Quantification and Bioburden of High Frequency Touch Surfaces (HFTS) in ICU Patient Rooms

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Abstract

Background: Contaminated environmental surfaces serve as reservoirs of pathogens causing health care-associated infections by transient carriage on hands of healthcare personnel (HCP). We chose to quantify contact of high frequency touch surfaces (HFTS) by HCP using direct observation & assessed bioburden on these before & after direct contact.

Methods: Direct observation was conducted in a total of 10 ICU rooms (medical & surgical). Number of touches by discipline were quantified for two four hour periods per room. Quantitative environmental microbiologic samples of each HFTS were collected prior to & after disinfection & then 24±2 hours after first sample.

Results: In the SICU mean number of touches/shift in descending order were computer mouse/keyboard (115.6), bed rail (65.4), infusion pump (63.3), mechanical ventilator controls (41.4) & door handle (21.9). In the MICU the following surfaces were touched more frequently including bed rail (148.2), ventilator controls (73.8), nurse server (55.4), infusion pump (45.8) & handwashing station (24.8). Mean number of touch/hour/shift were (294.6) & hours after the first sample. These samples were tested for total aerobic plate count and quantification CFU/cm².

Introduction

• The impact of Hospital Acquired Infections, particularly those caused by multiresistant pathogens is substantial.
• Hand hygiene and isolation practices are recommended to control the spread of these pathogens.
• Hand or glove contamination after contact with patients colonized with vancomycin-resistant Enterococcus (VRE) or methicillin-resistant Staphylococci aureus (MRSA) is common.

Methods

• Observation study was conducted in 10 ICU rooms (five MICU and five SICU) at SJMH for over three months in 2010.
• A pilot study was conducted to pre-identify HFTS in ICU and a total of 14 HFTS were identified.

Results Conclusion

• We demonstrated that there are few surfaces which are more frequently touched (HFTS) in the patient’s immediate environment.

• Some of the surfaces had high bioburden at 24 hours after disinfection and this correlated with total touch frequency suggesting a need for more targeted and frequent environmental cleaning procedures to prevent transmission.

References


FIGURE 1: Average number of Touches/shift by Discipline in SICU & MICU...

FIGURE 2: Average number of Touches/shift by Discipline in SICU & MICU...

FIGURE 3: Comparison of Bioburden on Ventilator surface: Pre cleaning, Post cleaning and 24 hour later (p<0.0001)