

Hypochlorous Acid for Definitive Terminal Cleaning of the Hospital Environment

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Posted on: 06/09/2014

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Standard terminal cleaning of hospital rooms is a fundamental infection prevention process performed by the environment of care staff. It is defined as physical cleaning followed by disinfection with an approved hospital disinfectant. Monitoring consistency of this process, however, is difficult and not assured. There can be as many variations of the process as there is staff performing the task. It is not unusual that significant residual bacteria are left in place.(1-2) Alternative disinfection technology utilizing a product derived from saline and electricity, "superoxidized water," produces a cidal activity 50 to 100 times that of household bleach, addressing growing resistance issues of standard terminal cleaning agents. Electrolyzed sodium hypochlorous acid (HOCL), produces an efficient disinfecting adjunct to standard terminal cleaning and provides many advantages in optimizing infection prevention in the hospital environment.(3) The wand spray device distributes the product in a sequential back and forth motion producing a uniform distribution of the powder coating to all areas of the environment. Due to the neutral pH of the HOCL, it is non-toxic, does not leave residue on environmental surfaces, and is not corrosive to hospital equipment as traditional bleach and phenolics have long demonstrated.(4)

Materials and Methods

In an effort to minimize residual bacteria post standard terminal cleaning, a preliminary study was performed utilizing two different cleaning and disinfection modalities post patient discharge. The first consisted of the standard terminal cleaning process. The second utilized the standard terminal cleaning process followed by a spray application of electrolyzed HOCL. Five high-touch sites -- bedrail, bed table, phone, toilet and TV remote -- were cultured before and after each process.

Results

Of the 54 high-touch sites cultured post standard terminal cleaning, residual bacteria consisting mainly of coliforms and skin bacteria were found in 85 percent of the cultures (46/54 cultures yielding 2,014 bundled colony forming units or cfu). Following the additional HOCL spray, residual bacteria was reduced to 31 percent (17/54 cultures yielding 107 bundled cfu). The residual bacterial load after standard terminal cleaning followed by electrostatic HOCL spraying was reduced 10 fold.

Discussion

The enhanced effects and cidal activity with the two-step process are presumed to be related to comprehensive coverage of environmental surfaces with the HOCL solution. This preliminary clinical study demonstrates that standard terminal cleaning followed by the routine use of electrostatic HOCL spray is effective in significantly reducing environmental bioburden found to be essential for infection prevention and patient quality assurance. Further studies comparing this reduction of bioburden to facility incidence of methicillin-resistant *Staphylococcus aureus* (MRSA) or other potentially pathogenic and increasingly resistant microorganisms would be ideal.

The general public fears hospitalization and contracting the “superbugs” they read and hear about today. While it is not our goal to sterilize the hospital environment, it is completely reasonable to assure its disinfection to the best of our current technological availabilities.

Doris Dimmitt is a certified infection preventionist with a masters in public health. She is currently the hospital epidemiologist for Carson Tahoe Health System, a 224-bed acute-care, multi-faceted, inpatient facility. Prior to this position she worked 23 years as a clinical microbiologist. Dimmitt worked in collaboration with Dr. Raymond Swarts, an infectious disease consultant and Theresa Rucker, BSN, an infection preventionist, in completing this study.

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