100 dB(A); WHO guidelines advise an average of 35 dB in the day and of 30 dB at night.¹ The average peak noise was 119.5 ± 6.50 dB(A). We found that there were higher intensities of noise at lower frequencies as opposed to at higher frequencies (figure 1) and a

significant difference between noise intensities at different frequencies (figure 2).

Discussion Noise frequencies from 2000 Hz to 5000 Hz may be subjectively perceived to be more unpleasant.² The intensity of noise is also likely detrimental to patient recovery and sleep quality. Our results suggest that hospitals require creative solutions in order to mitigate the adverse effects of noise generated to such specifications.

Abstract P008 Figure 1 The frequency level is negatively proportional to the average amount of noise ($p < 0.001$). The poisson and negative binomial models were used to correct for the skewed data distribution

REFERENCES

1. Berglund B, Lindvall T, Schwela DH. Guidelines for Community Noise. Geneva: World Health Organization; 1999. <http://whqlibdoc.who.int/hq/1999/a68672.pdf>
2. Kumar S, von Kriegstein K, Friston K, Griffiths TD. Features versus feelings: dissociable representations of the acoustic features and valence of aversive sounds. *Journal of Neuroscience* 2012;**32**(41):14184–14192.

Abstract P008 Figure 2 Distribution of averaged noise across noise meter. We identify a significant difference in the noise intensities across different frequencies (ANOVA, $DF = 10$, $p < 0.001$)