Appendix 1
Spirometry Training Course: for general practitioners and practice nurses

Instructors: respiratory specialist physician, pulmonary physiologist, GP.
Course content

- Spirometry performance (40 min)
  - Demonstration of simple spirometry spirogram and complex spirometry flow volume loop
  - Potential complications of spirometry
  - Contraindications to spirometry:
  - Requirements for achieving consistently high quality spirometry
  - Test performance instructions
  - Acceptance criteria (need to obtain at least 3 technically acceptable blows)
  - Reproducibility criteria
  - Common causes of poor quality spirometry
  - How to get quality spirometry
  - Trouble shooting: patient related (with examples of curves)
  - Interpretation: types of ventilatory defects
  - Use of predicted values
- *Demonstration* using EasyOne spirometer and software (20 min)
- *Practice spirometry* with EasyOne (30 min)
- Spirometry: application in COPD (30 min)
  - Diagnosis of COPD, differentiation from asthma
  - Interpretation of airflow obstruction and classification of severity
  - COPDX guidelines—indications for spirometry
  - Review of clinical case examples.

Appendix 2
Acceptability assessment

1. Spirometry test did not meet EasyOne spirometer criteria for an unacceptable test:
   a. back extrapolated volume greater than 150 ml or 5% whichever is greater;
   b. time until peak flow greater than 120 ms;
   c. expiration time less than 2 s or volume accumulation has not dropped below 100 ml per 0.5 s.
2. exhalation time (forced expiratory time) less than 6 s.

Quality grading definitions used in EasyOne spirometer:

a. at least three acceptable tests AND the difference between the best two FEV and FVC values is equal to or less than 150 ml;
b. at least three acceptable tests AND the difference between the best two FEV and FVC values is equal to or less than 200 ml;
c. at least two acceptable tests AND the difference between the best two FEV and FVC values is equal to or less than 250 ml;
d. at least two acceptable trials but the results are not reproducible or only one acceptable trial;
e. no acceptable test available.

Lung alert

No proof that lung transplantation improves survival in cystic fibrosis

Lung transplantation is a common procedure with significant risks undertaken in children with cystic fibrosis. This retrospective study investigates the effect of lung transplantation on survival.

Five hundred and fourteen of 602 children (85%) aged <18 years with cystic fibrosis placed on the lung transplantation waiting list in the USA between 1992 and 2002 were included in the study; 248 of these children subsequently underwent lung transplantation. Proportional hazards modelling identified *Burkholderia cepacia* infection, diabetes, increasing age and *Staphylococcus aureus* infection as factors other than transplantation that had an impact upon survival. By also modelling transplantation as a time-dependent covariate, the authors calculated that 5 patients had a significant estimated benefit, 315 had a significant risk of harm, 76 had an insignificant benefit and 118 had an insignificant risk of harm associated with lung transplantation.

Although other factors that could not be measured in the study may have affected survival, the data and methods used seem to justify the conclusion of the authors that lung transplantation should not be undertaken in children with cystic fibrosis with the aim of prolongation of life expectancy. They acknowledge, however, that it remains to be determined whether, for some children, lung transplantation can be justified on quality of life grounds against an acceptable complication and mortality risk. A prospective randomised trial will be required to determine whether this is indeed the case. Until such information is available, it is questionable under what circumstances lung transplantation should be performed in children with cystic fibrosis.

► Liou TG, Adler FR, Cox DR, *et al*. Lung transplantation and survival in children with cystic fibrosis. *N Engl J Med* 2007;**357**:2143–52

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