Poster no. 1191

Comparison of High Touch Surface Bioburden Associated with the Use of Disinfectants With and Without Continuously Active Disinfection Properties in Ambulatory Care Settings

Heidi M. Torres, MD*[1,2], Jamie Marino, PhD[1], Matthew Simon MD, MS[1,2], Harjot K. Singh MD, MSc[1,2], Lars F. Westblade, PhD[1], David P. Calfee MD, MS[1,2]

[1]Weill Cornell Medicine, New York, NY; [2] NewYork-Presbyterian Hospital, New York, NY

***Corresponding author contact: 525 E 68th St., Box 265, NY, NY 10065; email: het9037@med.cornell.edu**

BACKGROUND

- Microbial contamination of high-touch surfaces (HTS) in health care settings contributes to pathogen transmission.
- HTS quickly become re-contaminated after disinfection.
- A quaternary ammonium (QA) and isopropyl alcohol (IPA)-based disinfectant (Sani-24®) with reported continuously active disinfection (CAD) properties up to 24 hours has been associated with reduced microbial buildup on HTS over time in *in vitro* studies and inpatient healthcare settings.
- Performance of this product in ambulatory care settings has not been reported.

STUDY OBJECTIVE

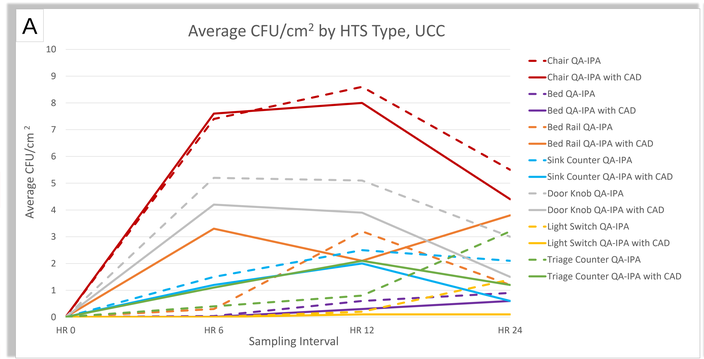
- Identify if there is reduced microbial burden on HTS disinfected with a QA-IPA with CAD compared to a standard QA-IPA without CAD over a 24-hour period in ambulatory settings.

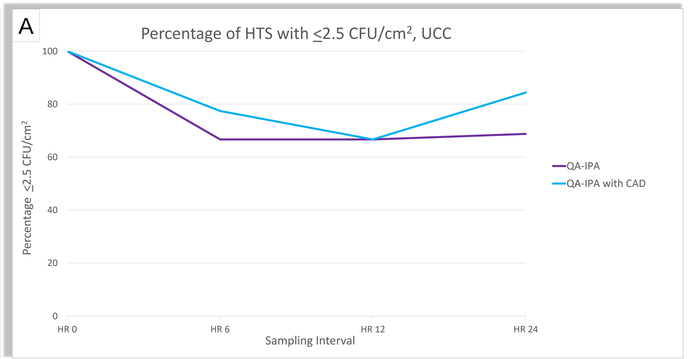
METHODS

- HTS in an urgent care center (UCC) and outpatient clinic (OPC) were selected.
- Surfaces/rooms were assigned 1:1 to the disinfectants.
- Study team used pre-saturated wipes to disinfect designated HTS at the start of each sampling period.
- In UCC, unit staff performed subsequent disinfection per routine protocols with standard disinfectants.
- In OPC, unit staff used the study-assigned disinfectant for subsequent disinfection per routine protocols.
- HTS were sampled at 0, 4-6, 8-12, and 24 hours using Eswabs soaked in neutralizing broth.
- Microbial burden was quantified after 48 hours.
- Average CFU/cm^2 were compared using T-tests and proportion of samples with ≤ 2.5 CFU/cm^2, a microbiologic standard for environmental surfaces, were compared by chi-square test.

RESULTS

- 66 UCC HTS (33 per disinfectant) and 70 OPC HTS (35 per disinfectant) were included.
- There were no statistically significant differences in:
  - ➢ average CFU/cm^2 on HTS types between disinfectants in the UCC or OPC (Fig 1A, 1B).
  - ➢ average CFU/cm^2 on all HTS combined between disinfectants in the UCC or OPC (data not shown).
  - ➢ percentage of surfaces with ≤2.5 CFU/cm^2 between disinfectants in the UCC or OPC (Fig 2A, 2B).





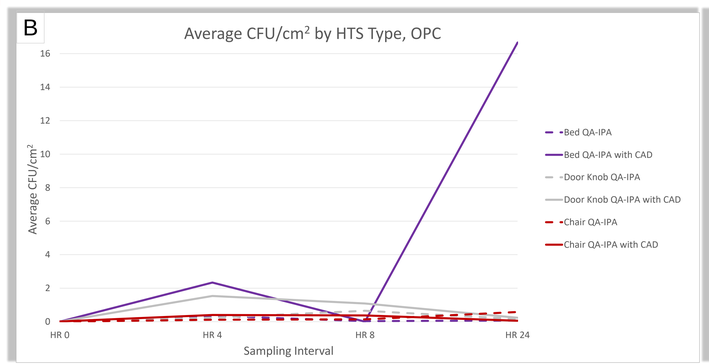


Figure 1. Average CFU/cm^2 on high touch surface (HTS) type with each disinfectant used over a 24-hour period at the urgent care center (UCC, Fig 1A), and the outpatient clinic (OPC, Fig 1B).

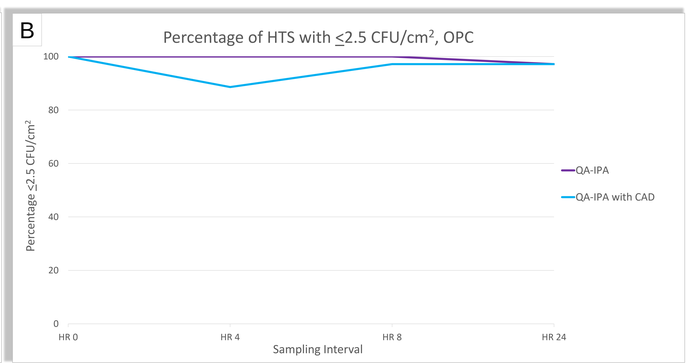


Figure 2. Percentage of all high touch surface (HTS) samples with ≤2.5 CFU/cm^2, a standard for safer environmental surfaces, cleaned by each type of disinfectant over a 24-hour period at the urgent care center (UCC, Fig 2A) and the outpatient clinic (OPC, Fig 2B).

DISCUSSION

- Overall, no statistically significant differences were observed between disinfectants across HTS in either ambulatory setting.
- Factors potentially contributing to the lack of difference include:
  - Frequent cleaning/disinfection occurred throughout the study period in both locations.
  - Possible partial removal of CAD surface films in the UCC during subsequent disinfection of HTS with the non-CAD disinfectant. However, this is not suspected to have been an issue in the OPC given disinfectants were assigned to each room for subsequent use throughout the day.
- Potential limitations:
  - The microbial burden in the OPC was very low, potentially reducing the ability to detect a difference.
  - The Hawthorne effect could have resulted in more frequent and more effective cleaning/disinfection between patients.

CONCLUSIONS

- These findings suggest disinfectants with CAD may not have additional benefit compared to standard disinfectants in areas of frequent cleaning or low contamination.
- Further study in other ambulatory care settings is warranted.

REFERENCES

Redmond SN, Cadnum JL, Silva SY, et al. Evaluation of a continuously active disinfectant for decontamination of portable medical equipment. Infect Control Hosp Epidemiol. 2022 Mar;43(3):387-389.

Rutala WA, Gergen MF, Sickbert-Bennett EE, et al. Antimicrobial activity of a continuously active disinfectant against healthcare pathogens. Infect Control Hosp Epidemiol. 2019 Nov;40(11):1284-1286.

Schmidt M, Fairey S, Attaway H. In situ evaluation of a persistent disinfectant provides continuous decontamination within the clinical environment. Am. J. Infect. Control. 2019;47(6):732-734.

This study received support from the Weill Cornell T32 training grant (T32AI007613 Research Training in Infectious Diseases). PDI provided no financial support and was not involved in study design or analysis.