

Second, while dip slides are relatively malleable, they could not be expected to pick up the full complement of bioburden on items such as a call button, a light switch, and some types of handles, rails, and bars. The preferred method for accurately screening irregular and/or small surfaces is to swipe a moistened swab over a specified area and then inoculate the slide or plate with the swab.<sup>3</sup>

Third, the article does not mention the pressure used to apply the dip slides to the selected surfaces. This is important, because if too much pressure is applied on the surface, the agar breaks up and renders quantitative assessment of counts invalid. If too little pressure is applied or pressure is not applied for an adequate length of time (10 seconds is advised), the dip slide will fail to pick up all superficial (newly shed/planktonic) microbes on sampled surfaces.<sup>3,7,8</sup> The correct pressure for dip-slide sampling has been quoted as 25 g/cm<sup>2</sup> (without lateral movement) by food industry microbiologists and should have been predetermined within an appropriate training process before the study began.<sup>3,7</sup>

Fourth, the dip slides were incubated for only 24 hours; this time period is insufficient to permit retrieval of environmental organisms, and particularly so when the study surfaces have been habitually exposed to disinfectants.<sup>7</sup> In our experience, both agar plates and dip slides should be incubated for at least 48 hours at 30°–35°C to recover the greatest possible yield of cultivable aerobic organisms.<sup>9</sup> Additionally, the agar(s) used on the dip slides and incubation conditions are not mentioned in the Methods.

Finally, 2 standards were originally proposed: 1 quantitative (<5 cfu aerobic flora/cm<sup>2</sup>) and 1 qualitative (<1 cfu specific pathogen/cm<sup>2</sup>).<sup>2</sup> These standards were designed to be used together and, indeed, have been shown to be linked (for coagulase-positive staphylococci) when screening hand-touch sites.<sup>9</sup> The second standard was not used in the present study. The choice between 2.5 cfu/cm<sup>2</sup> (as in this study) vs 5 cfu/cm<sup>2</sup> (as originally suggested) does not necessarily represent a significant problem; several studies have examined both and little difference overall was found.<sup>3,5</sup> Future work will demonstrate which density adequately predicts risk in a range of healthcare environments. However, quantitative aerobic colony counts performed in isolation only provide a general level of contamination and not necessarily an infection risk for patients.<sup>3</sup>

Considering these concerns together, it is possible that the low level of bioburden reported in this study did not reflect true contamination of hospital surfaces and should not have been interpreted in accordance with previously proposed microbiological standards. Surface sampling is fraught with potential pitfalls and has always complicated reliable assessment of cleanliness. Recent work on surface biofilm in the healthcare environment has introduced yet another hurdle for healthcare monitoring.<sup>8</sup> Despite these new findings and the concerns listed above, it is very gratifying to see increasing interest and support of basic cleaning in our hospitals. It has been a long time coming.<sup>10</sup>

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## Reply to Dancer

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*To the Editor*—We very much appreciate Dr. Stephanie Dancer's comments related to our recent report, "Evaluating a New Paradigm for Comparing Surface Disinfection in Clinical

Practice.”<sup>1</sup> Dr. Dancer is regarded the world over for her expertise, research, and advocacy related to improving patient safety through mitigating transmission of healthcare-associated pathogens from near-patient surfaces to susceptible hosts. We welcome the opportunity to respond to several points she raised in her letter.<sup>2</sup>

The methodological considerations she posed included the potential that the low heterotrophic bioburden (HBB) we found could have been a reflection of habitual exposure of environmental surfaces to disinfectants; differences in sensitivity between dip slides and swab cultures; potential shortcomings in the manner in which dip slides were used; and possible improved sensitivity of the dip slide system with 48 hours incubation vs 24 hours. All have validity and are worth considering in future studies. Given the essential identical thoroughness of cleaning and large number of data points in both arms of our study, we believe that the magnitude of the analysis and the manner in which the dip slide system was used led to a symmetrical distribution of any confounding variables that might have adversely affected the sensitivity of our quantitative findings. Indeed, the magnitude of the difference in potency between the 2 disinfectants (ie, the novel disinfectant was 1.93 times more potent than the quaternary ammonium disinfectant) and the high level of the relative difference ( $P < .0001$ ) between the disinfectants clearly support the sensitivity of the dip slide system as it was used. Because the kinds of comparative studies for which this new paradigm may be used to compare the effectiveness of interventions may have substantially less differences between the 2 interventions, maximizing the sensitivity of the sampling system employed will be an important consideration in future studies.

While limitations in the length of our report precluded a more in-depth discussion related to hygienic standards, it is important to note that the study was not designed to directly analyze this issue. Our findings, by chance, provided further observations regarding the challenges of using HBB independently as a cleanliness standard, and we addressed the issue in the discussion section of our report.

As has been noted in the past<sup>3</sup> and as recently as this year,<sup>4</sup> many published reports have observed, as we did, that the generally low HBB on healthcare surfaces appears to limit the potential for assessing the effectiveness of surface cleaning practice unless it is performed on a comparative basis, as we did. We support Dr. Dancer’s hope that “future work will demonstrate which density adequately reflects risk in a range of healthcare environments.”<sup>2,5</sup> In addition, the concern that ongoing use of disinfectants over time can decrease residual HBB has recently been raised.<sup>6</sup> Further work in this area, particularly with the new disinfectants that do not damage patient area surfaces,<sup>7</sup> needs to be conducted.

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### Letter to the Editor Regarding “Impact of Vaginal-Rectal Ultrasound Examinations with Covered and Low-Level Disinfected Transducers on Infectious Transmissions in France” by Leroy et al.

*To the Editor*—A simulation study on the impact of vaginal-rectal ultrasound examinations on infectious risks in France was published recently by Leroy and colleagues.<sup>1</sup> Although statistical methods with Monte Carlo simulations could be contributive, we would like to raise some points which might limit the interpretation of their results.

The uncertainty of several parameters was possibly very wide, and simulation did not take such variability into account.