Background Occupational exposures are important and preventable causes of COPD. In a cross-sectional study of current occupation among over 220,000 workers in the UK Biobank cohort (over 500,000 subjects) we previously reported that 14 jobs were associated with increased COPD risk (De Matteis S, et al., OEM, 2016). To progress these findings we developed OSCAR, a new web-based tool for efficient self-reporting and automatic coding of job-histories in large population-based studies. Our aim was to identify the occupations at increased COPD risk taking into account lifetime job-histories in the UK general population.
Methods We administered OSCAR to all UK Biobank participants with an available email address (n = 324,653) between June-February 2016. Paid jobs held for at least six months were collected and coded by OSCAR using the UK Standard Occupational Classification (SOC), v.2000. COPD was defined as FEV1/FVC<LLN based on spirometry performed at recruitment. Prevalence ratios (PRs) for ever-exposure to each of the 353 SOC-coded jobs using lifetime office workers as reference category were estimated using Poisson regression with adjustment for age, sex, recruitment centre and lifetime tobacco smoking. In addition, we used lifetime cumulative job durations to test for exposure-response trends.
Results Among the 116,375 participants who completed OSCAR (response rate: 34%), 94,551 had acceptable and repeatable spirometry data (according to ERS/ATS criteria) and smoking information and were included in the analyses. Taking into account individual lifetime job-histories, 19 jobs significantly increased COPD risk (e.g. 'fishing and agriculture related occupations': PR: 1.69; 95% confidence interval (CI): 1.18–2.42, and 'food, drink and tobacco process operatives': PR: 1.42; 95% CI: 1.02–1.97). The majority were also confirmed by positive exposure-response trends for cumulative years of employment in each job/lifetime.
Conclusions Compared to our previous cross-sectional study, some jobs were confirmed (e.g. 'food, drink and tobacco process operatives', and 'horticultural trades') while others were not (e.g. 'coal miners'), likely due to the few employed in these jobs among the OSCAR responders. OSCAR is still collecting job-histories in the UK Biobank cohort; further analyses on a larger sample, as well analyses restricted to never-smokers and never-asthmatics to investigate the possibility of residual confounding, are planned.

Virtual Smoking: The Risks of the Evil Weeds

S122 EFFECTS OF VAPED E-CIGARETTE LIQUID CONDENSATE UPON HUMAN ALVEOLAR MACROPHAGE FUNCTION. TO VAPE OR NOT TO VAPE THAT IS THE QUESTION?

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Introduction and objectives Electronic cigarette usage or "vaping" has risen exponentially in recent years in smokers and ex-smokers. Published data suggests that vaping e-cigarette liquid (ECL) may not be as benign as propounded by e-cigarette companies which are increasingly owned by "big tobacco". Much of the current literature has focused on the effect of non-vaporised ECL – such studies do not fully reflect the exposure of the user, as the process of vaping causes chemical changes in ECL. To investigate the effect of unvaped ECL and vaped e-cig condensate (ECVC) using our novel system, with and without nicotine, on alveolar macrophage (AM) viability and immune responses.
Methods We developed a novel method to produce ECVC to allow direct comparison with unvaped ECL. Nicotine concentration as assessed by GFID was 31 mg/ml in ECL and 26 mg/ml in ECVC. AMs were obtained from lung resection tissue and treated with ECVC/ECL ± nicotine. Cell viability was assessed by cell titre aqueous assay, apoptosis, necrosis and markers of macrophage phenotype (CD68, CD80, CD163, CD206) were assessed by flow cytometry. IL-8 release by AMs was assessed by ELISA.
Results AM culture with ECL or ECVC resulted in dose dependent reduction in cell viability. ECVC was cytotoxic at lower concentrations than ECL (0.8% ECVC vs 5 %ECL, n = 6). 24 hour culture with 1% ECVC resulted in a 5fold increase in AM apoptosis and 2 fold increase in necrosis compared with 1%ECL (p = 0.079, n = 5). Nicotine containing ECVC caused more apoptosis vs nicotine free ECVC (27.2% vs 13.4%, (p = 0.0079, n = 4). Culture with 0.6%ECVC significantly increased supernatant levels of IL-8 compared with 1% ECL (p = 0.015, n = 4). ECVC was also found to affect macrophage phenotype, showing both nicotine dependent/independent regulations of markers of macrophage m1/m2 polarisation (CD80 p = 0.0357, CD163 p = 0.0179, CD206 p = 0.0357, n = 6).
Conclusions Our novel system creates ECVC which is sterile, minimises loss of nicotine and prevents dilution of the vapour. Vaped E-cigarette condensate is significantly more toxic to AMs than non-vaped e cigarette liquid. Furthermore, ECVC with nicotine is significantly more toxic than ECVC without Nicotine. Effects shown on inflammatory cytokine production and markers of macrophage polarisation indicate both nicotine dependent and independent effects of ECVC on alveolar macrophages.

S123 THE EFFECTS OF ELECTRONIC CIGARETTE FLAVOURINGS ON MACROPHAGE CYTOKINE RELEASE AND PHAGOCYTOSIS

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Background Electronic cigarettes (e-cigarettes) are marketed as an alternative to tobacco cigarettes, but little is known regarding their biological effects. Studies to date have produced varying results, reflecting varying chemical compositions of different e-liquids.

Chronic tobacco smoking is known to alter macrophage function, resulting in impaired bacterial phagocytosis and increased release of cytokines including TNFα, CXCL8 and IL-6. To date, there is little understanding of the effects of e-cigarettes on human macrophages. It was hypothesised that e-cigarettes would produce effects on macrophage function comparable to those of tobacco cigarettes.
Methods Six e-liquids were investigated: tobacco-flavoured e-liquid (± nicotine), banoffee-pie-flavoured e-liquid (± nicotine), e-liquid vehicle (propylene glycol + vegetable glycerine) and nicotine-vehicle solution. Effects of e-cigarette vapour extracts (e-CVEs) were compared with cigarette smoke extract (CSE) from a tobacco cigarette. Monocyte-derived macrophages (MDMs) from healthy subjects (n = 6) were cultured for 24 h with e-CVEs or CSE then incubated for 4h with *Streptococcus pneumoniae* or *Haemophilus influenzae*. Cell viability was determined and

phagocytosis was quantified using fluorimetry. Release of TNFα, CXCL8 and IL-6 was measured by ELISA. Expression of macrophage receptor with collagenous structure (MARCO) and toll-like receptors (TLRs) 2 and 4 was measured by flow cytometry.

Results Neither CSE nor any of the e-CVEs had any significant effect on cell viability. In addition, none of the exposures produced any significant effect on phagocytosis, though higher concentrations of CSE displayed a trend towards reduced phagocytosis.

CSE significantly reduced TNFα release (by approximately 70%; $p < 0.05$). Tobacco- and banoffee pie-flavoured e-CVEs also caused significant reductions in TNFα release (by 30–50%; $p < 0.05$), while nicotine and the e-liquid vehicle had no effect. Minimal effects were observed on CXCL8 and IL-6 release (0–30% reduction; $p > 0.05$) with CSE and e-CVEs. Expression of MARCO and TLR4 were unaffected by all cell treatments. TLR2 expression appeared to be slightly increased by e-CVEs, but was not statistically significant.

Conclusion Effects of e-CVEs on MDMs differed from those of CSE. E-liquid flavourings appeared to be responsible for changes in MDM function, while the e-liquid vehicle and nicotine solution had minimal effects. More research is needed to improve understanding of the biological effects of e-cigarette flavourings.

S124 THE EFFECTIVENESS OF "IN-CLINIC" SMOKING CESSATION SUPPORT IN THE SETTING OF SECONDARY CARE RESPIRATORY OUTPATIENT SERVICES

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Introduction and aims Although two thirds of smokers wish to quit, referral, uptake and engagement with smoking cessation (SC) services are frequently poor. In Leicester, uptake of smoking cessation referred from secondary care is approximately 20% with successful quit rate at four weeks of 10%. Provision of immediate support through smoking cessation specialist advice provided at the point of clinical assessment in outpatients might enhance referral uptake and quit rates. We assessed the value of this "in-clinic" approach in specialist respiratory outpatient clinics in two secondary care centres.

Methods Provision of immediate smoking cessation advice was implemented in two outpatient clinic services providing specialist care for patients with complex, chronic obstructive pulmonary disease (COPD); an Acute General Hospital (Peterborough City Hospital, PCH) and a Tertiary Care Hospital (Glenfield Hospital, GH). All current smokers were referred to an on-site smoking cessation specialist advisor by the physician, or clinic nurse, as part of their outpatient review on the same day of their clinic visit.

In the Glenfield service SC was provided by a smoking cessation specialist, using a harm reduction approach with a guided patient-led tailored programme and the possibility of direct supply treatment at the initial assessment.

In the PCH service, SC using psychosocial and/or pharmacological therapy was undertaken by a dedicated smoking cessation officer

Follow-up visits and telephone calls were arranged separately by the smoking service and data including demographics, treatment uptake and quit rates after 4 weeks were analysed.

Results A population of 122 smokers with a diagnosis of COPD were assessed for in-clinic SC over a period of twelve months in both centres.

Demographic details of both cohorts, outcomes of both SC strategies including treatment uptake and quit rates are disclosed in Table 1.

Conclusions Providing "in-clinic", expert smoking cessation advice results in favourable referral uptake and four week quit rates when compared with locally available data from paper based referral routes. Reinforcing physician delivered smoking cessation advice through immediate provision of proactive cessation support may be an effective means to enhance quit rates in secondary care.

Abstract S124 Table 1 Smoking cessation outcomes

	In-Clinic SC Approach at Peterborough Hospital	In-Clinic SC Approach at Glenfield Hospital
N patients referred	65	57
Age (years) (mean, [SD])	61.3 [9]	61.1 [9]
Gender	53% Male	53% Male
Approach to SC	Conventional	Harm Reduction
Treatment Uptake (% of N)	32 (49%)	29 (50%)
SC managed after 4 weeks (% of N)	29 (44%)	16 (28%)

S125 SMOKING CESSATION KNOWLEDGE, BELIEFS AND CURRENT PRACTICES AMONG UK CHILD HEALTH PROFESSIONALS

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Introduction and objectives Two million children in the UK are regularly exposed to second-hand smoke (SHS) in the home and many more are exposed in other settings. The consequences of this are well recognised and include higher incidences of: numerous acute illnesses; hospital admissions; school absences and increased smoking rates in later life. Together these result in significant costs to the NHS and wider economy.

Barriers to improved practice have been reported in other professional groups in the UK and in Child Health Doctors and Nurses in other countries. We could find no previously published data from the UK on this topic with which to inform and improve our own staff training and support.

Methods An electronic questionnaire was developed, covering beliefs, knowledge and current practice. The survey was distributed through professional groups, training and healthcare delivery organisations.

Results 140 responses were received, from Consultants (22%), trainee Paediatricians (32%), Nurses (34%) and others (11%), including Physiotherapists, Pharmacists, Healthcare Assistants and Play Therapists. Respondents came from 19/21 UK regions.