Abstract P128 Table 1 Safety comparison of respiratory interventions in patients attending a severe asthma service

	Airway clearance techniques n (%)	Hypertonic saline-7% challenge n (%)	Bronchoscopy n (%)
No asthma symptoms	114 (100%)	109 (93%)	89 (90%)
Bronchospasm requiring nebulised SABA[1]	0 (0%)	8 (7%)	8 (8%)
Severe Asthma Exacerbation	0 (0%)	0 (0%)	2 (2%)
Total	114	117	99

[1] Short acting beta-agonist

Conclusion In patients attending a severe asthma clinic physiotherapy techniques (ACT and HS-7) were safe and effective. Bronchoscopy had similar requirement for rescue salbutamol nebulisation compared to HS-7, but a higher risk (2%) of severe asthma exacerbation.

REFERENCE

1 Brinke AT, *et al*. Sputum induction in severe asthma by standardised protocol. *AJRCCM* 2001;**164**(5):749–753.

P129 FUNGAL CONTAMINATION OF VALVED HOLDING CHAMBERS (VHCS): POTENTIAL TO PREVENT, AND EFFECT ON DRUG DELIVERY

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Introduction and objectives Able Spacerâ−2 VHC (AS2) is one of many accessory devices available to improve pressurised metered dose inhaler (pMDI) drug delivery, but uniquely includes a ~ 1wt% body polymer silver ion additive (~ 1%Ag+) to combat microbial growth and reduce static. Drug-specific bacterial growth on VHC polymers[1] and the bacterial growth-reducing effects of the Ag+ polymer are known.[2] The fungal pathogen *Aspergillus fumigatus* causes serious pulmonary disease. We assessed the effect of 4%Ag+ on fungal activity and, subsequently, drug delivery characteristics.

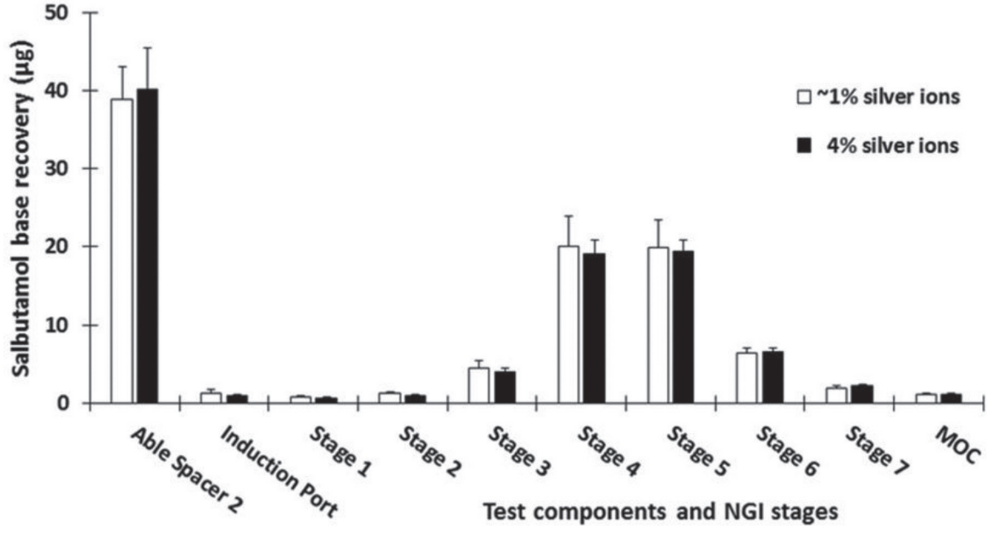
Methods Determination of fungal sporicidal activity was via modified ISO22196:2011 using flat body polymer discs (n = 3) of AS2 ~ 1% Ag+ and AS2 4%Ag+, and sterile Control (same polymer minus Ag+, n = 6). 100mL *A. fumigatus* (5.0 x 10^5 spores/mL distilled water) was pipetted onto disc surfaces. Samples were incubated for 24 h at 35°C/ ≥ 95% relative humidity, with silver ions neutralised thereafter. Colony forming units (CFU) were enumerated by spiral dilution and converted to CFU/cm^2. Aerosol performance of salbutamol (as salbutamol sulphate) pMDI (Ventolinâ Evohaler, GSK) through AS2 VHC (~ 1% Ag + as standard) and a newly-developed AS2 4% Ag+ VHC was assessed through a Next Generation Impactor (NGI) at 30 L/min. pMDIs and NGI were operated, and drug determinations made, using standard procedures.

Results 24 h geometric mean Log_{10} *A. fumigatus* CFU/cm^2 were 4.2 × 10^3 (Control), 2.8 × 10^3 (~ 1% Ag+), and 4.5 × 10^2 (4% Ag+), representing Log_{10} and% reductions from Control of 0.2 (34%) and 1.0 (89%) for ~1% Ag+ and 4% Ag+. Key salbutamol aerosol performance data were emitted dose (mg) 95.9 ± 11.0 and 94.9 ± 9.1; fine particle fraction (% < 5.0 mm) 54.0 ± 4.3 and 53.6 ± 1.9; and fine particle dose (mg < 5.0 mm) 52.0 ± 8.7 and 50.7 ± 3.8 for AS2 ~ 1% Ag+ and AS2 4% Ag+ respectively. NGI recovery (Figure 1) profiles were very similar, including the VHC component: 38.9 ± 4.2 (AS2 ~ 1% Ag+) and 40.2 ± 5.3 (AS2 4% Ag+).

Conclusions Use of 4%Ag+ additive did not affect salbutamol aerosol performance and showed greater effect on *A. fumigatus* spored activity *in vitro*. VHC fungal *Candida* spp. and nebuliser *Aspergillus* spp. have been identified. The moist, anti-static setting of the Chamber may support and, of more concern, promote aerosolisation into the lungs of fungal material. Further research and understanding are necessary.

REFERENCE

1 Sanders. *PCRM* 2016;**26**(16022):16.
2 Sanders MJ, *et al*. P87 Klebsiella Pneumoniae Survival On Plastic Valved Holding Chamber Bodies. *Thorax* 2014;**69**(Suppl 2):A114.



Abstract P129 Figure 1 NGI recovery profiles for salbutamol via AS2 ~1% Ag+ and AS2 4% Ag+ (mean values ± SD, n = 5)