

**270** New nebulisers and colistin-resistant *Pseudomonas aeruginosa* (crPA) in patients with cystic fibrosis (CF)

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**Introduction:** New nebulisers are associated with quicker treatment and possibly improve concordance. Sputum microbiology monitoring suggested an increased incidence of crPA from patients prescribed colistin delivered via the iNeb. The study aimed to determine risk factors for the isolation of crPA in adults with CF prescribed colistin delivered via the iNeb.

**Methods:** The study was undertaken at the Leeds Regional CF Unit. Between June 2005 and June 2006 all patients using an iNeb were identified and their hospital records reviewed. The following data were recorded; demographics, antibiotic courses after starting the iNeb, and isolates of crPA during and in the 5 years prior to iNeb use.

**Results:** 71 patients were identified during the study period, 8 (11.2%) of whom grew a crPA after commencing nebulised colistin via the iNeb. There was no significant difference between the patients with and without crPA in the sputum after starting using the iNeb in terms of age, gender, number of courses of IV antibiotics or courses of IV colistin. Patients who grew a crPA post-iNeb were significantly more likely to have had a positive sputum culture for crPA pre-iNeb (9.5% v 87.5%) (Fisher Exact test  $P < 0.005$ ).

**Conclusion:** crPA isolates are rare in patients with CF. Colistin resistance is due to structural modifications of the outer cell membrane. Patients who have grown crPA prior to starting nebulising colistin via an iNeb are at increased risk of doing so afterwards. Further studies are required to determine if this relates to issues of drug distribution and/or concordance. Patients who have had positive sputum culture for crPA should be closely monitored after commencement of colistin delivered via the iNeb for recurrence of isolates of crPA.

**272** Satisfaction survey concerning vibrating mesh-nebulizer in CF patients

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Vibrating-mesh nebulizers are more and more frequently used in CF patients. Patients' satisfaction with their nebulizer plays a key role in adherence to treatment and, thus, is of prime importance in the evaluation of new devices.

**Study objective:** The aim of this study was to assess patients' satisfaction with the E-Flow nebulizer (Pari, Germany) by a questionnaire and to compare it with classical devices.

**Method:** A questionnaire was developed from elements contributing to patients' adherence with nebulization. A group of patients using E-Flow were asked to compare their satisfaction concerning E-Flow (Group 1) with their old nebulizer (Group 2). The same questionnaire was submitted to a control group of patients who had never used an E-Flow nebulizer (Group 3). Their level of satisfaction was rated using a 1 (unsatisfied) to 10 (completely satisfied) Likert scale.

**Results:** 46 patients were included in Groups 1 and 2 and 33 patients in Group 3 respectively. Group 1 notified that all items were more satisfying (between 8.1 and 9.7) compared with Group 2 (between 4.5 and 8.3). In Group 3, satisfaction varied between 5.1 and 8.3. A significant difference was found for ease of use ( $p = 0.002$ ) and of maintenance ( $p = 0.002$ ), duration of the nebulization ( $p < 0.0001$ ), portability of the device ( $p < 0.0001$ ), noise ( $p < 0.0001$ ) and global satisfaction ( $p < 0.0001$ ) between group 1 and group 3 but no difference was found for subjective therapeutic efficacy, comfort related to nebulization nor adherence.

**Conclusion:** The results preliminary of our survey show an improvement of global and individual satisfaction for specific items when using the E-Flow nebulizer. This has to be confirmed in larger studies.

**271\*** Achieving sustained compliance with nebulised therapies in a paediatric CF population

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Adaptive aerosol delivery (AAD) devices have been introduced into our clinic for inhaled antibiotic (primarily colistin) and DNase treatments. They have been well received and with correct breathing technique significantly reduce treatment times. Using a software package provided by one of the manufacturers, compliance with morning and evening treatments was calculated after a variable run-in period and at regular 3 monthly intervals over a year. Feedback on compliance data and breathing technique were given by a physiotherapist to both parents and child at a clinic appointment immediately after the run-in period and at subsequent routine clinic visits. Since March 2005, 69 patients have been established on an AAD device (age range 2–17 years) for variable periods of time (3–18 months) depending on indication. Median treatment times range between 2–8 minutes. Compliance data from a random selection of patients (11/69) have so far been analysed (see Table). These show that treatment compliance through the device was good, that it increased following the first feedback session at the end of the run-in period ( $p < 0.05$ ) and that it was maintained. Evening compliance was significantly better than morning compliance ( $p < 0.05$ ). These data suggest that the in-device data logger provides a valuable resource for the clinic physiotherapist to work with patients at achieving sustainable aerosolised therapy.

Morning and evening compliance following the start of nebulised therapy

	Mean (SD) morning compliance (%)	Mean (SD) evening compliance (%)
Run-in period (n=11)	47 (38)	65 (33)
3 months (n=11)	68 (24)	89 (14)
6 months (n=11)	66 (32)	86 (15)
9 months (n=9)	63 (34)	79 (31)

**273** Educational leaflets to improve use of volume space device in children with CF

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Administration of inhaled bronchodilators or steroids is a major component of treatment in CF. Using a volume space device improves drug delivery. We conducted an observational study in 50 children with CF less than 15 years old and observed that most of them had a lack of breath coordination. Moreover, cleaning and maintenance were not appropriate.

We therefore undertook an educational program aiming at improving the use of this device. We implemented simple leaflets on followings: benefit of using this device; respective characteristics of the different models; appropriate technique; cleaning and maintenance; questions and answers, practical examples. These documents were explained by the physiotherapist and the nurse during routine clinics. An evaluation study in the children and family who took part to this educational program has evidenced improvement of the technique.

Despite apparent simplicity, holding chamber devices are often misused by the patients. Regular assessment of the technique and education if necessary must be undertaken.