

Priming of a Non-Conducting Valved Holding Chamber May Result in Inconsistent Medication Delivery

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INTRODUCTION

- Priming Valved Holding Chambers (VHCs) with several actuations of medication before use may be an established practice to prepare the spacer before use. However this practice can have a significant influence on subsequent medication delivery.
- The present study set out to test the hypothesis that priming is not an effective alternative to the use of anti-static VHCs

MATERIALS AND METHODS

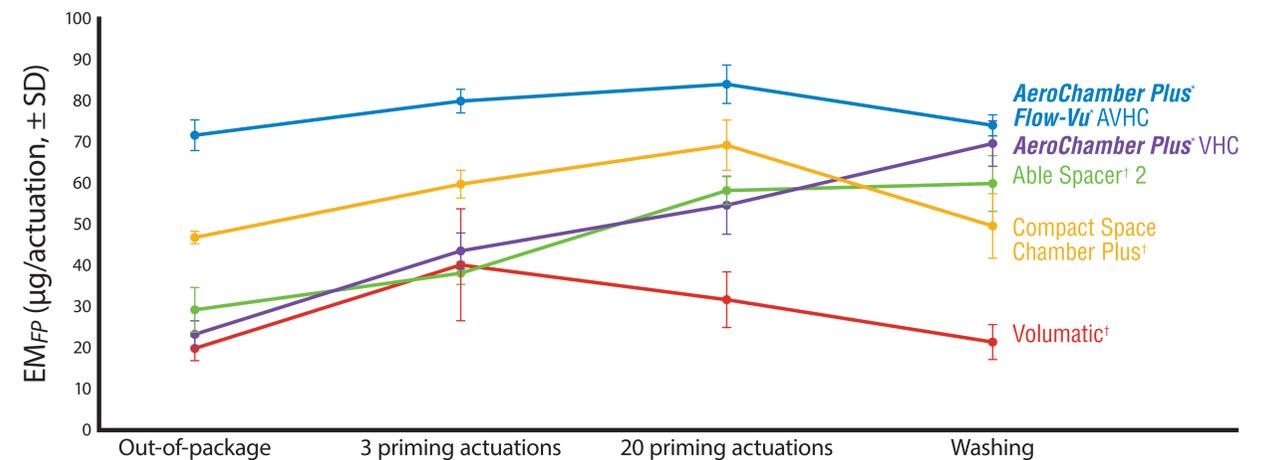
- The following VHCs, each with mouthpiece as patient interface ($n=5$ devices/group) were evaluated



- Each VHC was connected via a filter holder to a vacuum source operated at 28.3 L/min
- Evaluated with a pMDI (Flovent[†] 125 µg, FP)
- Emitted Mass of FP (EMFP) determined by HPLC-UV assay
- The following sequence of testing was conducted
 - Test VHC immediately after removal from packaging (no pre-treatment) And evaluate EMFP following one actuation
 - Supply two more actuations into the same VHC and evaluate EMFP (representing 3 actuations of priming)
 - Deliver 17 more actuations into the same VHC and evaluate EMFP (representing priming of 20 actuations)
 - Clean VHC, then repeat part (1) (representing pre-conditioning by washing as an alternative to priming)

RESULTS

- The behavior of EMFP (mean ± SD) with VHC type is summarized in the graph below



Using the non-conducting VHCs out of package resulted in significantly lower EM values

The choice of no pretreatment or cleaning between use made no difference to EMFP for the **AeroChamber Plus[®] Flow-Vu[®]** antistatic VHC

AeroChamber Plus[®] VHC

- After washing, comparable to the **AeroChamber Plus[®] Flow-Vu[®]** antistatic VHC out-of-package
- Priming resulted in a gradual increase in EM although even after 20 actuations still significantly less than after wash/no rinse

Able Spacer[†] 2

- Priming resulted in significant increases from out-of-package to 3 actuations and 3 actuations to 20 actuations
- However, washing provided no further improvement from 20 actuations

Compact Space Chamber Plus[†]

- Priming resulted in significant increases from out-of-package to 3 actuations and 3 actuations to 20 actuations
- Washing resulted in a decrease in EM from priming

Volumatic[†]

- The influence of priming was inconsistent, potentially due to the larger volume of the VHC
- Washing resulted in a decrease in EM from priming

CONCLUSIONS

- Clinicians should be aware that priming of non anti-static VHCs with multiple MDI actuations results in inconsistent medication delivery, is wasteful of medication, and is not as effective in mitigating static charge as the use of a well designed anti-static VHC

