Identifying Opportunities to Improve Environmental Hygiene in Multiple Healthcare Settings

Philip C Carling, MD, FSHEA*, Loreen Herwaldt, MD, FIDSA, FSHEA, Carol Sulis, MD, Courtney A. Reynolds, MD PhD, Susan S. Huang, MD MPH, FIDSA For the Healthcare Environmental Hygiene Study Group (HEHSG)

Near-patient surfaces play a role in transmission of pathogens in healthcare settings. Thus, disinfection cleaning is an important infection prevention intervention. Using the same evaluation system to analyze cleaning practice in a range of defined healthcare venues, we combined both our published (40%) and yet unpublished (60%) HEHSG site observations to develop a standardized, broad based, analysis of disinfection cleaning thoroughness in a range of US healthcare settings.

**Background**

As summarized in the figure below, thoroughness of discharge cleaning of 52,931 objects in 4,243 medical/surgical and ICU rooms averaged 49% (95% CI = 48.1 to 51.0). Thoroughness of daily cleaning of: 3,657 objects in 271 implantation operating rooms was 24%; 1,160 objects in 84 adult ICU rooms was 26%; 3,680 objects in both common areas and patient rooms in long-term care facilities was 24%; and 610 objects in 38 ambulatory clinic treatment areas was 20%. While potentially overestimated as a result of a Hawthorne effect, daily cleaning, which averaged 25%, was significantly less thorough than discharge cleaning (p = <.0001).

**Methods**

Trained healthcare professionals in 140 sites (121 acute care hospitals and 19 long-term care facilities) covertly evaluated disinfection cleaning practice using a fluorescent targeting system (DAZO®) to objectively quantify cleaning compliance of standardized sets of near-patient surfaces that had a high risk of transmitting pathogens between patients and healthcare workers. The objects chosen were specific to the particular venue evaluated. Results were expressed as the percentage of surfaces marked with the fluorescent target that were cleaned (DAZO® removed).

**Results**

The thoroughness of disinfection cleaning was surprisingly similar in the 140 sites evaluated. Covert evaluation of disinfection cleaning of both inpatient and outpatient areas consistently revealed opportunities for practice improvement. These results provided an objective basis for successful process improvement projects in all sites that implemented structured programs to enhance the thoroughness of cleaning.

In addition, our methodology meets the specifications of the Department of Health and Human Services Action Plan to Prevent Healthcare Associated Infections (June, 2009), which stated: “Standardized methods (i.e., performance methods) that are feasible, valid, and reliable should be used “for measuring and reporting compliance with broad based HAI prevention practices that must be practiced consistently by a large number of healthcare personnel”.

**Conclusions**

The thoroughness of disinfection cleaning was surprisingly similar in the 140 sites evaluated. Covert evaluation of disinfection cleaning of both inpatient and outpatient areas consistently revealed opportunities for practice improvement. These results provided an objective basis for successful process improvement projects in all sites that implemented structured programs to enhance the thoroughness of cleaning.

In addition, our methodology meets the specifications of the Department of Health and Human Services Action Plan to Prevent Healthcare Associated Infections (June, 2009), which stated: “Standardized methods (i.e., performance methods) that are feasible, valid, and reliable” should be used “for measuring and reporting compliance with broad based HAI prevention practices that must be practiced consistently by a large number of healthcare personnel”.

* Department of Infectious Diseases
Carney Hospital
2100 Dorchester Avenue
Boston, MA 02124
(617) 296-4000 Extension 5050
Philip.Carling.MD@steward.org