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**Title:** Lung clearance index (LCI) and hyperinflation in children with cystic fibrosis (CF)

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**Body:** Introduction: LCI is used to detect early CF lung disease.<sup>1,2,3</sup> However, there are few data relating changes in LCI to lung volumes, and extent of hyperinflation, in children with CF.<sup>1</sup> Therefore, we aimed to look at the association between LCI derived from multiple-breath nitrogen washout (MBNW) and two indices of hyperinflation (i) residual volume/total lung capacity (RV/TLC), and (ii) the difference between FRC determined by plethysmography (FRC<sub>p</sub>) and MBNW (FRC<sub>N<sub>2</sub></sub>). Methods: Children with CF completed MBNW and plethysmography as part of their annual review. All tests were performed, analysed and reported according to ATS/ERS recommendations. The difference between FRC<sub>p</sub> and FRC<sub>N<sub>2</sub></sub> was expressed as a % of FRC<sub>p</sub> and called FRC<sub>diff</sub>. Results were examined using Spearman's rank correlation coefficient. Results: 37 children with CF (aged 5-17) completed lung function tests. A significant correlation was found between LCI and RV/TLC (r=0.516, p=0.001)(Figure), and between LCI and FRC<sub>diff</sub> (r=0.413, p=0.011).

Discussion: The adoption of LCI as an ideal marker for early lung disease requires that it should correspond to established markers of abnormalities in lung function.<sup>2</sup> Our findings showed comparable decline in LCI and indices of hyperinflation in children with CF. References: 1. Horsley, A. et al. 2008; Respir Physiol and Neurobiology; 162: 197-203 2. Aurora, P. 2010; Thorax; 65: 373-374 3. Gustafsson et al. 2008; Thorax 2008 63: 129-134.