

**Results** In 5 patients (4%), PE was confirmed after imaging. The mean age was 50 years with 68.5% female patients. The most common presenting complaint was chest pain followed by dyspnoea. In 59% of cases the Well's score was not documented. D-Dimer was checked in 94.5% of patients with unnecessary measurement in 11% of these. In 20% of patients who had radiological investigations for PE, D-dimer was negative. ECG and CXR were performed in most of cases with abnormal findings in 11% and 15% respectively. 77% of patients underwent CTPA, 21% had a V/Q scan, and 2% had V/Q scan followed by CTPA. The mean time to scan was 1.5 days with minimum of 1 day and maximum of 4 days. All confirmed PEs were identified by CTPA and were provoked by risk factors such as recent surgery, recent pregnancy, oral contraceptives, previous documented VTE. Domiciliary enoxaparin was administered in 89% of patients pending CTPA or VQ. All confirmed PEs were subsequently treated with warfarin. No complications occurred, including bleeding events, recurrent VTEs, readmissions for anticoagulation related events, or deaths related to PE.

**Conclusions** Our experience shows that selected patients with suspected PE can be safely managed as outpatients in our trust. Closer adherence to the pathway may prevent a number of unnecessary scans (i.e. PE can be safely excluded when Wells score low and D-Dimer negative without a scan). Our protocol and pathways are being updated to incorporate PESI criteria to safely identify ambulatory patients, and to use of rivaroxaban in preference to warfarin for confirmed PE.

#### REFERENCE

1 Ladwa RM, et al. *Thorax* 2011;**66**:A160

#### P273 A RETROSPECTIVE SERVICE EVALUATION OF A 2 YEAR COHORT, ATTENDING A NEW, DEDICATED PULMONARY EMBOLISM CLINIC

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10.1136/thoraxjnl-2015-207770.409

**Introduction** A service evaluation investigated the effect of follow-up in secondary care on the outcomes of patients who had suffered a Pulmonary Embolism (PE). Patients who attended the PE clinic received a tailored treatment plan specific to their PE event. Events were classified as provoked or unprovoked and their 2 year recurrence rates and complications assessed.

**Method** The 2012 cohort of 84 patients from a PE clinic was analysed retrospectively, allowing for a 2 year follow-up. Patients were classified as having sustained a provoked event if a transient provoking risk factor was identified, as per the European Society of Cardiology (ESC) 2014 guidelines.

**Results** Of the 84 patients (40 male, 44 female), 83 were available for follow-up at the 2 year mark. Fifty patients (59.5%) had a provoked event whilst 32 (38.1%) were unprovoked- 2 patients had inadequate history to assess. Patients with unprovoked events were investigated further to screen for an underlying malignancy. Three patients (9.38%) were diagnosed with malignancies within 6 months of their PE. Of the unprovoked, 26 underwent a thrombophilia screen with 4 (12.5%) testing positive. Of 83 patients followed to 2 years, 7 (8.4%) had a recurrence (median = 17 months). Two (2.4%) developed chronic thromboembolic pulmonary hypertension whilst 3 (3.6%) developed post-thrombotic syndrome.

**Conclusion** Compared to the ESC 2014 guidelines, recurrence rates and complications at 2 years are much lower. The classification of provoked and unprovoked events led to the diagnosis of unknown pathologies. Although only an initial study, this shows that secondary follow-up decreases adverse consequences.

## Treatment options in cystic fibrosis

#### P274 MOVING FROM RESCUE TO PREVENTION: REAL WORLD EVIDENCE OF REDUCTION IN IV ANTIBIOTIC REQUIREMENT FOLLOWING IMPROVEMENT IN ADHERENCE TO MAINTENANCE NEBULISED TREATMENT IN AN ADULT CYSTIC FIBROSIS CENTRE

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10.1136/thoraxjnl-2015-207770.410

**Background** Adherence to preventative nebulised therapy is associated with better health and lower costs for rescue treatment. However, adherence with nebulised treatment is generally poor and there is currently no systematic adherence intervention for people with CF. The Sheffield Adult CF centre has embarked on various pilot projects in this area, culminating in an NIHR programme grant awarded in 2014 to develop such a systematic adherence intervention. We hypothesised that the pilot projects would have improved the adherence levels and health outcomes among people with CF receiving care at the CF centre.

**Objectives** To determine overall change in nebuliser adherence and health outcomes among the cohort of people with CF in Sheffield from 2013 to 2014.

**Methods** Demographic data, spirometry, BMI, annual total intravenous antibiotics days and prescription details were obtained by reviewing patient notes. Adherence was measured with I-neb nebuliser and calculated as a percentage of the agreed regimen between clinicians and people with CF. People on ivacaftor or with previous lung transplantation were excluded from this analysis.

Abstract P274 Table 1

	2013 data (n = 166)	2014 data (n = 170)
People on I-neb (%)	92 (55%)	101 (59%)
People with $\geq 3$ months of I-neb data (%)	83 (50%)	85 (50%)
Median % I-neb nebuliser adherence (IQR)	40.5 (20.2–66.8)	49.5 (23.1–77.8)
Median age in years (IQR)	25 (19–31)	26 (20–32)
Female (%)	75 (45%)	79 (46%)
Pancreatic insufficiency (%)	138 (83%)	136 (80%)
CF related diabetes (%)	38 (23%)	41 (24%)
Median % predicted FEV1 (IQR)	79 (56–95)	79 (56–93)
BMI (IQR)	22.0 (19.7–24.6)	22.7 (19.8–24.9)
Median IV days (IQR)	14 (0–41)	14 (0–28)
Total IV days	3970	3313

**Results** 15 people were excluded from the analysis for both years. The cohort increased from n = 166 in 2013 to n = 170 in 2014, with a similar increase in the number of people with I-neb data for  $\geq 3$  months (n = 83 in 2013, n = 85 in 2014). Median nebuliser adherence improved from 40.5% in 2013 to 49.5% in 2014. The median FEV1 remained stable at 79% while BMI improved slightly from 22.0 in 2013 to 22.7 in 2014. The total IV days reduced by 657 from 3970 in 2013 to 3313 in 2014; a potential saving of around £156,000.

**Conclusion** Although adherence remains a challenging issue, these data suggest the potential of benefits of improved adherence. More work will be needed to examine the adherence data in more detail and to collect further longitudinal data to determine if there is a clear trend of improvement.

**P275 PREVALENCE AND STRAIN TYPING RESULTS OF GRAM-NEGATIVE EMERGING BACTERIAL PATHOGENS IN PATIENTS ATTENDING A LARGE UK ADULT CF CENTRE**

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10.1136/thoraxjnl-2015-207770.411

**Introduction** In recent years Gram-negative bacterial emerging pathogens (EP) have been noted to infect the airways of patients with CF. Prevalence of EP is increasing but much remains unknown. This study aimed to determine prevalence of EP at a large adult UK centre and whether these organisms may be capable of cross infection.

**Methods** Prevalence of *Burkholderia multivorans*; *Stenotrophomonas maltophilia* and *Achromobacter*; *Ralstonia* and *Pandoraea* species was calculated in October 2013 and 2014. Strain typing was performed on EP isolated from patients from January 2008 to present using pulsed-field gel electrophoresis following restriction with *Xba*I. Epidemiology of patients with shared strains was analysed by reviewing patient addresses, outpatient appointments, admissions, paediatric centres and asking patients about their social behaviours.

**Results** In October 2013, 358 patients had at least 1 sputum culture result in the previous 12 months and were included in the prevalence calculation. This increased to 368 patients in October 2014. Prevalence of most EP increased between 2013 and 2014. EP prevalence in 2014 ranged from 1.9% (*Ralstonia* species) to 6.2% (*B. multivorans*) (Table 1). 96 patients had  $\geq 1$  isolation of an EP between January 2008 and July 2015. Of these, 20 (21%) have had  $>2$  strains of EP isolated from their sputum within that timeframe. To date, strain typing has been performed on 97 of 115 identified isolates from 96 patients. Shared strains of EP in unrelated patients with epidemiological connexions other than place of home residence were found in cases of infection with *Achromobacter*, *Ralstonia* and *Pandoraea* species. Shared strains of *B. multivorans* were found in a sibling pair, an unrelated pair with no temporal overlap in positive cultures and in 4 patients with no clear opportunities for cross infection to have occurred.

**Conclusions** Prevalence of EP is low at our centre but is slowly increasing. History of EP infection appears to be a risk factor for infection with other EPs. Shared strains of *Achromobacter*, *Ralstonia* and *Pandoraea* species have been identified in our centre in patients with epidemiological connexions. Numbers are too small to establish whether cross infection or a common environmental source is responsible.

**Abstract P275 Table 1** Prevalence of Gram-negative bacterial emerging pathogens at Manchester Adult Cystic Fibrosis Centre 2013 and 2014

Organism	Prevalence October 2013, % (number of patients)	Prevalence October 2014, % (number of patients)
<i>Burkholderia multivorans</i>	6.4 (23)	6.2 (23)
<i>Achromobacter</i> species	4.5 (16)	5.1 (19)
<i>Stenotrophomonas maltophilia</i>	3.4 (12)	4.6 (17)
<i>Pandoraea</i> species	2.2 (8)	2.4 (9)
<i>Ralstonia</i> species	1.4 (5)	1.9 (7)

**P276 THE PREVALENCE OF TICARCILLIN HYPER-SUSCEPTIBLE PSEUDOMONAS AERUGINOSA ISOLATES FROM NON CYSTIC FIBROSIS BRONCHIECTASIS PATIENTS COMPARED TO PATIENTS WITH CYSTIC FIBROSIS AND CONTROLS**

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10.1136/thoraxjnl-2015-207770.412

**Background and aims** *Pseudomonas aeruginosa* (PsA) is associated with considerable morbidity and mortality in Non-Cystic Fibrosis bronchiectasis (NCFB) and Cystic Fibrosis (CF) patients. Ticarcillin, a carboxypenicillin, is occasionally used in NCFB and CF to treat pulmonary exacerbations. In CF, a subpopulation of PsA exists that is hypersusceptible to ticarcillin (Tichs) *in vitro*, (minimum inhibitory concentration [MIC]  $<4$   $\mu$ g/ml). This phenotype, is associated with reduced MICs to  $\beta$ -lactams, fluoroquinolones, tetracyclines and a degree of resistance to aminoglycosides.

The aim of this study was to investigate whether this Tichs strain exists in NCFB patients and compare this to the prevalence rates from CF and control cohorts. We also assessed whether this strain correlated with enhanced susceptibility to temocillin and other anti-pseudomonal antibiotics.

**Methods** 18 isolates of PsA from NCFB patients, 23 PsA isolates from CF patients and 18 PsA isolates from controls with no chronic lung disease were analysed. MICs for each isolate were determined by agar dilution using ISO20776-1 for the antibiotics listed in Table 1 and interpreted using EUCAST breakpoints.

**Results** The NCFB isolates had the highest prevalence of the Tichs strain of the three cohorts we tested, with a prevalence of 76%, compared to a prevalence of 48% in the CF cohort and 0% in the controls. Resistant strains of PsA were more prevalent in the CF cohort compared to the NCFB and control cohorts, except for temocillin and ticarcillin where the CF and NCFB cohorts had lower MICs compared to the control cohort (Table 1).

The Tichs strain in NCFB and CF was associated with reduced MICs to all antibiotics apart from ciprofloxacin in comparison to the non-Tichs strain. In CF, the Tichs strain was also associated with increased MICs to gentamicin.

**Conclusion** Our data supports the existence of a Tichs strain of PsA in NCFB patients, which existed in greater prevalence compared to our CF cohort. This appears to correlate with reduced MICs to temocillin, to which PsA would normally be resistant.