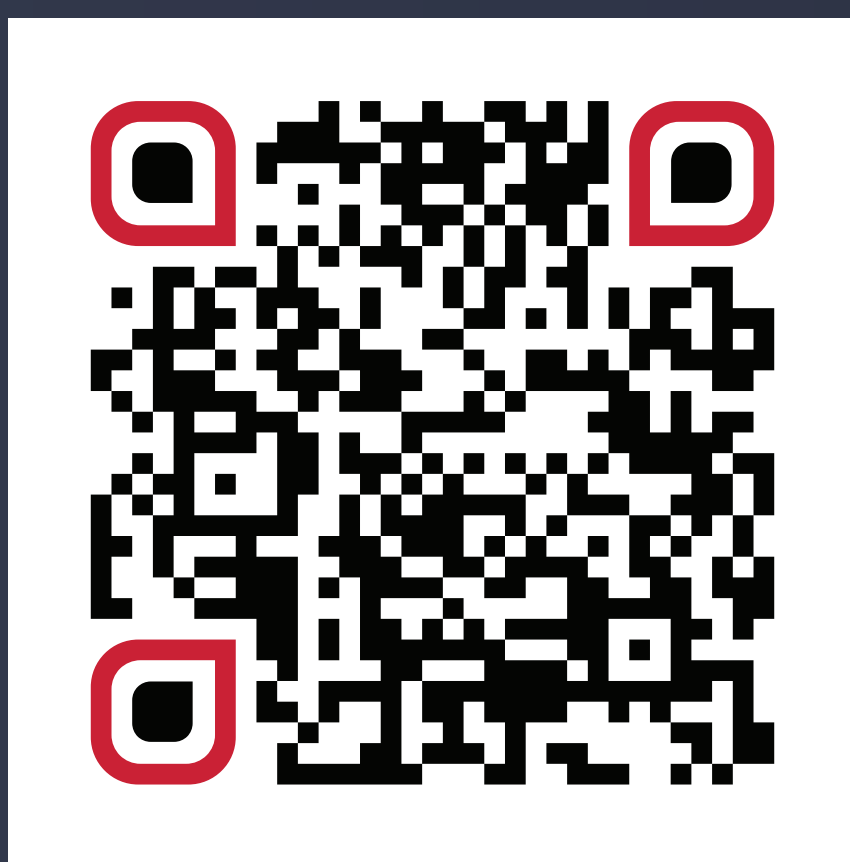


Ability of a valved holding chamber to minimize medication losses caused by delayed inhalation when using a new combination metered-dose inhaler

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SUMMARY

In vitro testing demonstrates comparable fine particle dose delivery between a VHC with delays and a standalone MDI used with perfect coordination.

PURPOSE

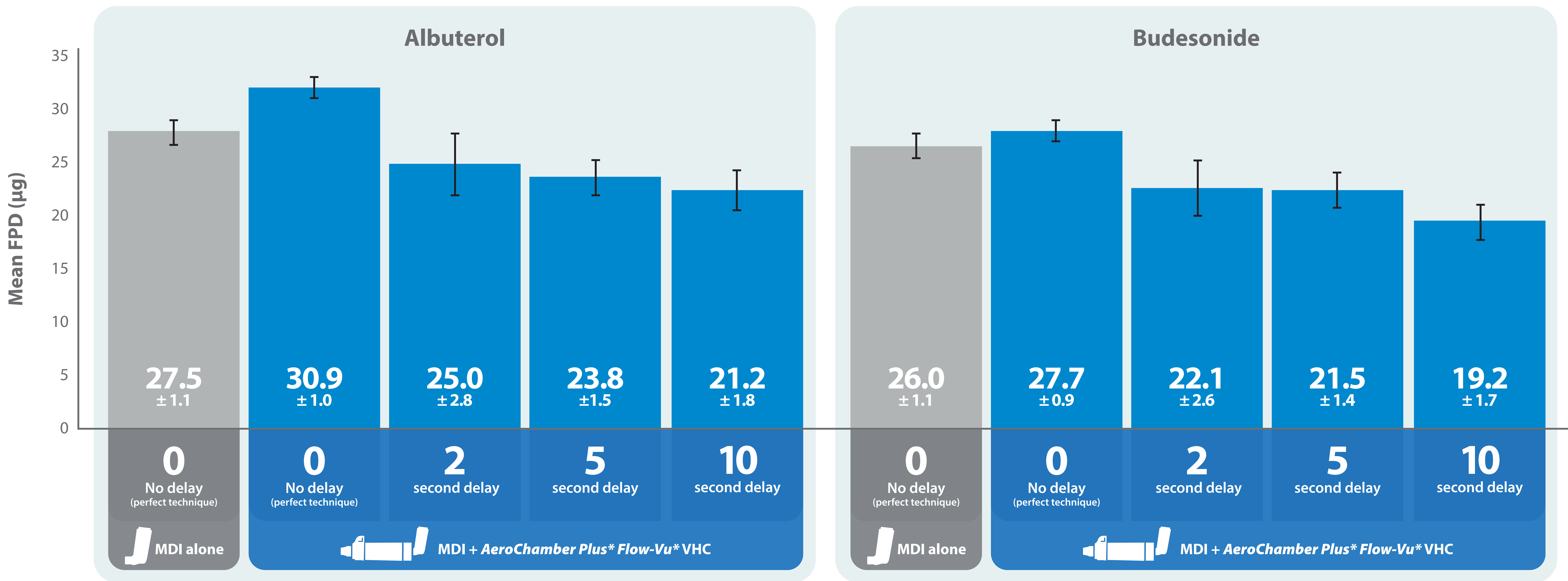
- Clinical benefit of aerosol medication can be compromised when using a pressurized metered dose inhaler (MDI) alone.
- Short delays between actuation and inhalation have been shown to significantly reduce medication delivery (Suggett *et al.*, 2020).
- Even with perfect coordination, much of the aerosol is deposited in the oropharynx, increasing risk for bacterial infection and complications to oral health.
- Such risks can be mitigated through the use of a valved holding chamber (VHC).

METHODS

- Airsupra[†] is a novel MDI that offers a convenient approach to asthma management, combining the fast-acting relief of albuterol with the anti-inflammatory effects of budesonide. This laboratory study sought to determine if a VHC could alleviate the loss of Airsupra[†] drug available when there is a delay between actuation and inhalation.
- Measurements for fine particle dose (FPD, <4.7µm) for the Airsupra[†] (albuterol 90µg / budesonide 80µg) MDI were made by a cascade impactor at 28.3L/min. Tests with the pMDI alone only included the perfect, but unlikely, condition where there was no-delay between actuation and simulated inhalation. Four sampling conditions were evaluated with AeroChamber Plus[®] Flow-Vu[®] VHC: immediate collection with no delay between actuation and inhalation, simulating perfect coordination; and collection after a 2, 5 and 10 second delay, simulating an uncoordinated patient use scenario. Five tests were completed for each condition.



RESULTS



CONCLUSIONS & CLINICAL IMPLICATIONS

- This *in vitro* testing demonstrates comparable fine particle dose delivery between a VHC with delays and a standalone MDI used with perfect coordination.
- Addition of the VHC eliminates the need for strict actuation — inhalation coordination and reduces the risk of coarse particle mass deposition in the oropharynx, linked to side effects.