

Hospital Field Test Report 015

Reduction of VRE and other contamination in hospital environment

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Background

Vancomycin Resistant Enterococci (VRE) is an important nosocomial pathogen. VRE can complicate and prolong hospital stay and in some cases, especially in immunocompromised patients, cause fatal diseases. VRE is increasingly prevalent in contaminated environment and equipment with resistant organisms. Regular cleaning and disinfection are important for breaking the chain of infection. However, the hospital environment is frequently re-contaminated. Though routine disinfection procedures are costly, they are often ineffective in controlling nosocomial transmission of pathogens. Hence, the use of antimicrobial surface coating¹ was selected to provide a better safeguard against disease transmission.

Prior trials performed in Queen Elizabeth Hospital, Tuen Mun Hospital, and Princess Margaret Hospital have shown the coating safe to use, acceptable to frontline healthcare workers, and reduction of total antimicrobial burden in the tested environment.

This test is conducted in Caritas Medical Centre (CMC). CMC is an acute general hospital providing a full range of acute, rehabilitation, ambulatory and community medical services to in-patients and out-patients. It belongs to the Kowloon West Cluster of the Hong Kong Hospital Authority. Caritas Medical Centre is located at 111 Wing Hong Street, Shamshuipo, Kowloon, Hong Kong.

Testing procedures

Wards housing patients infected with VRE were recruited into the study. An equal number of patients were allocated randomly into the control group. All staff involved was informed of the study. In the study, areas such as bed rails, bed-end tables, bedside lockers, and computer keyboards, are identified as the “high-touched” sites. These “high-touched” areas were divided into the treatment group and control group. The treatment group was coated with smart antimicrobial coating once a day. They are compared with the control group that follows standard cleansing routines using 1:49 hypochlorite twice a day.

¹ Germfree 7 from Greenland Biotech Ltd, a smart antimicrobial coating is used in this testing procedure.

Summary of test results

The field test from May 8-29, 2012 was carried out in hospital rooms housing VRE (vancomycin-resistant *Enterococcus*) patients. Statistical analysis of total bacteria count and VRE found is summarized as follows;

- (1) The hospital furnishing and medical items with smart antimicrobial coating in the *treatment* group has 1-log (90 %) less bacteria contamination, compared to similar but uncoated hospital furnishing in the *control* group that received twice-a-day regular cleaning and disinfection with 1:49 bleach solution;
- (2) There is a significant reduction ($p < 0.05$) of VRE in the hospital furnishing and medical items with smart antimicrobial coating compared to similar but uncoated hospital furnishing in the *control* group that received twice-a-day cleaning and disinfection with 1:49 bleach solution.

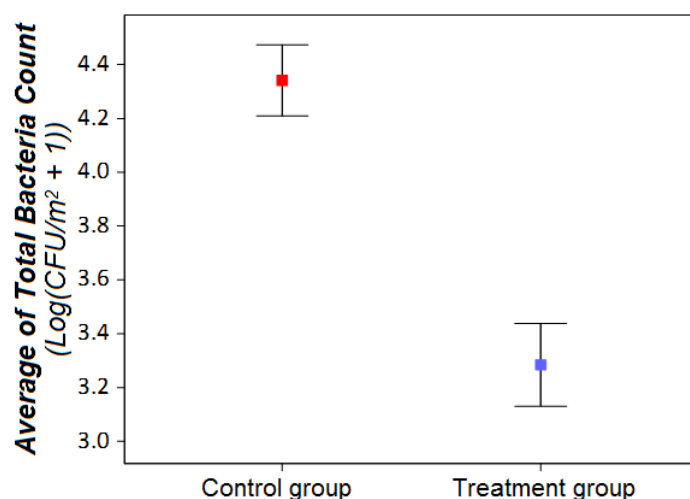


Figure 1. Average of viable bacteria (in log scale) recovered from high contact areas in the *treatment* group and *control* group over the 27 day study period at CMC.

Table 1. Average of viable bacteria recovered and VRE found in this test.

1. Total Bacteria Count

Group	Sample number	Mean
Control	323	21,923
Treatment	345	1,924
		↓ 91.2%

2. VRE occurrence

Group	No VRE found	VRE found	% of VRE found
Control	311	12	3.7%
Treatment	341	4	1.2%
			↓ 67.6%