explain this is being explored and numbers increased. The results may help determine the best methodology for assessing isolate susceptibility to a phage mix for inclusion in a future clinical trial.

S113 AN EPIDEMIOLOGICAL REVIEW OF STRAINS OF PSEUDOMONAS AERUGINOSA IN A NON-CYSTIC FIBROSIS BRONCHIECTASIS COHORT

[1]P Mitchelmore, [2]A Brown, [3]C Sheldon, [1]C Scotton, [4]M Bull, [4]E Mahenthiralingam, [3]N Withers. *[1]University of Exeter Medical School, Exeter, UK; [2]University of Exeter, Exeter, UK; [3]Royal Devon & Exeter Hospital, Exeter, UK; [4]Cardiff University, Cardiff, UK*

10.1136/thoraxjnl-2015-207770.119

Introduction and objectives *Pseudomonas aeruginosa* (*Pa*) is a significant respiratory pathogen. Research in Cystic Fibrosis cohorts has revealed transmissible strains, leading to heightened infection control protocols due to concerns of cross-infection. In patients with Non-Cystic Fibrosis Bronchiectasis (NCFB), the research is more limited. Our objectives were to investigate the strains found in our local NCFB population, and assess the occurrence of shared strains.

Methods Patients with NCFB and previous *Pa* in sputum culture consented to providing sputum for the study and review of their medical notes. Sputum samples from patients were processed in the usual manner and if *Pa* was isolated, 10 representative colonies per patient were stored for strain typing. Isolates were subjected to Random Amplification of Polymorphic DNA (RAPD). Distinct RAPD types were verified by electrophoresis on an Agilent Bioanalyzer and subsequent cluster analysis using GelCompar II software, and further investigated by Multi-Locus Sequence Typing (MLST).

Results *Pa* was obtained from 46 patients over 12 months providing 459 isolates. Co-existence of multiple strains was observed in two patients. Twenty patients (43%) had unique strains by RAPD and the remaining patients were clustered into 7 subgroups, defined as $\geq$90% homology by RAPD, using Pearson's correlation analysis. The largest cluster showed a predominance of one MLST strain type identified as ST-17 (also known as "Clone C") on the MLST database. In our cohort, 8 patients (17%) harboured Clone C, which is a higher prevalence than observed in previous UK studies of various patient cohorts (typically 2–6% prevalence). MLST analysis of smaller RAPD clusters identified other MLST strain types shared by 2 or 3 patients. As with Clone C, all the observed shared MLST strain types are globally distributed. MLST did not reveal any novel shared strains.

Conclusions Our cohort of patients with NCFB shows evidence of shared strains of *Pa* including a high prevalence of Clone C compared to previous national reports. Whilst the occurrence of shared strains may reflect their global distribution, we cannot rule out cross-infection between patients.

S114 FEASIBILITY STUDY FOR A RANDOMISED CONTROLLED TRIAL OF PSEUDOMONAS AERUGINOSA ERADICATION TREATMENT IN PATIENTS WITH BRONCHIECTASIS

[1]HR Abo-Leyah, [2]A Smith, [3]M Clark, [2]J Hill, [1]TC Fardon, [1]JD Chalmers. *[1]Department of Respiratory Medicine, College of Medicine, University of Dundee, Dundee, UK; [2]College of Medicine, University of Dundee, Dundee, UK; [3]Department of Microbiology, College of Medicine, University of Dundee, Dundee, UK*

10.1136/thoraxjnl-2015-207770.120

Introduction Guidelines recommend Pseudomonas aeruginosa (PA) eradication treatment for new isolation of PA in bronchiectasis patients, but evidence is lacking. We performed a feasibility study to identify how many patients with new PA isolation would be eligible for a future randomised controlled trial (RCT).

Methods For 12 months (2013–2014) we piloted a PA "alert" system that would notify the study team when PA was isolated in sputum samples. Patients were reviewed using electronic medical records to classify patients as 1- New PA, having never isolated PA before and therefore eligible for eradication, 2- Relapsed PA, patients having been free from PA and now isolating it again-therefore eligible for eradication, 3- Chronic PA, and therefore not eligible for eradication, 4- patients without HRCT confirmed bronchiectasis. Anti-PA IgG antibodies were measured in serum as a predictor of potential eradication success.

Results There were 322 PA isolates from sputum over 12 months, in 156 patients. 22 patients presented new PA, 13 patients relapsed PA, 17 chronic PA and 104 patients did not have bronchiectasis (66%). The most frequent diagnoses in the non-bronchiectasis group was COPD.

Overall, 35 patients would have been eligible for a trial of PA eradication on clinical grounds. Of these patients, clearance (negative PA culture at next follow-up sample) was demonstrated in 63%.

PA IgG was positive in all of the patients with chronic PA, and identified those with successful clearance: sensitivity 93% and specificity 54%. A low antibody level was strongly associated with successful eradication (negative likelihood ratio 0.06, successful eradication in 92.3%).

Mortality was very high in this patient group. 9%, 30% and 24% of patients died within 12 months follow-up in the 3 groups respectively.

Conclusion This feasibility demonstrates that a future community based RCT of PA eradication would require a large number of centres, and be resource intensive. Major challenges in powering a future study include the low proportion of true first isolates and the high frequency of spontaneous PA clearance. Raised PA IgG was not sufficiently specific to exclude successful eradication, but a low PA IgG suggests a high likelihood of success.

S115 EFFICACY OF PSEUDOMONAS AERUGINOSA ERADICATION REGIMENS IN NON-CF BRONCHIECTASIS

[1]E Vallieres, [2]K Tumelty, [3]MM Tunney, [2]R Hannah, [2]O Hewitt, [1]JS Elborn, [2]DG Downey. *[1]Queen`s University Belfast, School of Medicine, Dentistry and Biomedical Sciences, Belfast, UK; [2]Belfast City Hospital, Belfast Health and Social Care Trust, Belfast, UK; [3]Queen's University Belfast, School of Pharmacy, Belfast, UK*

10.1136/thoraxjnl-2015-207770.121

Introduction and objectives BTS guidelines recommend to try and eradicate *Pseudomonas aeruginosa* when first isolated from patients with non-CF bronchiectasis. The aims of this study were to 1) define the different eradication regimens used in our respiratory centre and 2) evaluate their efficacy.

Methods The medical notes of adult non-CF bronchiectasis patients who underwent eradication trial for *P. aeruginosa*, between 2007 and 2014, were retrospectively reviewed. Eradication was considered successful if all (and at least 3) respiratory samples collected during the 6-month period following initiation of eradication were free of *P. aeruginosa*.

Results During the study period, 67 patients (58% male, average age 63.0 yrs) had at least one eradication trial. The majority of

regimens used combined nebulised colomycin with either oral ciprofloxacin or intravenous antipseudomonal antibiotics as first line therapy, (Table 1, n = 57; 85%). Overall, first eradication attempts were successful in 52% of cases (35/67). Regimens including nebulised colomycin were more effective (n = 23/38; 60%) than those without it (20%; 2/10) (Fisher`s exact test, $p = 0.04$). Longer courses of ciprofloxacin (>3 weeks) did not improve outcome in comparison with shorter (≤3 weeks) courses (p = NS). Furthermore, intravenous antibiotics were not superior to oral ciprofloxacin (p = NS). Amongst the 32 patients who failed to eradicate *P. aeruginosa* in the first instance, 20 underwent a second attempt. In comparison with first trials, overall success rate of second trials decreased to 35% (n = 7/20). However, this difference did not reach statistical significance (Fisher`s exact test, $p = 0.3$). Nineteen patients, who initially successfully cleared *P. aeruginosa*, required a 2nd eradication trial later during the study period. For those patients, the eradication success was 53%, comparable to the first one.

Abstract S115 Table 1 Frequency and efficacy of antibiotics used as first-line eradication regimens

Treatment	Nebulised colomycin (3 months) &					No nebulised colomycin		
	Cipro (≤3 weeks)	Cipro (>3 weeks)	IVs (2 weeks)	Cipro + IVs	Nil else	Cipro	IVs	Cipro + IVs
Patients, *n*	9	29	13	5	1	6	2	2
Success, *n* (%)	6 (67)	17 (59)	7 (54)	2 (40)	1 (100)	1 (17)	0 (0)	1 (50)

Cipro: Ciprofloxacin; IVs: intravenous antipseudomonal antibiotics.

Conclusions Eradication regimens combining systemic and nebulised antibiotics appear more effective than systemic antibiotics alone to achieve *P. aeruginosa* eradication in non-CF bronchiectasis patients.

Best of basic science advances

S116 GDF-15, THE MIR-542 CLUSTER AND MIR-422A ARE ASSOCIATED WITH MUSCLE WASTING IN INTENSIVE CARE UNIT ACQUIRED PARESIS

[1]RG Paul, [2]MI Polkey, [1]PR Kemp, [2]MJD Griffiths. [1]*Imperial College, London, UK*; [2]*NIHR Respiratory BRU, Royal Brompton Hospital, London, UK*

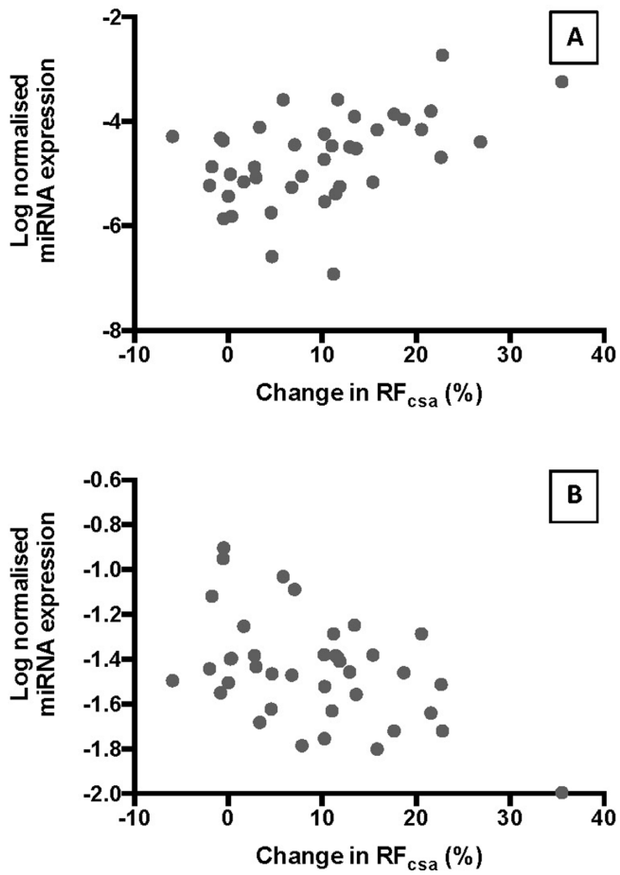
10.1136/thoraxjnl-2015-207770.122

Introduction and aims Intensive care unit acquired paresis (ICUAP) is a common complication of critical illness, associated with significant morbidity and mortality in patients admitted to the ICU. To date, there has been little success in the identification of patients at risk of acute muscle wasting or potential targets for therapeutic intervention.

GDF-15, a TGF-B family member, has been shown to be a potential driver of acute muscle wasting in ICUAP (Crit Care Med 2013;41:982). From previous analyses in ICUAP and other wasting conditions, we hypothesised that pre-surgery expression of microRNAs from the miR-542 family would be higher in patients who would lose significant muscle bulk following surgery, whereas expression of miR-422a would be lower.

Methods A prospective observational study of 40 patients undergoing high-risk cardiothoracic surgery with cardiopulmonary bypass was conducted. Patients underwent pre- and post-operative paired rectus femoris biopsies and blood sampling. Muscle wasting was assessed by ultrasound pre-operatively and at day 7 post surgery. Plasma GDF-15 protein was quantified by ELISA and mRNA and microRNA expression in muscle specimens by RT-PCR.

Main results 52% (21 of 40) patients developed muscle atrophy. Plasma GDF-15 concentration was significantly raised at all sampling time points in patients with significant muscle wasting (wasters) compared to those that did not (non-wasters). miR-542–3p (median 1.9-fold, p = 0.0029), miR-542–5p (median 4.5-fold, p = 0.0346) and miR-424 (median 4.2-fold, p = 0.0040) were higher in pre-operative muscle specimens of wasters compared to non-wasters, whilst miR-422a was lower (median 1.2-fold, p = 0.0176). Expression of these miRNAs significantly correlated with change in rectus femoris cross-sectional area over time (see Figure 1).



Abstract S116 Figure 1 Correlation between change in rectus femoris cross-sectional area (RF_{csa},%) and pre-operative; A) miR-542-5p expression (n = 40). Pearson r = 0.47, p = 0.0022 and B) miR-422a expression (n = 40) Pearson r = 0.55, p = 0.0003

Discussion Pre-operative expression in muscle of these miRNAs correlates significantly with reductions in muscle bulk after major surgery and cardiopulmonary bypass suggesting that the pre-existing status of the muscle is important in the susceptibility to muscle wasting. Furthermore, as both miR-542–3p/-5p and miR-422a are predicted to regulate p53 activity in opposite directions, these data imply that the p53 stress pathway