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| **Lung clearance index predicts disease progression in children with cystic fibrosis** |
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| **Introduction/Aim:** The lung clearance index (LCI) from the multiple breath washout (MBW) test is a sensitive marker of cystic fibrosis (CF) lung disease. There are limited data on whether LCI is predictive of future lung disease in children with CF. We determined the ability of LCI to predict lung disease severity and progression in the following 1, 2 and 3 years.  **Methods:** Data from 140 children with CF aged 3 – 9 years with two or more LCI measurements over a 1-year period were included in the analysis. Lung disease was assessed using spirometry, hospitalisations, structural disease assessed by CT, and infection and inflammation from BAL or sputum. Data were analysed within a generalized linear mixed effects model framework to accommodate for repeated measurements. Best (smallest), largest (worst), and change in LCI within a 12 -month period was investigated as predictor variables.  **Results:** The largest LCI value was associated with lower FEV1 z scores and higher extent of lung disease from CT at 1 and 2 years, and a greater number of hospital admissions at 1, 2 and 3 years, following the MBW measurement. Smallest LCI and change in LCI over 1 year was associated with higher extent of lung disease on CT at 1, 2 and 3 years following measurement but not FEV1 z scores or hospitalisations. LCI did not predict future inflammation or infection.  **Conclusion:** LCI in children with CF is predictive of future spirometry, structural lung disease and hospital admissions. This highlights the potential use of LCI to guide the clinical care of young children with CF.  **Grant Support:** Vertex Pharmaceuticals      **Grant Support:** |