



Abstract P126 Figure 1 Within-subject changes in sReff when (A) flows are doubled but breathing frequency remains constant at 30 bpm, and (B) when flows remain relatively constant but breathing frequency is doubled.

**Conclusion** The true impact of breathing pattern on sRaw relates more to flows attained than to breathing frequency. To facilitate improved repeatability and minimise inter-subject and inter-centre variability, it is essential that subjects are encouraged to breathe quietly and naturally during plethysmographic recordings of sRaw. Software adaptations that allow accurate display of flows during data collection and analysis are required before guidelines pertaining to flow can be generated.

## REFERENCES

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P127

## DOES IT MATTER HOW THEY BREATHE?—PERCEPTIONS IN COPD PATIENTS WHEN ADOPTING DIFFERENT ROUTES OF BREATHING

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**Introduction** We have reported that normal subjects prefer nasal breathing (NB) and that the adoption of mouth breathing (MB) is associated with uncomfortable sensations including breathlessness.<sup>1</sup> MB may predispose to the perception of breathlessness by dynamically changing chest wall mechanics (CWM), and thus proprioceptive input. This study has been extended to COPD patients in whom airways resistance and dynamic hyperinflation is likely to alter CWM.

**Method** 20 COPD patients, mean age 71 years (range 47–89), FEV<sub>1</sub> mean 0.81 (range 0.4–2.02 l), whilst at rest (tidal breathing), undertook a 2×2 min cross over exercise during which subjects were requested to note their perceptual experiences when randomly allocated to either NB or, after a break, MB. The results have been compared to the individuals preferred route of breathing normally and 20 normal subjects (controls).<sup>1</sup>

**Results** 10/20 (50%) of COPD patients during NB found the exercise to be uncomfortable compared to only 3/20 (15%) controls ( $p=0.04$ ). 9/20 (45%) witnessed discomfort with breathing/breathlessness, 0/20 dry mouth and 2/20 (5%) a desire to cough. 13/20 (65%) of COPD patients during MB found the exercise to be uncomfortable compared to 10/20 (50%) controls ( $p=0.52$ ). 8/20 (40%) COPD patients witnessed discomfort with breathing/breathlessness, and dry mouth 6/20 (30%). 6/20 (30%) COPD patients preferred NB, 7/20 (35%) had no preference and 7/20 (35%) preferred MB during normal breathing in usual life. This compares to 13/20 (65%), 4/20 (20%) and 3/20 (15%) respectively for controls. 9/20 (45%) COPD patients had a positive Nijmegen score ( $>23$ ) (compared to 0/20 controls) and Hospital Anxiety Depression (HAD) scores were greater in COPD ( $p<0.001$ ). Depression in

COPD patients was strongly associated with a preference for MB normally ( $r=0.6$ ,  $p=0.007$ ).

**Conclusions** This study has shown that COPD patients, in contrast to controls, have adopted a shift in breathing preferences to favour MB. High scores for Nijmegen and HAD in COPD suggest ventilatory dysfunction with depression closely linked to MB. We hypothesise that MB in COPD patients is intricately linked to high levels of ventilatory dysfunction and depression.

## REFERENCE

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P128

## THE CHALLENGES OF HYPERTONIC SALINE IN NON-CF BRONCHIECTASIS

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**Background** Non-Cystic Fibrosis (CF) bronchiectasis is an understudied clinical area. Many studies are extrapolated from CF despite prior evidence suggesting this is not wholly appropriate. Recent BTS guidelines have suggested a role for Hypertonic Saline (HS) after findings from Kellet et al (2008). In that study, a nebulised (7%) HS challenge test was done and subjects were to be excluded from ongoing HS therapy if they reported 'chest tightness', 'wheeze' or 'difficulty in breathing', or had a 10% reduction in spirometry following inhalation of HS. Notably none of 23 patients were excluded on these criterion. We hypothesised that a fall in FEV<sub>1</sub> greater than 10% would be more common in a non study population but of limited clinical significance.

**Methods** We reviewed our 6% hypertonic saline challenge (baseline, post 2.5 mg Salbutamol and post 6% HS) data from consecutive patients commenced on this therapy due to mucus retention despite other interventions (eg, physiotherapy and/or mucolytic) Results: 33 patients were identified (20F, 13M) mean age 61.5±13 years, mean baseline FEV<sub>1</sub> was 1.37L±0.7 (range 0.4–2.65) mean FEV<sub>1</sub>% predicted 54%±25% (range 23–111%). One patient's data were excluded due to inability to reproducibly perform spirometry. The mean change in FEV<sub>1</sub> from baseline was +4.3%±10.8% (range -21 to +36) and fall from post Salbutamol was -0.64±11.6% (range -14 to +14%). Seven patients have stopped HS therapy either due to chest tightness or taste (20%).

**Conclusions** This cohort is larger than that previously reported and includes a wider range of airflow obstruction severity. No exclusion criterion were applied to trying HS. The overall fall during an acute HS challenge in an unselected bronchiectasis population is small. Despite this many patients discontinue HS within 3 months of initiation.

P129

## LUNG CLEARANCE INDEX (LCI) IS A SENSITIVE MARKER OF EARLY AIRWAY CHANGES IN SMOKERS WITH NORMAL SPIROMETRY

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**Introduction and objectives** Abnormalities in indices of gas mixing derived from multiple breath nitrogen washouts have been demonstrated in smokers without spirometric evidence of airflow obstruction, which improved on smoking cessation. We report initial data from a study investigating the ability of a simpler