

96%
REDUCTION
IN BACTERIA



IN A HOSPITAL ENVIRONMENT

The control of healthcare-associated infections (HCAIs) remains a challenge for healthcare providers. This involves employing a combination of infection prevention and control strategies, including hand hygiene, cleaning, training and the adoption of new technologies, to tackle the problem.

As a result, a wide range of infection control products and technologies are available on the market, including antimicrobial technology.

BioCote Ltd works with equipment manufacturers, engineering silver ion technology into a variety of healthcare related products, helping them to resist the growth of bacteria and mould on their surface. Silver is an ideal antimicrobial agent because it has a high efficacy against a wide range of medically-important microorganisms and is regarded as non-toxic.

For the NHS and other healthcare providers to employ new technologies and products they need to show a demonstrable ability to contribute positively to infection control. The use of any product that claims it has antimicrobial efficacy should be supported by a robust evidence-base.

Aim

A pilot study, conducted at the Heart of England NHS Foundation Trust, investigated to what extent BioCote® antimicrobial products can reduce microbial contamination in a healthcare environment.

In independent laboratory tests, BioCote® antimicrobial protected materials regularly demonstrate reductions in

counts of *E. coli* and *S. aureus* greater than 99%, compared with untreated samples.

The aim of this study was to determine to what degree this high level of antimicrobial efficacy could be achieved in a real-life hospital environment.

Study

Two outpatient units provided the environments for this 18 month pilot study. Unit A was refurbished with BioCote® treated products including blinds, tiles, door handles, sack holders and light switches and also a number of untreated products. A similar, refurbished outpatient ward containing untreated items (Unit B), served as a control.

Both outpatient units were similar in terms of volume of people, layout and floor-surface area and were subjected to standard cleaning practice. Both were allowed to function for 12 months before swabbing commenced.

Swabs were collected over a five month period from BioCote® treated and untreated products in both outpatient units. Swabs were processed for total counts of viable bacteria and results expressed as average counts of colony-forming units (CFUs).

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Results

Table 1 shows that CFU counts from BioCote® treated products in unit A were between 62% and 98% lower than from comparable, untreated products in Unit B.

The products used in the trial were manufactured from a variety of materials e.g plastics and fabrics. CFU counts from these different materials were also compared and are shown at the bottom of **Table 1**.

CFU counts from BioCote® treated materials were between 70% (fabrics) to 99% (laminates) lower than untreated equivalents.

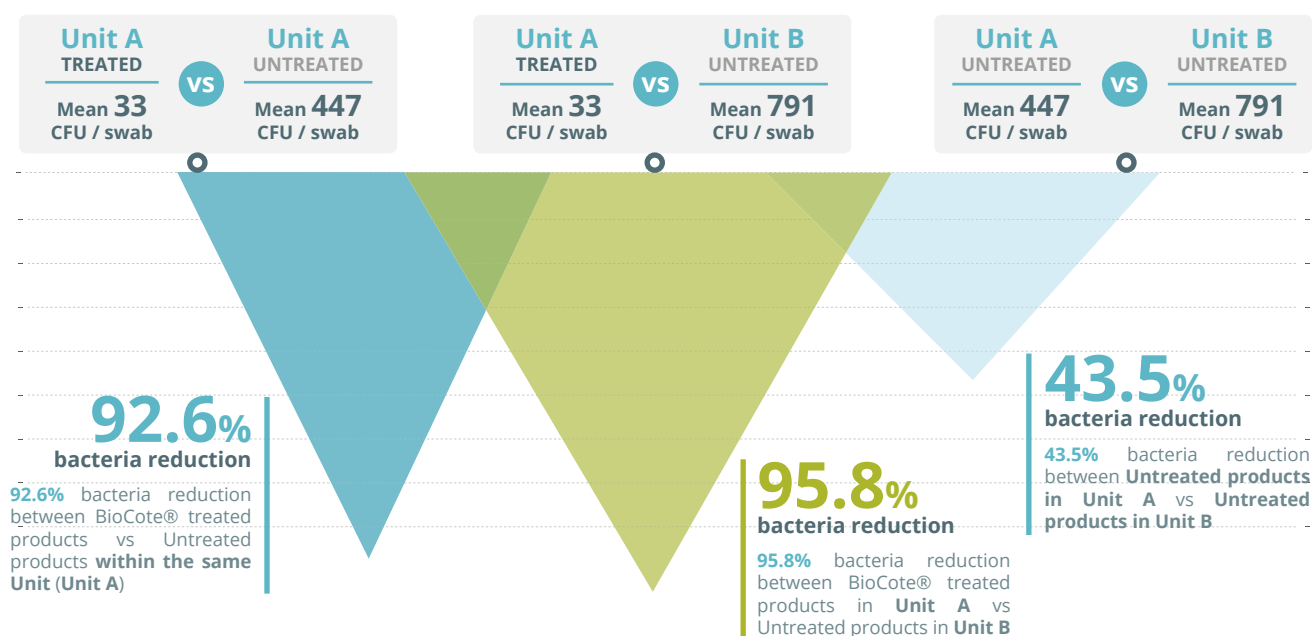
CFU counts from BioCote® treated products in Unit A were compared with CFU counts from untreated products in both Unit A and Unit B.

CFU counts on untreated products in Unit A were also compared to untreated products in Unit B.

Table 1: Unit A - BioCote® treated vs Unit B - Untreated
% reduction of CFU counts, on products & materials

Product	% Reduction
Door	98%
Door handle	89%
Electrical switch	95%
Curtains / Blinds	73%
Chair	93%
Treatment couch	62%
Sign	75%
Waste Bin	84%
Tiles	90%
Material	% Reduction
Powder coating	94%
Plastic	98%
Wood lacquer	98%
Fabric	70%
Laminate	99%

Figure 1: Inter-site comparison of average (mean) CFU counts from BioCote® treated and untreated products in Units A and B.



Discussion and conclusions

Results suggest that BioCote® antimicrobial products will demonstrate the same high level of antimicrobial efficacy in a real-life environment as seen in laboratory tests, e.g. an average bacterial reduction of 95.8%.

In addition to the effect of standard cleaning, BioCote® antimicrobial products showed sustained reductions in bacterial counts, compared to untreated products. Because BioCote® technology does not wear out or wipe off surfaces, it can provide a continuous decontamination effect. Treated products can complement cleaning practices, helping to continually reduce levels of bacteria on surfaces and in the wider healthcare environment.

Bacterial contamination on untreated products in Unit A was on average 43.5% lower compared with untreated products in Unit B. This suggests that a reduction in bacteria on BioCote® antimicrobial surfaces results in lower numbers of bacteria on other surfaces because there are fewer bacteria being transferred. Using a number of antimicrobial objects in a healthcare environment may therefore help the decontamination of the wider environment.

This study, first published in the Journal of Infection Prevention¹, highlights the ability of BioCote® treated antimicrobial products to reduce levels of bacteria contaminating healthcare settings.

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1. Taylor L., Phillips P., Hastings R. (2009) Reduction of bacterial contamination in a healthcare environment by silver antimicrobial technology. Journal of Infection Prevention 10 (1): 6-12. For text version, visit <http://bjj.sagepub.com/>

