for several sleep disorders where single night polysomnography is insufficient (ICSD-2). However, the optimal recording time for measurement remains unclear. We hypothesised that 7 days would provide similar data as recording for 14 days.

Patients & Methods We analysed 3 consecutive years of actigraphy data obtained within a tertiary sleep referral centre. Data were recorded continuously for two weeks using the AW2 Actiwatch (Cambridge NeuroTechnology, UK), using Actiwatch Sleep Analysis 5 software for analysis of the data. Parameters, including sleep efficiency (SE), sleep latency (SL), sleep fragmentation index (SFI), total sleep time (TST) and wake after sleep onset (WASO), were classified into week 1, week 2 and an overall average for the duration of 14 days. In addition, two experienced consultants working in the sleep laboratory compared the results of week 1 vs. week 2 independently, visually analysing the data for circadian rhythmicity and fragmentation of the pattern; allowing calculation of the itraclass correlation coefficient (ICC), κ.

Results The actigraphies of 239 patients (51.9% (124) male; mean age 42 (16) years) were analysed. There was no difference in SE, SL, SFI or WASO between week 1, week 2 and 14 days average recording. A difference was found between TST week 1 (399.9, 95% CI 389.9–409.9 mins) and TST week 2 (388.7, 95% CI 378.3–399.1 mins), but not between TST for 14 days average recording and either week (394.3, 95% CI 384.7–403.9 mins). Independent scorers achieved a strong agreement in the rhythmicity of the sleep pattern (ICC κ 0.734, $p<0.001$) and a low agreement for the fragmentation of the pattern (ICC κ 0.380, $p<0.001$).

Conclusion One week of actigraphy provides similar data to two week actigraphy, despite subtle differences between different weeks. One week actigraphy should be recommended as standard to maximise efficiency of the clinical service.

S45 SLEEP DISORDERED BREATHING (SDB) IN PATIENTS OF TYPE 2 DIABETES MELLITUS(DM) WITH AND WITHOUT RETINOPATHY- A HOSPITAL BASED STUDY

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Background Higher incidence of SDB has been reported from West in patients having sight threatening retinopathy with limited information from South Asia.

Methods It was a prospective, observational study carried out on 80 patients of type 2 DM presented to Vitreo-retinal clinic. Patients with coronary artery disease, acute and chronic Heart Failure, concurrent hypothyroidism, known Obstructive sleep apnea (OSA) with DM and of any known respiratory disorder were excluded.

On the basis of fundus and fluorescein angiography they were divided into two Groups, Group I without retinopathy (n=30) and Group II with retinopathy (n=50). Latter had 30 and 20 patients of Non Proliferative Diabetic retinopathy (NPDR) and Proliferative Diabetic retinopathy (PDR) respectively. All patients underwent whole night attended polysomnography in the hospital.

Results The patients having diabetic retinopathy had higher age, BMI, waist circumference, Serum creatinine, HbA1c and Apnea Hypoapnea index (AHI) ($p<0.05$). PDR sub-group had a higher waist and neck circumference however NPDR patients had a higher HbA1c ($p<0.05$). OSA was observed in 66% and 40% of patients with & without diabetic retinopathy (12/30 vs. 33/50) respectively. On subgroup analysis, 90% of patients having PDR had OSA as compared to 50% in NPDR group. Severity of OSA was proportional to the presence of retinopathy (AHI=24.35±27.72 vs. 13.09±20.3 in Gp II & Gp.I respectively). It was nearly twice as severe in PDR Group than NPDR Group ((34.91±30.61 vs 17.3±23.94) with significantly higher desaturation (5.37±5.09% vs. 11.53±6.82%). On multivariate regression analysis only HbA1c levels correlated with presence of SDB in Diabetics.

Conclusion In a selective hospital based population of type 2 DM, prevalence and severity of SDB correlated with severity of retinopathy. A larger longitudinal study is need of the hour to predict factors responsible for OSA and find correlation between SDB with diabetic retinopathy.

Key words sleep disordered breathing, type 2 Diabetes Mellitus, NPDR, PDR, Apnea Hypoapnea Index.

S46 THE RISK OF OBSTRUCTIVE SLEEP APNOEA IS SIGNIFICANTLY HIGHER IN PATIENTS WITH CHRONIC KIDNEY DISEASE - A STUDY FROM A SINGLE UK RENAL CENTRE

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Introduction and Objectives Along with known associations with coronary heart disease, heart failure and stroke, there is increasing evidence to demonstrate a link between obstructive sleep apnoea (OSA) and chronic kidney disease (CKD). There is also growing evidence to suggest that intensive treatment of CKD can improve or even eliminate symptoms related to OSA. So far though, there is no evidence to support the association between OSA and CKD in a UK population. Our study aimed to quantify the risk of OSA in different severities of CKD for the first time in the UK Our secondary aim was to look for factors that increased or decreased this risk, including medications.

Methods Using the renal database, 60 patients each at CKD stage 3b, 4 and 5, haemodialysis patients and renal transplant patients were identified, matched for age and sex and sent the Berlin questionnaire and a lifestyle questionnaire. The Berlin questionnaire was used to stratify patients into high-risk and low-risk groups for OSA. We used the lifestyle questionnaire along with up-to-date laboratory investigations to investigate variables that altered this risk within our sample.

Results Of the 300 patients who were contacted, 111 (37%) responded. Of the 111 respondents, 78 (70.2%) were found to be at high-risk of OSA. This significant increase in risk was seen in all severities of CKD that were examined including in CKD 3b (80.8%). In contrast to the general population, where OSA is more common in men, our study found that 77.1% of women were at high-risk of OSA compared to 65.1% of men. We also found that renin-angiotensin system inhibitors (RASI) were associated with a reduced risk of OSA with 66.1% of users being at high risk compared to 74.5% of non-users.

Conclusions Our study is the first to demonstrate the link between OSA and CKD in a UK population, a link that holds for milder forms of CKD. We noted that RASI use helped to reduce the risk of OSA, thus identifying a possible medical treatment for OSA in patients with CKD. Further study will clarify the importance of this treatment.

S47 COMPARING COPING STRATEGIES WHILE DRIVING IN PATIENTS WITH OBSTRUCTIVE SLEEP APNOEA SYNDROME (OSAS) AND IN HEALTHY CONTROLS

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Introduction Tiredness while driving is potentially fatal and it is recommended that a driver who starts to feel tired should stop and

Abstract S47 Table 1

	Controls (n = 50)	Mild OSAS [ODI 5 –15] (n = 44)	Moderate OSAS [ODI 16 – 30] (n = 41)	Severe OSAS [ODI >30] (n = 48)	One way ANOVA Is p<0.05?	Bonferroni's Multiple comparison test					
					P value	Control vs Mild	Control vs Moderate	Control vs Severe	Mild vs Moderate	Mild Vs Severe	Moderate vs Severe
Coping Strategy Score	3.5(2.5)	6.9(4.1)	6.8(4.4)	6.6(5.2)	<0.0001	Yes	Yes	Yes	No	No	No
ESS	3(2)	12(5)	10(5)	11(6)	<0.0001	Yes	Yes	Yes	No	No	Yes

have a rest, but some may use various strategies to try to stay alert. We devised a questionnaire that assessed various commonly used coping strategies and explored whether there is a difference between patients with OSAS and normal controls. We also hypothesised that patients might admit to utilising such strategies more readily than to sleepiness while driving and asked about sleepiness while driving in various situations.

Method 133 (52±10 yrs, ESS 12±6, ODI 31± 24) untreated OSAS patients and 49 healthy controls (45±17 yrs, ESS 3±2) were included in the study. The coping strategy section included ten questions about various strategies they adapt in order to stay awake. They were asked to rate on a 3-point scale, from "never" to "frequently". The questionnaire was scored by adding up the ratings for the ten questions, and the highest possible score was 30. Comparisons were made using one way ANOVA.

Results There was a significant difference in the total coping strategy score between the patients of different severities (mild, moderate, severe, as per ODI) and the healthy controls. However there was no difference when different severities of OSAS were compared against each other (Table 1). There was strong correlation between the coping strategy score & ESS (Spearman r=0.53, p<0.0001). 81% (38/47) of patients and 77% (23/30) of controls who did not admit to feeling sleepy while driving admitted using coping strategies.

Conclusion OSAS patients report using significantly higher number of coping strategies compared to healthy individuals irrespective of the severity of disease. It also correlated strongly with marker of day time sleepiness (ESS). Asking about such coping strategies may be a better way identifying who are at risk of an accident than asking directly about problems with sleepiness while driving.

Randomised clinical trials in COPD

S48 THE EFFECT OF ANGIOTENSIN-CONVERTING ENZYME INHIBITION ON SKELETAL MUSCLE DYSFUNCTION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A RANDOMISED CONTROLLED TRIAL

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Introduction Skeletal muscle impairment is a well recognised complication of COPD, predicting mortality in severe disease.[1] Evidence from animal models, genetic studies and observational cohorts suggest a role for the renin-angiotensin system in control of muscle phenotype.[2] We hypothesised that angiotensin-converting enzyme (ACE) inhibition would have a beneficial effect on quadriceps function in patients with COPD.

Methods A single-centre, double-blind randomised controlled parallel-group trial investigating the effect of fosinopril versus placebo on quadriceps muscle dysfunction in COPD patients with quadriceps weakness. Muscle weakness was defined as a quadriceps maximum voluntary contraction (QMVC) less than 120% of the body mass index.[1]

Measurements The primary outcome was change in non-volitional quadriceps endurance at 3 months, measured using repetitive magnetic stimulation. QMVC, mid-thigh CT cross-sectional area (MT_{CSA}), incremental shuttle walk distance (ISWD) and serum inflammatory markers were secondary outcomes.

Results 80 patients were enrolled (mean(SD), 65(8) years, FEV_1 43(21)% predicted, 53% male). 67 patients (31 fosinopril and 36 placebo) completed the trial, with the treatment group demonstrating a significant reduction in systolic blood pressure (Δ-10.5mmHg, 95%CI –19.9 to –1.1, p=0.03) and serum ACE activity (Δ-20.4units/L, 95%CI –31.0 to –9.8, p<0.001) compared to placebo. At 3 months, no significant difference was observed in quadriceps muscle endurance half-time (fosinopril Δ5.1s, 95%CI –4.3 to 14.5, p=0.27 vs. placebo Δ4.6s, 95%CI –5.8 to 15.1, p=0.37; between group Δ0.5s, 95%CI –13.3 to 14.3, p=0.94). QMVC improved significantly in both groups (fosinopril Δ1.1kg, 95%CI 0.03 to 2.2, p=0.045 vs. placebo Δ3.6kg, 95%CI 2.1 to 5.0, p<0.0001) with a greater increase in the placebo arm (between group Δ2.5kg, 95%CI 0.7 to 4.3, p<0.01). There was no significant change in MT_{CSA} (p=0.09), ISWD (p=0.51) or serum inflammatory markers (C-reactive protein, p=0.17) between the groups. Stratification based on ACE genotype did not influence study outcomes.

Conclusion This randomised controlled trial found that ACE-inhibition did not improve quadriceps function in a COPD population with quadriceps weakness. Study funded by the Medical Research Council. Trial registration: NCT01014338.

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2. Shrikrishna D, *et al*. *Clin Sci* 2012; 123:487–98.

S49 A SELF-MANAGEMENT PROGRAMME OF ACTIVITY COPING AND EDUCATION (SPACE) FOR COPD: RESULTS FROM A RANDOMISED CONTROLLED TRIAL

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Introduction The NHS Outcomes Strategy for COPD has identified self-management as an approach targeted at reducing the impact of COPD.[1] Previous self-management programmes have either been unsupported, such as brief education or action plans, or have been of high intensity, equivalent with pulmonary rehabilitation. Furthermore, no studies have specifically tested self-management in patients managed in primary care. SPACE is a