Inivos

The Royal Wolverhampton NHS NHS Trust

Can room decontamination with ultra violet (UV-C) light be a useful addition to healthcare cleaning processes- a small study of its use in a UK hospital setting.

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INTRODUCTION

Environmental cleanliness is a vital element in reducing HCAIs. Manual cleaning remains a prerequisite to any additional environmental cleaning processes. New decontamination technologies have become available in recent years, however, including improved and automated hydrogen peroxide vapour (HPV) and more recently ultra violet (UV-C) decontamination systems. This was an evaluation study to explore the integration of UV-C as an adjunctive cleaning practice.

As hospital capacity pressures multiply it is imperative that the time taken to decontaminate the environment is minimised, yet still ensuring that it is clean enough for safe patient care.

METHODS

Over an 8 week period (mid Oct- mid Dec 2014) the UVC system was used following routine manual cleaning in 18 vacated single rooms. All 18 rooms required either a 'red' or 'amber' clean (terminal cleans utilising HPV or chlorine releasing agent respectively). Environmental microbiological sampling was undertaken at 24 sites in each room and results expressed as colony forming units (CFU). The equipment used was the Ultra-V system (Hygiene Solutions, England).

RESULTS

The average trend indicated a very clear correlation between the different levels of intervention (see summary table below), with 25% (n=6) of room sampling sites having CFU reduction post UVC process that was statistically significant.

	Total no. of sites sampled	Mean CFU
Pre Manual Clean	383	77.48
Post Manual Clean	383	15.71
Post UVC (Ultra-V system)	383	2.92

DISCUSSION

UVC technology is easy to set up, enabling it to be used by a wide range of staff, and offers a relatively rapid process time (25-30 mins/room). Such systems have the potential to be used as a preventative adjunct to manual cleaning, and may greatly reduce the risk of transmitting infections through high touch surfaces. It is important to learn more about the safety, efficacy and practicalities of these new decontamination methods for tackling the challenge of HCAI in our hospital environment.

REFERENCES

B. M. Andersen, H. Ba ˚nrud, E. Bøe et al (2006) Comparison of UV C Light and Chemicals for Disinfection of Surfaces in Hospital Isolation.
Chicago Journals, The Society for Healthcare Epidemiology of America

John M. Boyce, Nancy L. Havill, Brent A. Moore (2011) Terminal Decontamination of Patient Rooms Using an Automated Mobile UV Light Unit
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Figure 1 below demonstrates the mean CFU at each intervention in the patient isolation room, across all 24 sample locations.

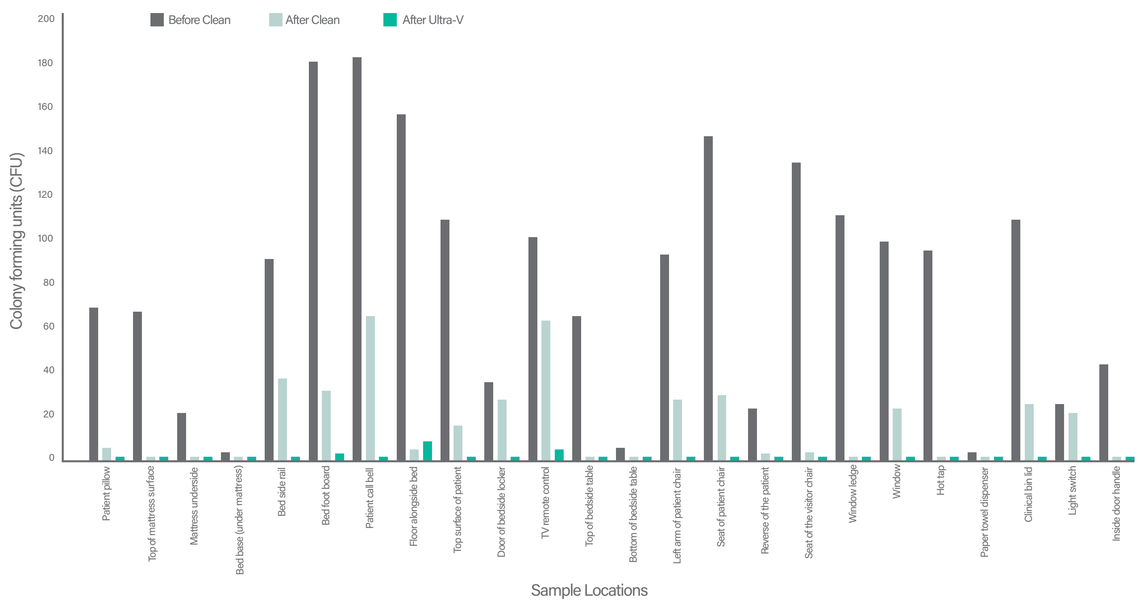

Figure 2 below demonstrates the CFU reduction of which was achieved through each intervention in the process.

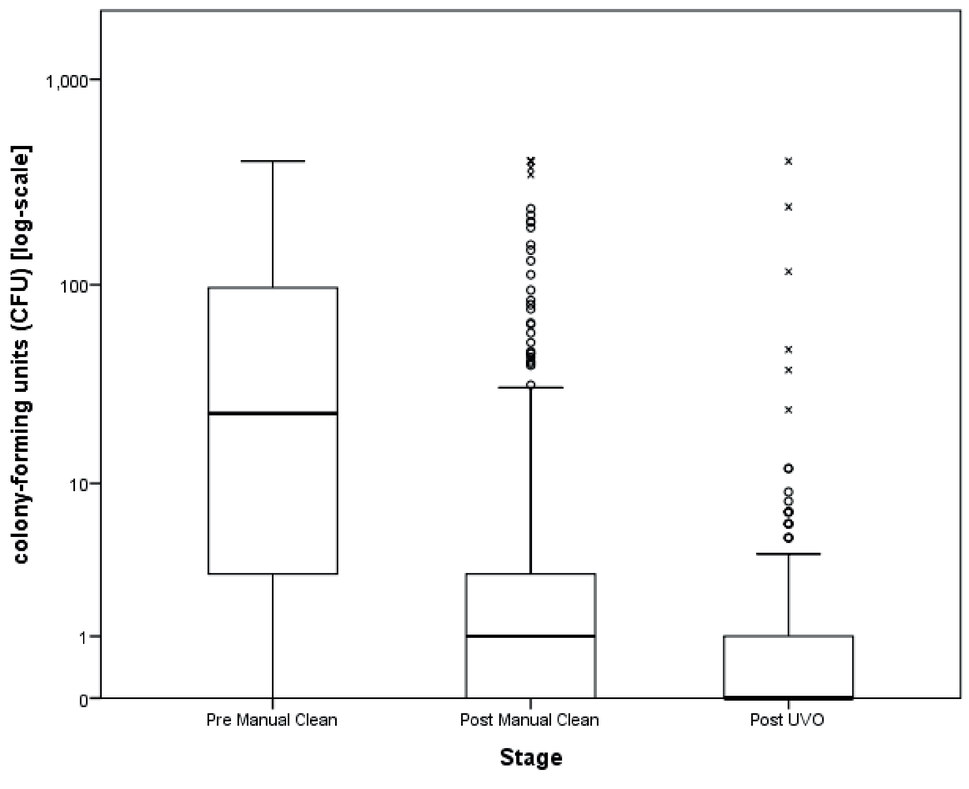

Figure 3 below demonstrates the quantity of the CFU's at each intervention in the process from all 18 processes, at each sample location.