

**266 Improved pulmonary function and quality of life perception after respiratory training with a specific commercial device**

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**Objective:** to investigate the effects of respiratory training with a specific device (SpiroTiger<sup>®</sup>) on lung function, quality of life perception, attitudes toward physiotherapy and need for antibiotic treatment in cystic fibrosis (CF).

**Design:** Twenty-four patients (mean age 21.1, SD 6.6) with CF were prospectively enrolled in an open-label one year observational study.

**Interventions:** baseline and post intervention measures were determined by lung function (FVC, FEV1, FEF 25–75), quality of life perception (Borg scales), attitudes toward physiotherapy (questionnaires) and need for antibiotic treatment in the year before and in the year of intervention. Each patient acted as a control of himself. Compliance to physiotherapy was monitored through the specific device software.

**Results:** following respiratory training, significant increases in lung function (FEV1% predicted mean and standard deviation from 82 (20.09) to 88.8 (21.9)  $p < 0.01$ ) and quality of life perception (Borg scales mean and standard deviation from 6.1 (1.2) to 9.1 (0.8)  $p < 0.001$ ) were noted with a reduction in need for intravenous antibiotic treatment (cycles per year mean and standard deviation from 1.8 (1.4) to 1 (1.3)  $p < 0.001$ ). Compliance to treatment was good/acceptable in 92% of patients. Patients preferences favoured respiratory training in respect to Positive expiratory pressure.

**Conclusions:** respiratory training with a specific device resulted in significant benefits for CF patients including lung function tests, quality of life perception, need for intravenous antibiotic treatment. Participants preferred respiratory training to PEP.

**268 Hygiene of the inhalation equipment: a Belgian national survey**

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**Introduction:** The majority of cystic fibrosis patients has to inhale nebulized drugs on a daily basis. Nebulizers are a potential source of contamination of the respiratory tract. Nevertheless, only few precise guidelines regulating the cleansing and disinfection of these are available. This survey aims to analyze the common household methods used by CF patients.

**Material and Method:** A questionnaire asking about the type of nebulizer, methods and frequency of cleansing, disinfection and drying of the nebulizer has been established by the physiotherapists of the Belgian CF centres. The Belgian CF Association sent this questionnaire to every Belgian patient.

**Results:** From the 903 distributed questionnaires, 379 (42%) returned. Respectively 40, 52 and 8% of the patients use a jet nebulizer, a vibrating-mesh nebulizer or an ultrasonic device.

88% of the patients clean their material, whereof 38% with soap. Disinfection is done by 90% of the patients whereof 55% less than once a day. A thermal disinfection (boiling water or steriliser), a hypochlorite-based solution or an acetic acid solution is used respectively by 39%, 25% and 11% of the patients. Thermal disinfection is used by 26% and 51% of patients using respectively a classical or a vibrating-mesh nebulizer. After being cleaned or disinfected, 85% of the material is being dried.

**Conclusion:** The high percentage of patients disinfecting their nebulizer proves that they seem aware of the hygiene problem. Lack of unanimous guidelines explains the various methods they use. The upcoming of vibrating-mesh nebulizer leads to a change in disinfection methods.

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**267 Hygiene of the inhalation equipment: what about vibrating-mesh nebulizers?**

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**Introduction:** the major part of CF patients receive nebulized drugs on a daily basis. The nebulizer has been proved to be a possible source of contamination of the respiratory tract. With the upcoming of vibrating-mesh nebulizers (Aeroneb<sup>®</sup>, E-Flow<sup>®</sup>), new methods concerning the hygiene of this material emerge. This survey aims to analyze the household methods used by CF patients.

**Method:** a questionnaire analyzing maintenance and hygiene of nebulizers has been established by the physiotherapists of the Belgian CF centres. The Belgian CF Association sent this to every CF patient. The replies concerning vibrating-mesh nebulizers were analysed separately.

**Results:** 196 (52%) of the 379 responding patients use a vibrating-mesh nebulizer. 86% of the systems are cleaned. 90% of the systems are disinfected, whereof 52% at least once a day. A thermal disinfection, a hypochlorite-based solution or an acetic acid solution is used respectively by 51%, 15% and 19% of the patients. Thermal disinfection is done by means of a steriliser (22%) or with boiling water (29%). In 68%, disinfection is followed by rinsing. Even after thermal disinfection, 53% of the patients rinse the system. After cleansing and/or disinfection, 79% of the patients dry the nebulizer.

**Conclusion:** Although the vibrating-mesh nebulizer has been introduced recently, already half of the Belgian patients use it. Lack of guidelines stipulating hygienic methods for these nebulizers enhance confusion of patients and although it is disadvised, hypochlorite solution and acetic acid remain largely used. An update of the guidelines is recommended.

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**269 Survey of the contamination of home nebulizers of cystic fibrosis patients and assessment of the implementation of a standardised recommendation**

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Nebulizations, frequently used by cystic fibrosis patients (CF), are a potential source of bacterial contamination of the respiratory tract.

**Purpose of the study:** The objectives of this study are to assess the habits of patients regarding the methods of disinfecting the nebulization equipment (Phase 1), and to observe the effect of standardised recommendations which has been validated in vitro (Phase 2).

**Material and Method:** A randomised sample of 50 CF patients was studied. During two home visits, a questionnaire about the routine methods of the equipment cleaning was completed by the nurses, sputum samples were taken from the patients and bacteriological samples from the equipment. The first visit (Phase 1) took place before implementation of the recommendations; for the second (Phase 2), compliance with the proposed recommendations was requested.

**Results:** Phase 1 showed a great diversity in practices. The results of the samples showed contamination of the equipment by environmental (43%), commensal (52%) and pathogenic (5%) bacteria, justifying special attention. Disinfection using a hypochlorite-based solution (Phase 2) showed an effect on the rate and degree of contamination, but did not decrease the number of pathogens found on the equipment. The cooling chamber of the ultrasonic equipment was the most contaminated part. No concordance was shown between the germs found in the samples taken from the nebulizers and the sputum samples.

**Conclusion:** Disinfection of the nebulizers would seem to be indicated in cystic fibrosis.

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