follow-up measurements. Baseline characteristics of 229 patients with complete data on pulse wave analysis are shown in the table (values are mean (SD) were applicable). CPAP improved endothelial function (FMD at follow-up +1.97% with CPAP compared to control group, 95% CI +0.84 to +3.09%, p=0.001), but there was no evidence of an effect on arterial stiffness (AIx at follow-up −0.56% with CPAP compared to control group, 95% CI −2.87 to +1.75, p=0.64). CPAP improved daytime sleepiness as assessed by the Epworth sleepiness score (mean (SE) change −1.91 (0.30) with CPAP; control group +0.08 (0.26), mean difference −1.99, 95% CI −2.77 to −1.21, p<0.0001, assessed using an unpaired *t*-test).

Conclusions 6 months of CPAP is associated with improved endothelial function, but does not reduce arterial stiffness in minimally symptomatic OSA. Thus patients with minimally symptomatic OSA may benefit from CPAP therapy in terms of cardiovascular risk reduction.

Abstract S14 Table 1

Variable	CPAP group	Control group
Age (years)	58.24 (7.21)	57.90 (7.55)
Male/females	97/19	97/13
BMI (kg/m^2)	32.69 (5.57)	32.58 (5.37)
ESS	8.39 (4.12)	8.55 (4.31)
ODI (events/h)	13.98 (14.14)	13.40 (11.38)
FMD (%)	3.41 (3.41)	3.42 (2.36)
AIx (%)	27.56 (9.32)	29.09 (10.54)

S15 AN OFFICE BASED ADVANCED DRIVING SIMULATOR TO ASSESS DRIVING PERFORMANCE IN OBSTRUCTIVE SLEEP APNOEA SYNDROME (OSAS): A PILOT STUDY

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Introduction Advising patients with Obstructive Sleep Apnoea Syndrome (OSAS) about whether they are safe to drive is challenging. Driving simulator studies have shown that OSAS patients perform poorly (Hack *et al*, 2001) but most simulators are simple, not realistic and in particular lack face validity, for example, multiple off road events during a short run. The Institute for Transport Studies, University of Leeds, host the UK's most sophisticated driving simulator but had also developed a PC based simulator (MiniSim) which incorporates the same realistic graphics and is much closer to 'proper' driving than most existing systems. It thus has the potential to be used in everyday clinical practice. We have investigated whether two parameters, proportion of high frequency steering activity (HFS) and standard deviation of lane position (SDLP), previously shown to be impaired in drivers suffering from fatigue, might predict drivers' behaviour in safety-critical scenarios.

Methods After a practice run, 63 patients (age 53±10, ESS 11±3, ODI 39±19) completed 50 min motorway driving on the MiniSim. Two situations were programmed that required evasive action to avoid a crash. A 'fail' was determined by an outright crash or veering completely out of lane. We compared HFS and SDLP in subjects with 'pass' or 'fail' and with Oxygen Desaturation Index (ODI) and Epworth Sleepiness Score (ESS).

Results (Abstract S15 Table 1) 'Fail' was more likely with worse sleep disordered breathing, but was not affected by subjective sleepiness. Subjects who 'failed' had significantly worse HFS (0.27 vs 0.34, p=0.03) & SDLP (0.58 vs 0.41, p=0.002). Both HFS & SDLP worsened with time. There was also a strong correlation between HFS & SDLP (r=0.51, p<0.0001).

Abstract S15 Table 1 Comparison between patients passing & failing the simulator run (Mean HFS=mean for the proportion of high frequency steering activity in epochs 3,6,7 of the simulator run, Mean SDLP=mean for the standard deviation of lane position in epochs 3,6,7 of the simulator run)

	ODI (Desaturations/h)	ESS	Mean HFS 3,6,7	Mean SDLP 3,6,7
'Pass'	34.97±3.47	12.13±1.02	0.26±0.012	0.41±0.02
'Fail'	46.40±4.38	12.23±1.40	0.31±0.018	0.57±0.05
p	0.043	0.95	0.0406	0.0025

Conclusion These data show that HFS and SDLP have promise as objective markers of poor driving in OSAS patients. They relate to measures of disease severity and to an event which has face validity as an indicator of poor driving in the real world. The patient will not be aware that they are being measured and therefore they have potential for repeated use.

S16 DETECTION OF SLEEP-DISORDERED BREATHING IN CHRONIC HEART FAILURE PATIENTS: UTILITY OF HEART RATE VARIABILITY VERSUS PULSE OXIMETRY?

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Introduction and Objectives Sleep-disordered breathing (SDB) is a frequent comorbidity in chronic heart failure (CHF). Patients are often asymptomatic and sleep studies may be required for SDB diagnosis. Our department has previously reported that %VLFI component of Heart Rate Variability (HRV) is correlated with apnoea-hypopnoea index (AHI) in CHF (r=0.52). Thus, we tested the hypotheses that %VLFI component of HRV, or pulse oximetry, can be used to rule out SDB in patients with CHF.

Methods Stable CHF patients attending cardiology clinics were enrolled, irrespective of cause or severity of CHF. Patients were studied using polysomnography, simultaneous ambulatory electrocardiography and pulse oximetry. SDB was defined as AHI ≥15.0/h, measured by polysomnogram. Fourier analysis of the electrocardiogram was used to measure %VLFI component of HRV, with a cutoff ≥2.23% to indicate SDB. The oxygen desaturation index (ODI) ≥3% was measured by pulse oximeter, with a cutoff >7.5 desaturations/h to indicate SDB. Diagnostic performance of %VLFI and ODI≥3% were calculated, with the polysomnogram as reference standard for SDB diagnosis.

Results 180 CHF patients were studied, seven were excluded due to insufficient sleep (<200 min). In 173 CHF patients (mean (SD) age 66.9 (13.0) years; 86% male; Epworth Sleepiness Scale 7.6 (4.3); NYHA 2.1 (0.6); median (IQR) BNP 118 (55–239) pg/ml), SDB was present in 77 (45%) patients with mean AHI 32.4 (18.2)/h. %VLFI was measured in 77 (45%) patients: in CHF patients with SDB (n=36), mean %VLFI was 3.13% (2.4) compared to 3.25% (2.6) in patients without SDB (n=41). Cardiac pacing, atrial fibrillation and frequent ectopy prevented %VLFI measurement in the remainder. ODI ≥3% was measured in 171 patients: in CHF patients with SDB (n=76), mean ODI ≥3% was 29.2 (17.2)/h compared to 10.2 (6.4)/h in patients without SDB (n=95).

Conclusion The %VLFI component of HRV has no utility to screen for SDB in patients with CHF. Moreover, it could not be measured in more than half of this cohort of patients. In contrast, the high sensitivity and negative predictive value of the ODI ≥3% suggest pulse oximetry is a valuable tool to rule out SDB in CHF patients.