

Comparing the Clinical Effectiveness of Surface Disinfectants

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Background

While disinfectant cleaning of near-patient surfaces has been an accepted healthcare standard for decades, the relative efficacy of disinfectant chemistries has not been studied in clinical use.

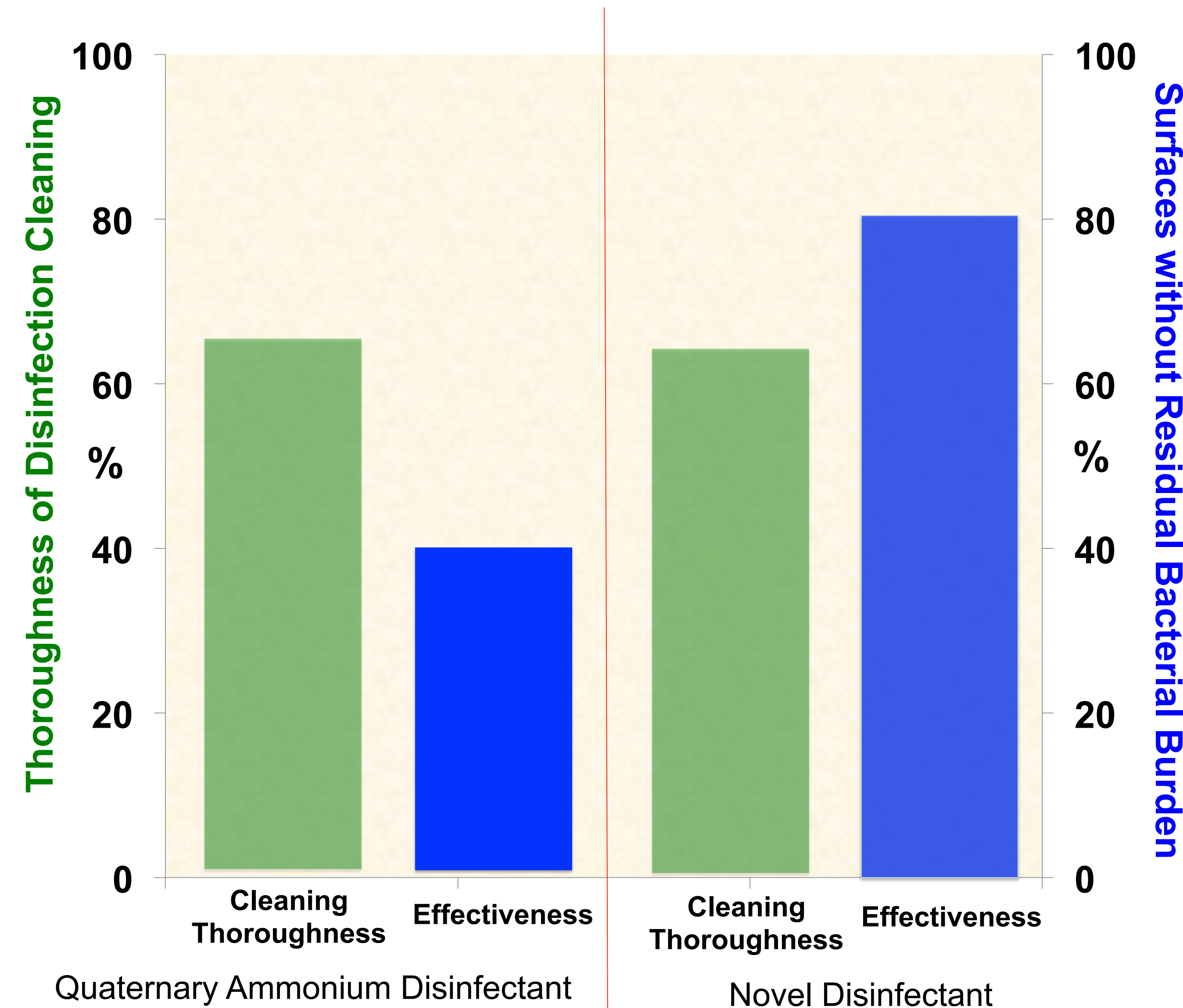
Methods

An EPA-registered quaternary ammonium disinfectant (QAC) and a novel EPA-registered sporicidal disinfectant (ND) with peracetic acid/hydrogen peroxide as the active ingredients were evaluated on a 48 bed clinical care unit as part of routine cleaning. Twelve high touch surfaces recommended by the CDC toolkit [Options for Evaluating Environmental Cleaning](#) were evaluated. Prior to cleaning each surface was dip slide cultured and marked with a fluorescent marker (DAZO™). After the room was discharge cleaned each surface was again cultured and the presence or removal of the test soil noted. Surfaces without detectable aerobic bacteria prior to cleaning were eliminated from analysis. Following cleaning, only surfaces with no detectable bacterial burden (0 CFU) were defined as effectively cleaned.



Results

A total of 571 surfaces were evaluated before and after cleaning. During the QAC phase, 93 of 237 (40%) of evaluable surfaces showed complete removal of bacterial burden and during the ND phase of the study, 211 of 274 (77%) of evaluable surfaces showed complete removal of bacterial burden. (Figure) In the context of the study design, the ND was 1.93 times more effective than the QAC ($p < .0001$). During the QAC phase of the study 66.4% and during the ND phase 65.3% of the surfaces were cleaned as evidenced by fluorescent target removal. ($p = .8$) (Figure).



Conclusions

Although the clinical relevance of the finding of a highly significantly greater effectiveness of the ND in comparison to the QAC warrants verification in different settings, we believe that this study design has significant potential for effectively defining the relative clinical efficacy of disinfectant formulations as well as materials such as microfiber cloth, disposable disinfectant wipes, and even detergents in order to objectively clarify best practices for decreasing the risk of pathogen transmission from contaminated surfaces to patients through the use of various cleaning modalities and chemistries.