Bacterial Decontamination of Nurses' White Coats by Application of Antimicrobial Finish

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Abstract : New pathogenic strains of microbes are continually emerging and resistance of bacteria to antibiotics is growing. Hospitals in India have a high burden of infections in their intensive care units and general wards. Rising incidence of hospital infections is a matter of great concern in India. This growth is often attributed to the absence of effective infection control strategies in healthcare facilities. Government, therefore, is looking for cost effective strategies that are effective against HAIs. One possible method is by application of an antimicrobial finish on the uniform. But there are limited studies to show the effect of antimicrobial activity of antimicrobial finish treated nurses' uniforms in a real hospital set up. This paper proposes a prospective non-destructive sampling technique, based on the use of a detachable fabric patch, to assess the effectiveness of silver based antimicrobial agent across five wards in a tertiary care government hospital in Delhi, India. Fabrics like polyester and polyester cotton blend fabric which are more prevalent for making coats were selected for the study. Polyester and polyester cotton blend fabric was treated with silver based antimicrobial (AM) finish. At the beginning of shift, a composite patch of untreated and treated fabric respectively was stitched on the abdominal region on the left and right side of the washed white coat of participating nurse. At the end of the shift, the patch was removed and taken for bacterial sampling on Brain Heart Infusion (BHI) plates. Microbial contamination on polyester and blend fabrics after 6 hours shift was compared in Brain Heart Infusion broth (BHI). All patches treated with silver based antimicrobial agent showed decreased bacterial counts. Percent reduction in the bacterial colonies after the antimicrobial treatment in both fabrics was 81.0 %. Antimicrobial finish was equally effective in reducing microbial adhesion on both fabric types. White coats of nurses become progressively contaminated during clinical care. Type of fabric used to make the coat can affect the extent of contamination which is higher on polyester cotton blend as compared to 100% polyester. The study highlights the importance of silver based antimicrobial finish in the area of uniform hygiene. Bacterial load can be reduced by using antimicrobial finish on hospital uniforms. Hospital staff uniforms endowed with antimicrobial properties may be of great help in reducing the occurrence and spread of infections.

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