Spoken sessions

Abstract S21 Table 1 Characteristics

	COPD	HV	HS
Age (yrs) [Mean ± SD]	58 ± 1	50 ± 11	55 ± 1
Sex (% Female)	22	46	63
Richness [Mean ± SD]	71 ± 16	69 ± 13	69 ± 16
SW [Mean ± SD]	1.90 ± 0.63	2.66 ± 0.51	2.51 ± 0.34
FEV ₁ [Mean ± SD]	1.46 ± 0.45	3.12 ± 0.55	3.20 ± 0.71
FEV ₁ % Predicted [Mean ± SD]	58 ± 17	98 ± 6	95 ± 13
FEV ₁ /FVC Ratio [Mean ± SD]	0.51 ± 0.08	0.82 ± 0.06	0.79 ± 0.06

in the lower airways of patients with COPD, healthy non-smokers and smokers.

Methods Bronchial wash samples were collected from patients with COPD (GOLD 1–3; n = 18), healthy non-smokers (HV; n = 11) and healthy smokers (HS; n = 8). Samples were processed using the Illumina MiSeq platform. The Shannon-Wiener Index (SW) of diversity, lung obstruction (FEV₁/FVC ratio) and ordination by Non-Metric Multidimensional Scaling (NMDS) on Bray-Curtis dissimilarity indices were analysed to evaluate how samples were related. Principal component analysis (PCA) was performed to assess the effect specific taxa had within each cohort. Characteristics of each cohort are shown in Table 1.

Results There was no difference in taxa richness between cohorts (range: 69–71; p = 0.954). Diversity (SW Index) was significantly lower in COPD samples compared to samples from HV and HS (p = 0.009 and p = 0.033, respectively). There was no significant difference between HV and HS (p = 0.186). The FEV₁/FVC ratio was significantly lower for COPD compared to HV (p = 9*10⁻⁸) and HS (p = 2*10⁻⁶), respectively. NMDS analysis showed that communities belonging to either of the healthy groups were more similar to each other than they were to samples belonging to the COPD group. PCA analysis showed that members of *Streptococcus* sp. and *Haemophilus* sp. had the largest effect on the variance explained in COPD. In HS, *Haemophilus* sp., *Fusobacterium* sp., *Actinomyces* sp., *Prevotella* sp. and *Veillonella* sp. had the largest effect on the variance explained, while in HV *Neisseria* sp., *Porphyromonas* sp., *Actinomyces* sp., *Atopobium* sp., *Prevotella* and *Veillonella* sp. had the largest effect on the variance explained.

Conclusions The study demonstrates that microbial communities in the lower airways of patients with COPD are significantly different from that seen in healthy comparison groups. Patients with COPD had lower microbial diversity than either of the healthy comparison groups, higher relative abundance of members of *Streptococcus* sp. and lower relative abundance of a number of key anaerobes.

S22 THE EFFECT OF CIGARETTE SMOKE ON IMPORTANT PATHOGENS IN COPD LUNG INFECTION

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Introduction The leading cause of COPD in developed nations is exposure to tobacco smoke. COPD is characterised by acute periods of exacerbation, which are often bacterial in aetiology. The direct effect of cigarette smoke on bacteria present in the COPD lung, and how this may drive disease progression, has not been determined. This preliminary study aimed to determine the effect of cigarette smoke extract (CSE) on the growth and antibiotic susceptibility of COPD bacterial lung pathogens.

Methods CSE was prepared as described previously. Briefly, smoke from one, two, three or four cigarettes was bubbled through 100 mls growth medium. Bacterial type strains (*Pseudomonas aeruginosa*, *Moraxella catarrhalis*, *Streptococcus pneumoniae*, *Prevotella* spp and *Haemophilus influenzae*) were inoculated into growth medium +/- CSE and incubated either aerobically or anaerobically (*Prevotella* spp). Total viable counts (TVC cfu/ml) were estimated from 0–48 hrs (aerobes) and 0–72 hrs (*Prevotella* spp). Changes in minimum inhibitory concentration (MIC) of antibiotics used in the treatment of respiratory infections were determined by E-Test®, in bacterial cultures exposed daily to CSE over 12 days.

Results The growth of *Paeruginosa*, *S. pneumoniae* and *H. influenzae* were not completely inhibited by any concentration of CSE; however a reduction in growth rate at higher concentrations was observed. *M. catarrhalis* growth was completely inhibited by two cigarettes/100 ml growth medium. No difference in growth was observed between *Prevotella* spp +/- CSE. A marked increase in *Paeruginosa* resistance to tetracycline and doxycycline was observed after repeated CSE exposure: resistance to tetracycline and doxycycline increased from 24 to >256 µg/ml, and 48- >256 µg/ml, respectively.

Conclusions The growth of principal bacteria isolated from COPD patients were not affected by concentrations of CSE utilised in this study, but changes in the susceptibility of *P. aeruginosa* to tetracyclines was observed. This increase in resistance may be mediated by efflux pump up-regulation, and may lead to cross-resistance with other antibiotics. Work currently underway aims to determine whether CSE induces other key phenotypic changes (virulence factor expression and/or biofilm production) which might enhance the pathogenicity of these bacteria in the presence of CSE and result in poorer outcomes for patients with COPD.

Sleep disordered breathing – assessment and treatment

S23 RESULTS OF A NATIONAL SURVEY OF PRE-OPERATIVE SCREENING FOR OBSTRUCTIVE SLEEP APNOEA

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Introduction and objectives There is currently no UK guidance (from BTS, BSS or RCA) regarding screening for obstructive sleep apnoea in the pre-operative setting. Evidence suggests that undiagnosed OSA is associated with increased post-operative complications but no trials have examined whether screening the UK's general surgical population is justifiable. We sought to examine current UK practice and opinion in this regard.

Methods A postal survey was sent to all 180 UK sleep service providers asking whether they had a hospital policy for pre-operative screening for OSA and what this consisted of. If there was no policy they were asked how pre-operative patients with suspected OSA were identified. Further details regarding diagnostic confirmation and opinion regarding practice were sought.

Results We received 84 replies. There is a spectrum of current practice amongst respondents. There were 31 centres (37%) with a policy for screening for OSA. Of these, 42% screened all patients with a questionnaire e.g. STOP BANG, 23% screened only patients undergoing certain operations, 13% screened patients with high BMI only. Of those with a policy who