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| **Airway cells from bronchiectasis patients demonstrate reduced mucociliary clearance *in vitro***  |
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| **Introduction/Aim:** Mucus hypersecretion has been recognised as a treatable trait in airways diseases such as asthma COPD and bronchiectasis. Clinically however, impaired mucociliary clearance (MCC), may offer a more specific therapeutic target and one that encompasses more than just mucus production in the airway. Here we aimed to establish a model of mucociliary clearance, comparing primary bronchial epithelial cells (pBECs) from those with bronchiectasis to healthy donors. We hypothesised that cells from bronchiectasis patients, differentiated *in vitro*, would exhibit reduced MCC.**Methods:** pBECs were obtained from healthy (n=8) and bronchiectasis (n=8) donors via bronchoscopy and were differentiated at air-liquid interface. Every 7 days transepithelial resistance, apical surface fluid and basal media was collected. Ciliary function was quantified weekly post day14. At day28, mucus velocity was determined using fluorescent microspheres, and remaining wells were harvested for RNA, histology and immunofluorescence (IF).**Results:** Cultures from bronchiectasis donors had significantly reduced active ciliated area and fluorescent particle velocity compared to those from healthy donors at equivalent time points. Mucus viscosity was significantly elevated in bronchiectasis cultures from day14 onward. Reduced concentration of ciliated cells per area was confirmed with IF using the ciliated cell marker anti-Ac-Tub. IF also revealed no change in junctional ZO-1.**Conclusion:** Here we describe the first *in vitro* model confirming impaired MCC in bronchial epithelial cells from donors with bronchiectasis. This impairment appears to be a function of reduced active ciliated area combined with increased mucus viscosity. **Grant Support: NHMRC Ideas grant 2010310** |