112* The change in *Pseudomonas* status of CF patients in Merseyside, UK – how are we doing?

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Many CF patients in Liverpool are chronically infected with the Liverpool Epidemic Strain of *Pseudomonas aeruginosa* (LES), which is frequently multiresistant and worsens the rate of clinical deterioration. Because of this, all CF clinics in the region adopt stringent patient segregation to prevent cross infection. To assess the effect this has had on colonisation rates, we looked at the *Pseudomonas* status of all 66 patients (55 from the paediatric sector, 6 adults from elsewhere, and 5 new adult diagnoses) transfered to the regional adult clinic between 2004 and 2006. On arrival, 30 (46%) were infected by LES, 24 (36%) by unique *Pseudomonas* strains, and 12 (18%) had no *Pseudomonas* infection (see table). As regards transition patients, those from the regional paediatric centre were more likely to be infected by LES than peripheral clinic transfers (22 of 29 versus 9 of 26, $\chi^2 = 9.48$, $P < 0.01$). We found no cases of LES in adult transfers and new CF diagnoses.
Overall, the incidence of LES infection fell from 59% in 2004 to 43% in 2006. This study indicates that whilst LES infection is still a problem in CF patients in our region, the prevalence is falling, presumably due to aggressive segregation policies in the paediatric sector.

Year	*Pseudomonas* status	Paediatric transfers		Adult transfer	New adult diagnosis
		Regional clinic	Peripheral clinic		
2004	LES +ve	7	3	0	0
	LES −ve	1	2	1	0
	none	1	0	0	2
2005	LES +ve	6	3	0	0
	LES −ve	3	5	1	1
	none	0	1	0	1
2006	LES +ve	9	3	0	0
	LES −ve	2	5	2	0
	none	0	4	2	1

113 Effect of a segregation policy on the incidence of multi-resistant *Pseudomonas aeruginosa* (mrPA) in adult patients with cystic fibrosis (CF)

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Introduction: In 2003 a strict segregation policy was introduced at the Leeds Regional CF Unit to reduce the risk of cross-infection. The policy aimed to prevent contact between patients with CF in both the in- and out-patient setting. This study aimed to determine if the policy had any effect on the isolation of mrPA in the sputum of patients with CF.
Methods: Sputum microbiology data were analysed retrospectively for all patients attending the unit between Jan 2000 and Dec 2006. For each year patients were classified according to the "Leeds" criteria. Each isolate of *Pseudomonas aeruginosa* (PA) was identified as multi-resistant (resistant to $\geqslant 2$ antibiotic class) or sensitive (resistant to $\leqslant 1$ antibiotic class).
Results: 314 patients were identified in the study period. During the 3 years prior to segregation the mean incidence of patients with an isolate of mrPA was 39.0% and 82.9% for patients classified as intermittent and chronic PA respectively. Following the introduction of the policy the mean incidence of mrPA isolation was 23.6% and 78.3% for patients classified as intermittent and chronic PA respectively. There was a significant reduction in mrPA isolation in patients classified as intermittent PA (t-test $P = 0.000$). There was no significant difference in the frequency of isolation of mrPA in patients classified as chronic PA (t-test $P = 0.362$).
Conclusions: It would appear that the introduction of the strict segregation policy has reduced the frequency of mrPA isolation from patients classified as intermittent PA. This would suggest that the segregation policy has reduced the risk of cross-infection of mrPA occurring in the healthcare setting. The policy would seem to be particularly beneficial to patients intermittently infected with PA.

114 *Pseudomonas aeruginosa* transmission at a winter camp in spite of rigorous precautions

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Objectives: Cystic fibrosis (CF) patients are often colonized with *Pseudomonas aeruginosa* (P.a.) and the majority by a strain acquired from the environment. Reports about the risk of cross-infection at camps have led to recommendations about segregation and hygienic precautions.
A one week winter camp 2005 with 8 children and families from three of four Swedish CF Centers was organized with rigorous precautions. A suspected transmission of P.a. has been investigated.
Method: P.a. isolates from all children collected before and after the camp were analyzed by antibiograms, genomic fingerprinting using pulsed field gel electrophoresis (PFGE) and verified by multiple locus variable number tandem repeat analysis (MLVA).
Two of four patients from the same centre acquired an identical multiresistant strain (J) not previously or subsequently found in their CF centre. One changed from a known P.a. strain to J. The other had negative cultures for P.a. before the camp.
The J strain is genetically identical to strains isolated before and after attending the camp in two patients cared for at other CF centers.
Conclusions: Patient-to-patient and center-to-center transmission of a multiresistant P.a.strain at a camp in spite of rigorous precautions has been proven by epidemiological data and genomic fingerprinting. How transmission occurred remains unknown. Our data highlights the risk of P.a. transmission at camps in spite of rigorous precautions.

115 Dynamics of *Staphylococcus aureus* strains in adults with cystic fibrosis (CF)

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Population dynamics of *Staphylococcus aureus* (SA) was retrospectively analysed in patients of our adult CF centre during one year (2005). The clonal distribution was analysed for the different strains (1 to 5) isolated from patients sputum. Among 265 CF patients, 148 (55.8%) were colonised with SA and we report our preliminary results for a total of 187 strains obtained from 85 patients (70 patients harbored more than 2 strains). These strains were analyzed for their antibiotics susceptibility and typed by pulsed-field electrophoresis gel (PFGE) after SmaI digestion of chromosomal DNA. Twenty two patients (26%) were colonised by methicillin-resistant *S. aureus* (MRSA). Nine patients were both colonized with MRSA and methicillin-susceptible *S. aureus* (MSSA). Among MRSA strains, 38/47 (80%) were also resistant to more than three other antibiotics family. Strains harboring minor differences in the banding pattern (>80% similarity as assessed by the Dice coefficient) were considered clonal. Our results show that 70% of the patients were colonized with a single persistent strain during the year of follow-up. Consecutive isolates with different PFGE profiles were obtained from only 13/70 patients (18%). PFGE analysis revealed that, MSSA belonged to 15 clusters corresponding to 61 patients and that MRSA isolated from 17 patients were grouped in 6 clusters. These results revealed a possible clonal relationship between MSSA and MRSA isolated from different CF patients. The study is ongoing in our adult CF population and in Necker pediatric CF centre in Paris.