Comparing CPAP. pref with CFlexpref we found no significant difference between mean EPAP on CPAP and mean EPAP on CFlex making it unlikely that preference for CFlex was based only on EPAP reduction. In the 23 patients (CPAPpref=13, CFlexpref=10) who had Vt insp measured we derived an index of the flow resistive load to expiration (Table). The CFlexpref group demonstrated a significant fall in this index of expiratory load. The changes in the CPAPref group were more variable. The findings are consistent with CFlex preferers generating and sensing a larger reduction in expiratory load on CFlex.

Abstract P259 Table 1

Resistance to Expiration (mean EPAP/mean Expiratory Flow) Geometric mean (SD) cm H_2O l^{-1} s			
CPAP		**CFlex**	
CPAP Preferred (n=13)	CFlex Preferred (n=10)	CPAP Preferred (n=13)	CFlex preferred (n=10)
70.8 * (38.3–131)	67.6** (51.6–88)	60.25* (34.5–105)	54.9** (40.6–74.3)

Paired t test: * p NS;** p<0.03v

P260 **HAEMATOLOGICAL CHARACTERISTICS OF PATIENTS REFERRED FOR INVESTIGATION OF OBSTRUCTIVE SLEEP APNOEA**

[1]B Prudon, [2]W Osborne, [1]SD West. [1]*Newcastle Regional Sleep Service, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK;* [2]*Haematology Department, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK*

Introduction Obstructive Sleep Apnoea (OSA) is a condition with increasing prevalence. Individuals with severe OSA have significant intermittent nocturnal hypoxia. Erythropoiesis is stimulated through the renal secretion of erythropoietin in response to hypoxia, and is responsible for polycythaemia found in chronic respiratory failure. There are case reports of secondary polycythaemia attributed to OSA, but there are limited data assessing the relationship of OSA physiological parameters and haemoglobin. We aimed to investigate this.
Methods Clinical information was collated prospectively from patients assessed at the Newcastle Regional Sleep Service with suspected OSA. None of those included had been referred to investigate polycythaemia. All patients included underwent either a domiciliary or in-patient sleep study as per standard clinical practise, and had a Full Blood Count (FBC) taken.
Results There were 103 patients included: 70% males, mean (SD) age 52 years (range 26–76 years), BMI 36.1kg/m² (8.3), Epworth Sleepiness Scale 13 (5), daytime SpO_2 on air 96% (2.7) [six patients had SaO2 <92%]. Sleep study results showed the Apnoea-Hypopnea Index (AHI) to be <5 in 13% [no OSA], ≥5 and <15 in 30% [mild OSA], ≥15 and <30 in 19% [moderate OSA], and ≥30 in 38% [severe OSA]. Analysis of FBC results showed no statistical difference in Haemoglobin between the four patient groups; mean (SD), no OSA 14.3g/dl (2.1), mild 14.6g/dl (1.5), moderate OSA 14.5g/dl (1.2), severe OSA 14.7g/dl (1.4). There was no correlation between Haemoglobin (Hb) and AHI, oxygen desaturation index (ODI), % time SpO_2<90%, % time SpO_2<80%, or awake SpO_2. There was no significant difference in haematocrit or RBC between groups. A weak positive correlation was observed between total WBC and

ODI, r=0.319, p=0.001, but there was no statistical difference between patient groups.
Conclusions In this sleep clinic patient group, we found no correlation between haemoglobin and any OSA severity marker. This suggests that the nocturnal intermittent hypoxia which occurs in OSA alone does not lead to secondary polycythaemia. Further work will evaluate the prevalence of OSA in people with secondary polycythaemia, and whether the OSA is contributory or reflects the general population prevalence of OSA.

P261 **ANALYSIS OF THE PREVALENCE AND PREDICTORS OF OBESITY HYPOVENTILATION SYNDROME IN A COHORT OF OVERWEIGHT PATIENTS WITH SUSPECTED SLEEP DISORDERED BREATHING**

V Macavei, K Spurling, J Loft, H Makker. *North Middlesex University Hospital, London, UK*

Introduction The need for early detection of Obesity Hypoventilation Syndrome (OHS) is clear because delay in the diagnosis and treatment is associated with significant morbidity and mortality.
Objective To determine the prevalence of obesity hypoventilation syndrome among obese patients with suspected sleep apnoea and determine the validity of previously reported predictors of OHS such as serum bicarbonate level.
Methods A retrospective analysis of prospectively collected sleep clinic data on 525 consecutive obese patients referred to sleep clinic from January 2009 to January 2011 to a university hospital was performed. Subjects with suspected sleep disordered breathing were evaluated according to our clinical protocol and capillary blood gases were measured in obese (BMI> 30) subjects.
Results 525 consecutive patients (mean age 51.44±12.7, 65.71% males, mean BMI 34.59±8.1) were evaluated. A total of 344 (65.52%) were obese (mean age 52.29±12.4, 63.66% males) of which 128 (37.2%) were morbidly obese (BMI>40 kg/m²). Daytime hypercapnia (paCO₂>6 kPa) was detected in 20.63% (71/344) obese and 22.1% (61/275) obstructive sleep apnoea (OSA) patients. Univariate analysis of potential predictors of OHS showed significant correlations between paCO₂ and BMI, FEV1, FVC, AHI, mean nocturnal SpO_2, minimum nocturnal SpO_2, sleep time spent with SpO_2 <90%, paO₂ and serum HCO₃. Following stepwise multiple regression, paO₂ and HCO₃ were found to be independent predictors of OHS explaining 27.7% of paCO2 variance (p<0.0001).
On logistic regression analysis, serum HCO₃ cut-off of >27 mmol was found to have 85% sensitivity and 90% specificity for diagnosis of OHS.
Conclusion We confirmed high prevalence of OHS in obese patients with OSA (22.1%) that would be possible to diagnose by measuring serum HCO₃ levels, thereby eliminating the need for arterial blood gas sampling.

P262 **AGE AND GENDER SPECIFIC DIFFERENCES IN EXCESSIVE DAYTIME SLEEPINESS**

[1]P Drakatos, [2]I Jarrold, [2]J Harris, [2]A Abidi, [3]A Douiri, [1]N Hart, [1]C Kosky, [3]A Williams, [1]J Steier. [1]*Guy'sSt Thomas' NHS Foundation Trust, London, UK;* [2]*British Lung Foundation, London, UK;* [3]*King's College London, London, UK*

Introduction The pictorial Epworth Sleepiness Scale (ESS) (Ghiassi et al., Thorax 2011) has been developed and validated against the traditional ESS and allows subjects to intuitively answer the questions related to daytime sleepiness with pictorial items. Although non-specific, the ESS has been validated for sleep apnoea

patients and it is widely used for screening patients. We hypothesised that the use of an online pictorial ESS can promote public awareness and help to screen for patients with undiagnosed sleep disorders.

Methods Between 2011 and 2012, we collected the pictorial ESS data of 24,272 subjects on the official webpage of the British Lung Foundation. Following a short explanation to the questionnaire, eight items are marked and given a score from `0` (not likely todoze) to `3` (very likely to doze) using pictorial items, the range of the total score for the pictorial ESS being `0` to `24`. The cut-off for excessive daytime sleepiness (EDS, more than 10 points) was chosen in line with the traditional ESS. In 3,265 questionnaires the subjects' age and gender were also recorded (starting from 03/2012). Chi-square test was used to compare the proportion of different groups.

Results The total 24,272 subjects scored a mean of 9.3 (5.1) points on the pictorial ESS. Of those, 38.0% were excessively sleepy (14.6 (3.2) points) and 62.0% had normal levels of sleepiness (5.9 (2.7) points, p<0.001). In the 3,265 subjects with age and gender recorded, there was no significant difference in the prevalence of excessive daytime sleepiness between genders (42.8% vs 43.9%, p=0.68). When age was considered, females tended to be sleepier than males in their 3rd and 4th lifetime decade (p<0.02), whilst males scored significantly higher in the 7th decade (p<0.0001, Figure); there was a statistically significant trend with age (p-value for trend p<0.001)

Conclusion The online pictorial ESS identifies gender differences in EDS on a large scale and reveals more severe levels of sleepiness associated with higher age. The use of modern media facilitates reaching out to the general population to raise awareness of conditions associated with daytime sleepiness such as sleep apnoea.
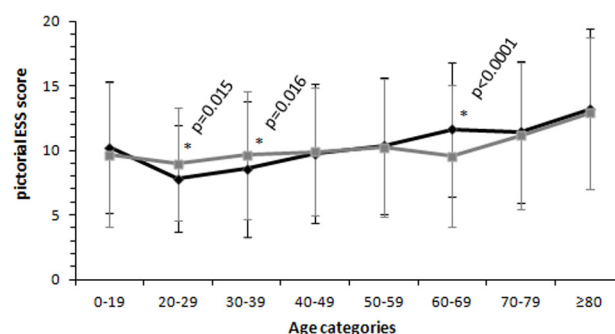

Figure: pictorial ESS for each decade, male vs female. Male: black line, Female: grey line. * shows where statistical significance was observed (p<0.05).
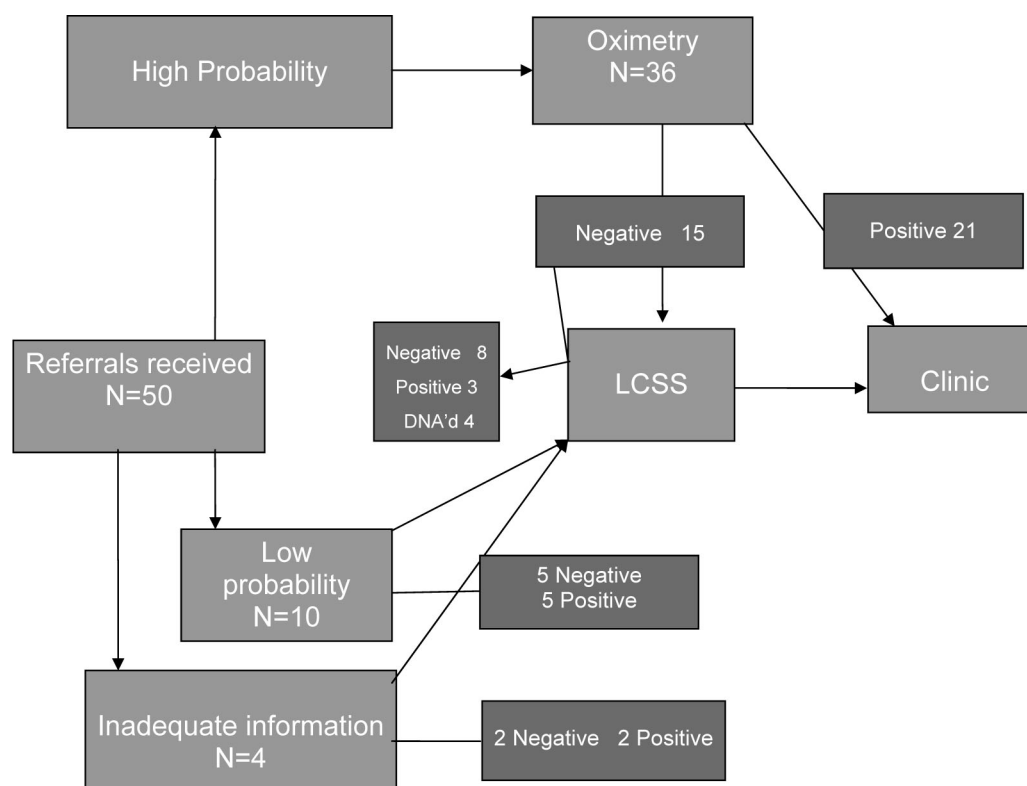
Abstract P262 Figure 1

P263   **REDUCING INVESTIGATION TIME FOR THE DIAGNOSIS OF THE OBSTRUCTIVE SLEEP APNOEA SYNDROME (OSAS) BY COMBINING OXIMETRY WITH A SCREENING ALGORITHM**

JA Benjamin. *Royal Glamorgan Hospital, Llantrisant, Wales, UK*

Introduction Oximetry and limited channel sleep studies (LCSS) for the diagnosis of OSAS have sensitivities of 87% and 82–94% respectively and specificities of 65% and 82–100% respectively[1]. Our centre finds oximetry useful for confirming OSAS in high probability patients but not at ruling it out. LCSS seems useful for both. The

Abstract P263 Figure 1   Outcomes of 50 consecutive sleep referrals