

European Respiratory Society Annual Congress 2013

Abstract Number: 68

Publication Number: P2115

Abstract Group: 7.3. Cystic Fibrosis

Keyword 1: Cystic fibrosis **Keyword 2:** Experimental approaches **Keyword 3:** COPD - management

Title: Combining inhalation by a breath-actuated nebulizer (BAN) with exhalation with oscillating positive expiratory pressure device (OPEP) offers potential for simultaneous therapy

Dr. Jason 140 Suggett jsuggett@trudellmed.com¹, Dr. Jolyon 141 Mitchell jmitchell@trudellmed.com¹, Ms. Valentina 142 Avvakoumova vavvakoumova@trudellmed.com¹, Ms. Rubina 143 Ali rali@trudellmed.com¹ and Ms. Heather 144 Schneider hschneider@trudellmed.com¹. ¹ Medical Aerosol Laboratory, Trudell Medical International, London, ON, Canada, N5V 5G4 .

Body: RATIONALE: Secretion mobilization by OPEP is often given separately to inhaled medication. Combining a nebulizer (AeroEclipse®-II, Trudell Medical International (TMI), London Canada) with OPEP (Aerobika®, TMI), both therapies can be delivered simultaneously. We investigated to see if the stand-alone BAN output is affected by use with the Aerobika® device, or by substituting another OPEP product (acapella®, Smiths Medical, UK) METHODS: A Next Generation Impactor operated at 15 L/min was used to make droplet size measurements. The BAN (3 x 3 replicates/device) was operated by compressed air at 50 psig and filled with 2-mL budesonide suspension (0.25 mg/ml, Nebuamp®, AstraZeneca), and connected directly to the Ph.Eur. induction port. The measurements were repeated (a) with the Aerobika® OPEP device inserted between the BAN and induction port, and (b) substituting the acapella® OPEP. The BAN was run to sputter, and the therapeutically beneficial fine particle mass < 5.4 µm diameter (FM_{bud}) determined. RESULTS: FM_{bud} (mean ± SD) via the BAN alone, with the BAN-Aerobika®, and the BAN-acapella® OPEP devices were 278±8, 250±21 and 56±9 µg respectively. The BAN-Aerobika® combination marginally reduced delivery (paired t-test, p = 0.002), whereas the BAN-acapella® configuration resulted in substantial losses (p < 0.001). CONCLUSIONS: The AeroEclipse®-II BAN-Aerobika® combination offers combined aerosol/OPEP therapy with minimal medication loss. Substitution with the acapella® OPEP to deliver aerosolized medication results in substantial reduction in BAN-output that may have adverse clinical implications.