missing data, a mixed effects model was used using residual maximum likelihood. Clinic visit and disease severity were included as factors. Utility values were assumed to be missing at random.

Results The estimated utility of COPD patients according to levels of disease severity was as follows: Mild = 0.820 (95% CI: 0.800–0.840); Moderate = 0.801 (95%CI: 0.794–0.809); Severe = 0.774 (95% CI: 0.767–0.782); and Very Severe = 0.743 (95% CI: 0.730–0.756). The correlation between increasing disease severity and decreasing patients' utility demonstrated the internal validity of the data.

Conclusion This analysis provides estimates of utility by COPD disease severity based on one of the largest sample sizes used to date, which is essential for cost-utility analyses that help inform healthcare decisions.

1. Kind P et al. "Variations in population health status: results from a United Kingdom national questionnaire survey." *BMJ* 316, no. 7133 (Mar 1998): 736–41.

P85 ASSESSING THE PATIENT EXPERIENCE OF COPD CARE USING AN IPSOS MORI QUESTIONNAIRE AS A PATIENT REPORTED EXPERIENCE MEASURE (PREM)

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[1]DJ Powrie, [1]M Ali, [1]S Ansari, [1]KG Lingam, [2]P Mulley, [3]S Hope, [1]AG Davison. *[1]Southend University Hospital, Westcliff on Sea, UK; [2]GlaxoSmithKline, Stockley Park West, UK; [3]Ipsos MORI, London, UK*

Patient reported experience measures provide vital information on the experience that patients have regarding their care and thus have become a recent focus of interest. We have developed a questionnaire to assess PREMS in patients with COPD attending a hospital outpatient clinic. The purpose of the questionnaire was to assess whether the processes that are necessary to improve outcomes in COPD had been dealt with in the clinic and understood by the patient. Also to assess in a similar way the understanding of COPD by the patient and whether they were satisfied with the consultation.

Results The questionnaire was completed by 142 new and follow up patients. Results are presented in the table below. 92% of patients had spirometry performed at their visit and 78% had the results explained. Before the consultation 57% of patients thought they had a good understanding, 30% moderate and 13% little or no understanding of their condition. Afterwards these improved to 67%,23% and 10% respectively. 29% believed that their knowledge of how to reduce exacerbations had increased after the consultation. 87% of patients thought that the length of the review was about right (average 20 minutes). 85% were satisfied overall with the consultation.

Conclusion We have studied COPD care from the patient's perspective. We have found evidence that simple clinician-led measures (such as flu vaccination and spirometry) have been explained either in clinic or previously and understood by the patient. We were less successful in dealing with more complex patient-centred experiences such as understanding of the disease and self management of exacerbations. Following this study we plan to develop a questionnaire dealing with the patient's understanding of their disease that would be filled in before attending clinic. This would allow areas of concern to the patient to be specifically addressed in the consultation. In addition the questionnaire could be used to provide feedback to individual clinicians on their effectiveness in outpatient clinics.

Abstract P85 Table 1

During your consultation were you told?	Explained in clinic (%)	Explained before (%)	total
How to access flu vaccination	65	22	87
How to access pneumonia vaccination	46	25	71
How to use your inhalers	59	33	92
How medicines would benefit you	56	27	83
How to access to smoking cessation	69	17	86
How COPD may affect you	43	35	78
What to do if symptoms get worse	20	46	66

Cystic Fibrosis: diagnosis to therapy

P86 THE SCREENING AND DIAGNOSIS OF CYSTIC FIBROSIS-RELATED DIABETES IN THE UNITED KINGDOM

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[1]KL Wickens-Mitchell, [2]FJ Gilchrist, [1]W Lenney. *[1]Keele University, Keele, UK; [2]University Hospital of North Staffordshire, Stoke on Trent, UK*

Introduction Cystic fibrosis related diabetes (CFRD) affects 17% of CF patients in the UK and is increasing in prevalence. It has a major detrimental impact on pulmonary function, nutritional status and survival; these effects are frequently seen prior to diagnosis. The UK CF Trust guidelines regarding CFRD screening, diagnosis and management differ from those used in Europe and the USA. We conducted a study to establish current UK clinical practise.

Methods A questionnaire was emailed to consultants at each of the 48 UK CF specialist centres. Data were gathered on the screening and diagnosis of CFRD as well as the personnel involved.

Results Completed questionnaires were returned by 39/48 centres (81%). Only 3/21 (14%) paediatric centres begin screening at 12 years (as per the UK CF Trust guidelines), with the majority; 11/21 (52%) starting to screen children at 10 years (as per the European and USA guidelines). Five centres start screening at a child's first annual review. The most common test used to screen patients for CFRD is the oral glucose tolerance test (OGTT) which is used in 33/39 (85%) centres. However, this tool is only used in isolation by 3/33 (9%) centres. More commonly, results of the OGTT are combined with random blood glucose tests and/or HbA_{1C} measurement. The test most frequently used to diagnose CFRD is home blood glucose monitoring which is undertaken in 32/39 centres (82%). Again this is rarely used in isolation, more commonly combined with HbA_{1C} and/or with the results of a continuous glucose monitoring system (CGMS). CGMS is undertaken for diagnosis in 23/39 centres (59%). The decision to initiate insulin therapy was most often shared between a CF consultant and diabetologist. However, in 4/14 (36%) centres a diabetic nurse specialist had sole responsibility.

Conclusions In UK clinical practise the screening and diagnosis of CFRD is not uniform. Various methods are used and there is poor adherence to UK CF Trust guidelines. However, these guidelines from 2004 are somewhat out-dated and need to be updated to reflect the current best available evidence. This is likely to decrease the variation in practise.

P87 THE IMPACT OF RESPIRATORY VIRUSES AND PULMONARY EXACERBATIONS ON FEV1 DECLINE IN ADULTS WITH CYSTIC FIBROSIS

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[1]WG Flight, [2]KJ Mutton, [1]AK Webb, [1]RJ Bright-Thomas, [1]AM Jones. *[1]Manchester Adult Cystic Fibrosis Centre, Manchester, United Kingdom; [2]Dept of Virology, Manchester Royal Infirmary, Manchester, United Kingdom*

Introduction Viral respiratory infection (VRI) is associated with an increased rate of decline in lung function in children with cystic fibrosis (CF) but the long-term clinical impact of VRI in adults is poorly described. We performed a prospective observational study to determine the effect of VRI on lung function in adults with CF.

Methods 100 adults with CF were followed for 12 months. Patients were seen every two months routinely and also at onset of new respiratory symptoms. Sputum, nose- and throat-swabs were

collected at each visit for virological analysis. Polymerase chain reaction assays for adenovirus, influenza A&B, metapneumovirus, parainfluenza 1–3, respiratory syncytial virus and rhinovirus were performed on each sample. Spirometry was recorded at each visit. Treatment failure was defined as a failure of the FEV_1 to return to ≥90% of baseline after intravenous antibiotics. Statistical analysis utilised generalized linear models and multiple linear regression as appropriate, taking into account multiple observations from participants.

Results 191/626 (30.5%) study visits were positive for ≥1 virus with rhinovirus accounting for 72.5%. The incidence of VRI and pulmonary exacerbation (PEx) was 1.6 and 2.5 cases/patient-year respectively. VRI was associated with increased risk of PEx (OR 2.2; 95% CI 1.6 – 3.1; p<0.001).

There was no significant difference in relative fall from baseline FEV_1 at virus-positive compared with virus-negative visits (8.7 vs 9.4%, p=0.4). Acute fall in FEV_1 was lower in virus-positive PEx compared with virus-negative PEx (12.7 vs 15.6%; p=0.04). Rate of PEx, but not of VRI, was associated with a statistically significant decline in FEV_1 over one year, adjusted for age, sex and baseline lung function (β coefficient –1.79; 95% CI –3.4 to –0.2; p=0.02).

Intravenous antibiotics were given for 122 PEx of which 90 had pre- and post-antibiotic FEV_1 data available. 26/90 (29%) were classified as treatment failures. There was a trend towards lower likelihood of treatment failure in virus-positive PEx (OR 0.55; 95% CI 0.1 to 2.7; p=0.46).

Conclusions Incidence of PEx, but not VRI, is associated with accelerated decline in FEV_1 in adults with CF. Virus-positive PEx are associated with a lower acute fall in FEV_1 than virus-negative PEx.

P88 IS HYDROGEN CYANIDE A MARKER OF BURKHOLDERIA CEPACIA COMPLEX INFECTION?

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[1]FJ Gilchrist, [1]H Simms, [1]A Alcock, [2]AM Jones, [3]D Smith, [4]P Spanel, [2]AK Webb, [1]W Lenney. *[1]University Hospital of North Staffordshire, Stoke on Trent, UK; [2]Manchester Adult Cystic Fibrosis Centre, Manchester, UK; [3]Keele University, Keele, UK; [4]J Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic*

Introduction Pseudomonas aeruginosa (PA) was thought to be the only organism found in the cystic fibrosis (CF) lung that produced hydrogen cyanide (HCN). A recent study used a cyanide selective electrode to demonstrate HCN production by *Burkholderia cepacia complex* (BCC) when cultured under biofilm conditions. We replicated this *in-vitro* experiment using selected ion flow tube mass spectroscopy (SIFT-MS) as a more sensitive method of detecting HCN We also investigated HCN as an *in-vivo* marker of BCC infection.

Methods Twelve adults with CF were recruited as they had chronic BCC infection and were free from PA infection for >12months. They provided mouth and nose exhalation breaths for HCN analysis and a sputum sample. The sputum sample was cultured and the isolated BCC recultured under planktonic (free floating) and biofilm (non-motile communities attached to glass beads) conditions. The HCN concentration in the headspace of the both culture types was measured after 24, 48, 72 and 96 hours of incubation. Sterile, control cultures were also analysed. Biofilm formation was assessed visually and with spectrophotometry after crystal violet staining. The mouth and nose exhaled breath from 10 patients with CF that were free from PA and BCC infection for >12 months was also analysed.

Results Biofilm formation was confirmed visually and using spectrophotometry: mean(SD) absorbance of crystal violet was 3.43(0.31) absorbance units (AU) in the biofilm cultures compared to 0.005(0.003)AU in the planktonic and control cultures (p<0.001). At each of the 4 time points, the headspace HCN concentration was <10ppbv (equivalent to background levels) for all biofilm, planktonic and control cultures. The mean(SD) breath HCN concentrations were no higher in the subjects with chronic BCC infection than in subjects without BCC infection for mouth exhaled breath (11.0(12.7) v 12.0(12.9) ppbv p=0.87) and nose exhaled breath (0.6(1.1) v 2.1(3.8) p=0.23).

Conclusions Using SIFT-MS we did not identify elevated HCN concentrations in the headspace of BCC cultured under biofilm or planktonic conditions or in the breath of patients with chronic BCC infection. Therefore, HCN does not appear to be an *in-vitro* or *in-vivo* marker of BCC infection.

P89 THE EFFECT OF SAMPLE HANDLING ON VIABLE BACTERIAL COMMUNITY PROFILES FROM CYSTIC FIBROSIS SPUTUM SAMPLES

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[1]TH Hafiz, [2]LC Cuthbertson, [2]AO Oliver, [3]GB Rogers, [3]KD Bruce, [1]MP Carroll, [2]CV van der Gast. *[1]Southampton University Hospital, Southampton, UK; [2]NERC, Centre for EcologyHydrology, Wallingford, UK; [3]Department of Life Sciences, King's College London, London, UK*

Introduction Obtaining accurate information on the composition of Cystic fibrosis (CF) lung infections is essential for the selection of appropriate therapy and maintenance of respiratory function. Whilst significant advances have been made using molecular techniques to provide such characterisation, there is a pressing need to identify the most appropriate sampling handling protocols. Here, we investigated the relationship between the time period prior to sample freezing and the bacterial community profiles.

Methods Eleven sputum samples were collected from adult CF patients experiencing acute pulmonary exacerbations. Expectorated sputum was aliquoted into 12 equal portions, with one portion being frozen immediately and others transferred to –80°C at time points over a 72 hour period. Samples were treated with propidium monoazide prior to DNA extraction to limit analysis to viable bacterial cells. The bacterial composition of samples was determined by 16S rRNA gene Terminal Restriction Fragment Length Polymorphism (T-RFLP) profiling. Changes in bacterial community composition over the time course were then analysed using ecological statistical tools.

Results A marked change in the bacterial community composition and abundance was observed within the first hour. Using Bray Curtis similarity index, a 51% similarity change in the bacterial community was observed in the first hour when compared to the sample frozen immediately. Thereafter, the bacterial community remained relatively stable for the following 72 hours (Figure 1A). Species cumulative richness showed an increase of approximately 63 new bacterial species over 72 hours, of which 25/63 (40%) emerged within the first hour. The mean sample richness also showed a significant increase in bacterial species within the first hour (Figure 1B).

Conclusion The data presented indicates a significant change in sample bacterial composition within the first hour of sample collection. These findings have clear implications for the handling of samples for viable community profiling.

P90 OSTEOPOROSIS IN NON-CYSTIC FIBROSIS BRONCHIECTASIS (NCFBR) ADULTS

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[1]SS Sunny, [2]A Burns, [1]H Jary, [3]T Aspray, [1]A De Soyza. *[1]Sir William Leech Centre for Lung Research and Freeman Hospital Bronchiectasis Service, Freeman Hospital, Newcastle upon Tyne, UK; [2]Bone Mineral Assessment, Freeman Hospital, Newcastle upon Tyne, UK; [3]The Bone Clinic, Freeman Hospital, Newcastle upon Tyne, UK*

Introduction Whilst osteoporosis is associated with COPD, little is known on its prevalence in non-cystic fibrosis bronchiectasis