

147 Segregation of children 5 and under diagnosed via newborn screening does not prevent acquisition of *P. aeruginosa*

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In recent years, transmissible strains of *P. aeruginosa* (*PsA*) have been described. Data from the Wisconsin newborn screening (NBS) study have shown that infants are at risk of early *PsA* acquisition from older patients. We have had NBS since 1981 and in May 2003, reorganised our CF service so that children ≤ 5 yrs were 'segregated' for outpatient and inpatient care. This study investigated the effect of this change on the acquisition of respiratory pathogens. The results of all sputum cultures ($n = 2814$ cultures in total) for all children ≤ 5 yrs before (1999–2002) and after (2004–2007) 'segregation' were collected. Each year 72–90 children of this age were seen and each child provided an average of 4.6 suction samples for culture per year. The % of children with one or more sputum cultures positive for pathogens of interest in the 4 years before and after 'segregation' are shown.

There was a significant decrease ($p \leq 0.001$, χ^2) in the acquisition of mucoid but not non-mucoid *PsA* after 'segregation'. The apparent increase in acquisition of *H. influenzae* was related to a change in microbiological detection processes during this period. These results suggest that young children diagnosed via NBS may be protected from the acquisition of mucoid *PsA* from older children by 'segregation' and that the acquisition of non-mucoid *PsA* in young children is from sources outside the hospital environment, but other factors also need consideration.

	Before 'segregation'	After 'segregation'
<i>E. coli</i>	40.7	39.8
<i>H. influenzae</i>	5.2	14.3
<i>S. aureus</i>	45.5	50.1
MRSA	1.3	1.0
non-mucoid <i>PsA</i>	22.3	22.7
mucoid <i>PsA</i>	5.9	1.0

148* Prevention of initial *P. aeruginosa* infection in children with cystic fibrosis: a multi-centre double-blind randomised controlled trial

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Background: Currently, initial respiratory infection with *P. aeruginosa* (PA) is treated with aggressive antibiotic therapy. However at this stage tissue destruction by PA, accompanying pulmonary inflammatory response and adaptation of PA might have already occurred; eradication is not always achieved.

Prophylactic antibiotic therapy seemed to have a preventive effect in small and retrospective studies, but has not been proven prospectively in a controlled manner.

Hypothesis: Prophylactic treatment of PA-negative CF patients will prevent or delay the first acquisition of PA or eradicate PA before the onset of persistent colonization and accompanying pulmonary inflammatory response.

Methods: Sixty-eight children (age 0.3–17.0; mean 7.3 y) without PA infection from 4 CF-centres were randomly allocated to 3-monthly courses of 3 weeks oral ciprofloxacin (10 mg/kg bid) and inhaled colistin (1 MIU bid) or both matching placebos during 3 years. Patients, investigators and doctors were blinded for allocation. Patients regularly visited the clinic for evaluation of PA- and clinical status. PA-status was determined by culturing sputa or cough swabs 3-monthly and measuring anti-PA antibodies 6-monthly.

The primary endpoint is initial PA infection (2 PA-positive cultures taken ≥ 1 week apart or 1 positive culture with pulmonary exacerbation). Secondary endpoints are PA-free interval, anti-PA antibodies, respiratory pathogens, antibiotic use and resistance, number of exacerbations, adverse events, pulmonary function, chest X-ray scores, inflammation parameters and BMI.

Results: Trial results (ISRCTN11604593), available May 2009, will be presented and discussed.

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149* Monitoring of the Initial *Pseudomonas aeruginosa* Colonization in Cystic Fibrosis Patients Demonstrated High Clonal Diversity

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Objective: To analyze the genetic background of the first *P. aeruginosa* isolate detected colonizing cystic fibrosis (CF) patients attended in our CF-Unit from 1994 to 2007.

Patients and Methods: Twenty-one CF patients (median age 9 years, range 0–34) were included. From these patients, only the first *P. aeruginosa* isolate detected were selected. Antibiotic susceptibility was determined using the agar dilution method, following the CLSI guidelines. To study the genetic background, both PFGE-SpeI and MLST (Curran et al. 2004, <http://pubmlst.org/paeruginosa>) experiments were performed in all isolates.

Results: Median follow-up period of these patients were 6.9 years (range 1–14). Percentages of susceptible isolate to different antimicrobials were as follows: colistin 96%, meropenem 95%, tobramycin 88%, ciprofloxacin 88%, ceftazidime 83% imipenem 79% piperacillin-tazobactam 76%, and amikacin 63%. SpeI-PFGE identified 19 unrelated pulsotypes, and also 2 patients presented related isolates. Moreover, 20 different sequence types (STs) were identified within studied isolates. A group of 3 patients carried single locus variants.

Conclusions: Unlike other studies, a polyclonal structure of *P. aeruginosa* from initial colonization stages in CF patients were observed without detected identified epidemic clones.

150 Clinical impact of a highly prevalent *P. aeruginosa* clone in Dutch CF patients

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Background: The occurrence of highly prevalent *Pseudomonas aeruginosa* clones reported in CF centres around the world has led to the implementation of strict segregation measures. The clinical impact of such strains however remains unclear. Recently, MLST typing of *P. aeruginosa* isolates revealed a highly prevalent clone in the population of the CF centre in Utrecht, The Netherlands, designated ST406. We aimed to study whether carriage of this clone was associated with impaired lung function or a different BMI.

Methods: Respiratory tract colonization status was determined in 334 CF patients (from a total population of 359 patients) during 2007 and 148 (44%) carried *P. aeruginosa*, of which 33 (22%) carried ST406. Demographic, genetic and clinical parameters were obtained from all 148 patients colonized with *P. aeruginosa*, in order to determine associations between patients colonized with either ST406 or non-ST406 strains.

Results: In preliminary analyses carriage of ST406 was not associated with FEV1% pred ($p = 0.28$), FVC% pred ($p = 0.53$) and BMI ($p = 0.11$). Furthermore, there appeared to be no association between ST406 and genetic or demographic parameters.

Conclusion: Carriage of the highly prevalent *P. aeruginosa* clone ST406 by patients attending the largest CF centre in the Netherlands appears not to be associated with impaired lung function or changed BMI.