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

  - AeroChamber Plus® VHC (charge dissipative)
  - Flow-Vu® VHC (charge dissipative)
  - Volumatic† VHC (non-conducting)
  - Able Spacer® 2 VHC (non-conducting)
  - Compact Space Chamber Plus® VHC (charge dissipative)

• 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

  1. Test VHC immediately after removal from packaging (no pre-treatment) And evaluate EMFP following one actuation.
  2. Supply two more actuations into the same VHC and evaluate EMFP (representing 3 actuations of priming).
  3. Deliver 17 more actuations into the same VHC and evaluate EMFP (representing priming of 20 actuations).
  4. 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.

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.