# European Respiratory Society
# Annual Congress 2012

**Abstract Number:** 3468

**Publication Number:** P4601

**Abstract Group:** 7.1. Paediatric Respiratory Physiology

**Keyword 1:** Lung function testing **Keyword 2:** Cystic fibrosis **Keyword 3:** Children

**Title:** Routine measurement of the LCI in CF with an ultrasonic device for multiple breath nitrogen washout

Dr. Susanne 21540 Fuchs susanne.fuchs@prohomine.de MD [1], Dr. Edmund 21541 Petri e.petri@clemenshospital.de MD [2], Dr. Georg 21542 Hülskamp g.huelskamp@clemenshospital.de MD [2] and Prof. Dr Monika. 21543 Gappa monika.gappa@prohomine.de MD [1]. [1] Children's Hospital and Research institute, Marien Hospital, Wesel, Germany and [2] Children's Hospital, Clemenshospital, Münster, Germany .

**Body:** During the last decade multiple breath washout technique (MBW) for calculating the Lung Clearance Index (LCI) has become very popular for assessing ventilation inhomogeneity (VI) as an early manifestation of Cystic Fibrosis (CF) lung disease. However, routine use has been difficult not only due to limited availability of licensed equipment. Inert tracer gases (e.g. $SF_{6,}$ He) certified for medical purposes are not universally available. Switch to nitrogen washout ($MBW_{N2}$) using 100% oxygen may overcome this problem. The aim of this cross sectional study was to assess whether LCI derived from $MBW_{N2}$ discriminates as well as $MBW_{SF6}$ between patients with CF and healthy controls. 19 controls (7-51years) and 11 unselected patients with CF (7-25 years) performed 2-3 single $MBW_{N2}$ using the EasyOne Pro LAB™ (ndd Switzerland) with 100% oxygen. Mean (SD) LCI was 6.5 (0.64) in controls and 9.3 (1.93) in CF with a mean difference (95% ci, p-value) of -2.83 (-4.14;-1.51, 0.001) between the groups. Within-test repeatability (CV%) was 5.3% in controls and 7.7% in CF. Assessment of LCI using licensed equipment for $MBW_{N2}$ was feasible and well tolerated in both, children and adults and patients and controls. LCI based on $MBW_{N2}$ differed significantly between patients with CF and controls and results were comparable to published data obtained with different equipment and with using $SF_6$ as tracer gas. We conclude that $MBW_{N2}$ reflects VI similar to $MBW_{SF6}$ and may thus be used for clinical application of MBW in patients with CF.