Evaluation of a New On-the-Go Spacer for Delivery of a MART Metered Dose Inhaler Therapy

Nagel, M.[1], Suggett, J.[1], & Clutterbuck L.[2]

[1]Trudell Medical International, London, Ontario Canada [2]Trudell Medical UK Limited, Basingstoke, Hampshire United Kingdom

AIM

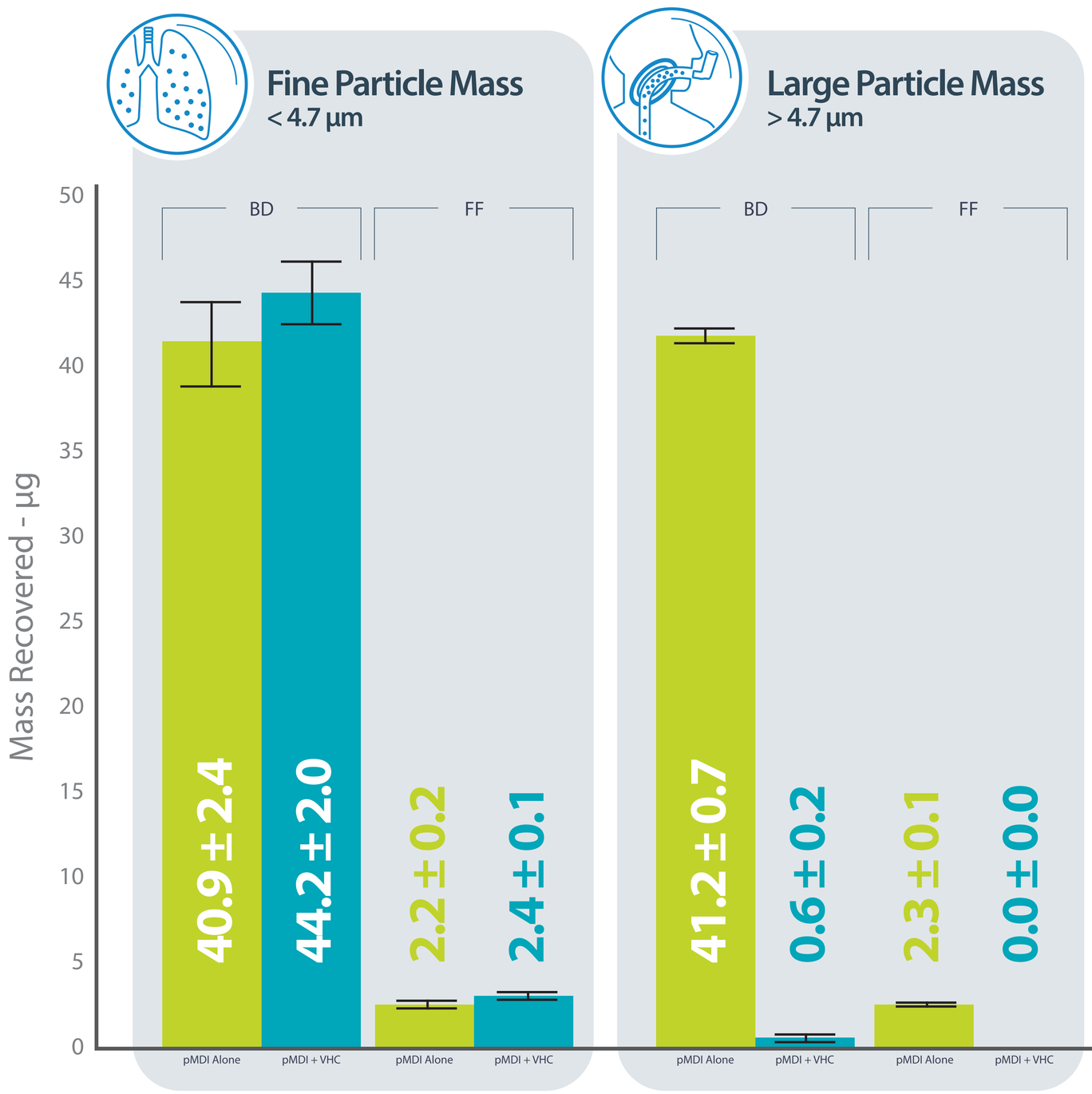
Maintenance And Reliever Therapy (MART) is increasingly recommended for asthma patients. Asthma attacks often occur outside the home when exposed to different triggers. This laboratory study investigated the medication delivery of a Beclomethasone/ Formoterol inhaler with and without a new portable spacer (***AeroChamber2go****, A2Go), addressing the British Thoracic Society's (BTS) recommendation that spacers should accompany all Metered Dose Inhalers (MDIs). This study aims to determine if a portable VHC could improve MART therapy effectiveness outside of the home.

METHODS

The emitted dose was sampled at 28.3 L/min from an abbreviated Andersen cascade impactor. Five actuations of beclomethasone dipropionate / formoterol fumarate (BD/FF 100/6µg /actuation; Foster†) were delivered at 30s intervals. Inhalation 0s after MDI actuation simulated perfect, but unlikely, coordination with the MDI alone. A more realistic 2s delay (to simulate mis-use) was investigated for the MDI/VHC system. BD/FF was subsequently recovered and assayed by HPLC-UV spectrophotometry.

RESULTS

The fine particle mass < 4.7µm (FPM) and large particle mass > 4.7µm (LPM) per actuation results (mean µg ± SD) for MDI alone and MDI/VHC are summarized in the table.



	pMDI Alone	Foster† MDI with *AeroChamber2go** VHC
Delay (s)	0	2
FPM_{BD} µg	40.9 ± 2.4	44.2 ± 2.0
FPM_{FF} µg	2.2 ± 0.2	2.4 ± 0.1
LPM_{BD} µg	41.2 ± 0.7	0.6 ± 0.2
LPM_{FF} µg	2.3 ± 0.1	0.0 ± 0.0

CONCLUSIONS

This study demonstrates that the ***AeroChamber2go**** spacer helps ensure consistent delivery of the intended dose to the lungs (related to the fine particle mass), even with poor coordination between actuation and inhalation likely experienced during exacerbations. Additionally, the ***AeroChamber2go**** spacer significantly reduces the deposition of larger particles in the oropharynx (throat) compared to using an MDI alone, particularly important with inhaled corticosteroids. These results suggest that the new and portable ***AeroChamber2go**** VHC can enable effective MDI drug delivery outside of the home.

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