Methods We assayed specific IgE sensitisation in 300 bakers employed by one of two large UK supermarkets who, at routine health surveillance, had declared work related upper or lower respiratory symptoms. Sensitisation was determined using radio-allergosorbent assay to enzymes contained within the specific 'improver' mix used by the employing supermarket; each mix contained eight individual enzymes which were not necessarily common to both supermarkets.
Results Bakers were sensitised to each of the individual 'improver' enzymes with a prevalence ranging from 1.8% to 23.9%; the frequency did not appear to be associated with the quantity of enzyme incorporated in the mix. Sensitisation was far more likely if a baker was sensitised also to either flour or fungal alpha amylase; but a small proportion (5%) of bakers who were sensitised to neither flour nor fungal alpha amylase had specific IgE to one or more of the 'improver mix' enzymes.
Conclusions Bakers working in UK supermarket bakeries can become sensitised to improver enzymes other than fungal alpha amylase. The clinical significance of this remains unclear but the message is important both in the diagnosis of bakers with work-related respiratory symptoms and in any programme of immunological surveillance.

S6 THE ROLE OF INDIVIDUALLY VENTILATED CAGES IN PREVENTION OF LABORATORY ANIMAL ALLERGY: A PROOF OF CONCEPT STUDY

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Introduction and objectives At least 12000 people work with laboratory animals in the UK. Approximately 15% of exposed employees develop specific IgE sensitisation and 10% clinical symptoms of laboratory animal allergy (LAA), a form of occupational asthma. Individually ventilated cages (IVCs) are increasingly replacing conventional open cages (primarily to protect mice from external infection) and whilst this can be associated with lower levels of ambient aeroallergen levels no corresponding reduction in the incidence of LAA is apparent. The SPIRAL (Safe Practice In Reducing Allergy in Laboratories) study is a large multi-centred study designed to increase understanding of the complex association between workplace exposure to mouse allergens and development of sensitisation, and to evaluate the risk of working with mice today.
Methods A cross-sectional study of animal workers at seven UK medical research institutions is in progress. We aim to recruit 250 people working in IVC-only facilities and 160 people working in mixed facilities; our primary outcome is a comparison of prevalence of sensitisation to Mus m 1 (mouse urinary antigen) between these two groups. Participants are invited to complete a detailed online questionnaire about work tasks and practices. Skin-prick tests to common aeroallergens and various animal proteins are performed and blood samples analysed for serum specific IgE to Mus m 1. Aeroallergen sampling for particular matter and Mus m 1 is undertaken concurrently to provide additional information about potential exposures. Recently employed individuals are invited to participate in a cohort study to determine incidence rates of laboratory animal allergy.
Results 136 individuals have been recruited to date; Table 1 shows their demographics and preliminary immunology results. Prevalence of allergic symptoms and sensitisation is similar to that anticipated.
Conclusion The SPIRAL study is the largest, most detailed study of LAA to be carried out. It aims to increase understanding of the relationship between allergen exposure and risk of sensitisation with the goal of significantly reducing the incidence of LAA. The results will be used to develop a "Code of best working practices" for facilities using IVC systems, nationally and further afield.

Abstract S6 Table 1 Baseline characteristics SPIRAL study participants to date and preliminary results

		Number (%)*
Sex		
	Men	53 (39%)
	Women	83 (61%)
Job title		
	Scientists	81 (60%)
	Animal Technicians	40 (29%)
	Other	15 (10%)
Type of facility		
	IVC only	29 (21%)
	Open cages	44 (32%)
	Mixed facilities (IVC and open cages)	57 (42%)
	Participant unsure	6 (4%)
Reported work related symptoms		
	Allergic rhinitis	21 (16%)
	Allergic conjunctivitis	16 (12%)
	Asthma	11 (8%)
Sensitisation to mouse epithelium on skin-prick testing		
	Positive	15 (11%)
	Negative	121 (89%)

*percentages may not equal 100 due to rounding

New approaches to the management of ILD

S7 NITROFURANTOIN LUNG TOXICITY – ARE STEROIDS USEFUL?

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Background Recurrent urinary tract infections are common and current UK guidelines advocate prophylaxis with nitrofurantoin in selected patients[1]. Nitrofurantoin-induced pulmonary toxicity ("Nitrofurantoin lung" or NL) is uncommon but can result in progressive respiratory failure. Locally we have observed a rise in NL. Pulmonary toxicity necessitates cessation of nitrofurantoin, however the utility of additional corticosteroid therapy remains controversial[2]. We examined a detailed case series to ascertain the effect of drug cessation alone and addition of oral corticosteroids in NL.
Methods Using a local Interstitial Lung Disease database, we retrospectively identified patients who had presented with NL between 2009–2013. Patient demographics, imaging, pulmonary function and prescribing data were accessed. Local and national nitrofurantoin prescribing rates were also reviewed.
Results Scottish prescribing data demonstrated increased community nitrofurantoin prescriptions from 3.4 to 11 items/1000 patients from 2008–2012. Our database identified 13 NL cases (93% female, mean age 74 years, range 63–83). All had a history of chronic cystitis and presented with chronic NL. Cumulative

lung function (available in 9 patients) demonstrated a mean improvement in% predicted FVC and FEV_1 of +33 (p = 0.009) and +37 (p = 0.006), respectively, following cessation of nitrofurantoin. 44% of patients were also prescribed oral prednisolone. Comparing these two groups (cessation + steroid vs cessation alone) showed no significant difference in mean% predicted FVC (p = 0.47) or FEV_1 (p = 0.87), gender, age or imaging at diagnosis. Following treatment, there was no significant difference in% predicted FVC (p = 0.87) or FEV_1 (p = 0.93) between groups. The mean% predicted FVC improvement was 31% in the steroid group and 34% in the cessation only group, showing no significant difference between groups (p = 0.86).

Conclusions With increased nitrofurantoin prescribing, the prevalence of NL will continue to rise throughout the UK and heightened awareness of the condition will be required in primary and secondary care. Our data demonstrates that significant improvements in lung function occur on cessation of nitrofurantoin and suggests no benefit is conferred by additional use of corticosteroid in patients with chronic NL.

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S8 RITUXIMAB THERAPY FOR REFRACTORY MYOSITIS RELATED INTERSTITIAL LUNG DISEASE UNRESPONSIVE TO CONVENTIONAL IMMUNOSUPPRESSION: THE BRISTOL INTERSTITIAL LUNG DISEASE SERVICE EXPERIENCE

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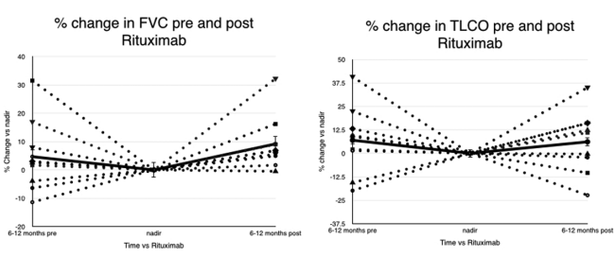
Introduction Rituximab is a chimeric monoclonal antibody against CD20 that depletes B-lymphocytes. There is increasing evidence for its use in Scleroderma ILD.[1] Recently it has been reported as rescue therapy in patients with connective tissue disease related severe fibrotic lung disease who have failed conventional immunosuppression.[2] It remains unclear which patients are most likely to benefit from this potent immunosuppressive treatment. We review here the experience of the Bristol Interstitial Lung Disease service in use of Rituximab in a subset of patients with myositis (Anti-synthetase syndrome and Dermatomyositis).

Methods We retrospectively reviewed the case notes of 10 patients with severe and progressive ILD despite immunosuppression with Cyclophosphamide and Mycophenolate Mofetil, who had received salvage treatment with Rituximab. Serial pulmonary function tests, 6 min walk distances and HRCT appearances (as assessed by a Thoracic radiologist) were compared in the year before and after Rixtuximab therapy. Changes in physiological variables compared to nadir at treatment were compared with paired-samples T-Test.



Abstract S8 Figure 1

Results The average age of the patients was 49.8 (range 26.9–72.99), with 7/10 female. 4 patients had dermatomyositis, while 6 had Anti-Synthetase Syndrome (2 Anti-Jo1, 2 Anti-PL12, 1 Anti-PL7, 1 Anti-PM-Scl). There were complete lung function data available for 9 patients and 6MWD data for 6 patients.

CT appearances stabilised in all 9 patients with follow-up scans available, with significant improvement in 2 (1 after a second pulse of Rituximab).

FVC improved after treatment by an average of 9.2% (p = 0.023, 95% CI 1.67–16.76), with TLCO improving by an average of 6.1% (NS). Figure shows% change in FVC and TLCO leading to and after therapy. 6MWD remained stable.

There were no adverse events reported.

Summary Our experience adds to the growing evidence to support the use of Rituximab in severe CTD-ILD, and suggests that a subset of patients with myositis may show good therapeutic response.

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S9 ACUTE INFLAMMATORY PRESENTATION ASSOCIATES WITH SURVIVAL IN INTERSTITIAL LUNG DISEASE AND EXTRACORPOREAL MEMBRANE OXYGENATION-REQUIRING SEVERE RESPIRATORY FAILURE: A SINGLE CENTRE CASE SERIES

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Introduction Patients with interstitial lung disease (ILD) and severe respiratory failure (SRF) requiring mechanical ventilation are widely perceived to have poor outcomes. A therapeutic strategy incorporating extracorporeal membrane oxygenation (ECMO) improves all cause SRF survival. There exist no data on the use of ECMO in severe ILD. ECMO may offer lung rest, reduce the inflammatory burden associated with mechanical ventilation and allow time for effective immunosuppression. We hypothesised that the use of ECMO and early immunosuppression increases survival in patients with ILD in whom mechanical ventilation was failing.

Methods Retrospective interrogation of a single centre ECMO database for patients with ILD between 2011 and 2014. Variables collected included diagnosis; immunosuppression regimen; duration of symptoms prior to ECMO initiation; serum biochemistry; clinical severity score (SOFA) and survival to ECMO decannulation, ICU discharge and at 6 months. ECMO centre admission computed tomography (CT) thorax scans were independently analysed for pattern and degree of abnormality by two radiologists. Variables were compared between responders (those who survived without lung transplant) and non responders (composite group of those who died and one patient who survived with lung transplantation). Two-tailed t-tests were used for all comparisons.

Results 12 patients with an ILD diagnosis who received ECMO were identified. ECMO and ICU survival was 58.3%. The group of responders had a shorter duration of symptoms prior to ECMO (p = 0.04), a higher CRP (p = 0.046), a higher SOFA