

Impact of an Environmental Cleaning Intervention on the Presence of Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant Enterococci on Surfaces in Intensive Care Unit Rooms

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Objectives. To evaluate the adequacy of discharge room cleaning and the impact of a cleaning intervention on the presence of methicillin resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE) on environmental surfaces in intensive care unit (ICU) rooms.

Design. Prospective environmental study.

Setting and sample. Convenience sample of ICU rooms in an academic hospital.

Methods and intervention. The intervention consisted of (1) a change from the use of pour bottles to bucket immersion for applying disinfectant to cleaning cloths, (2) an educational campaign, and (3) feedback regarding adequacy of discharge cleaning. Cleaning of 15 surfaces was evaluated by inspecting for removal of a preapplied mark, visible only with an ultraviolet lamp (“black light”). Six surfaces were cultured for MRSA or VRE contamination. Outcomes of mark removal and culture positivity were evaluated by χ^2 testing and generalized linear mixed models, clustering by room.

Results. The black-light mark was removed from 44% of surfaces at baseline, compared with 71% during the intervention ($P < .001$). The intervention increased the likelihood of removal of black-light marks after discharge cleaning (odds ratio, 4.4; $P < .001$), controlling for ICU type (medical vs surgical) and type of surface. The intervention reduced the likelihood of an environmental culture positive for MRSA or VRE (proportion of cultures positive, 45% at baseline vs 27% during the intervention; adjusted odds ratio, 0.4; $P < .02$). Broad, flat surfaces were more likely to be cleaned than were doorknobs and sink or toilet handles.

Conclusions. Increasing the volume of disinfectant applied to environmental surfaces, providing education for Environmental Services staff, and instituting feedback with a black-light marker improved cleaning and reduced the frequency of MRSA and VRE contamination.

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