

## **Germicidal Capability of Glutaraldehyde-Phenate Disinfectant**

### **To the Editor:**

The recent report by Townsend et al<sup>1</sup> is a welcome addition to the literature on hospital disinfectants since indeed there has been a paucity of clinical studies of such products. For well over a year we have been using the same glutaraldehyde-phenate disinfectant they evaluated and would like to offer the following comments:

The data in Table 1 are somewhat confusing in view of the statement that "of those few tubes from which organisms were recovered, the number of organisms was small." An *average* of  $182 \pm 356$  organisms from 22 tubes soaked in five-day-old or less glutaraldehyde does not seem to be a particularly small number, especially if our interpretation of Figure 1 is correct in that only three of the 22 tubes involved supported growth of organisms. While Fisher's exact test suggests that no significant differences existed between the *proportion* of contaminated tubes, the *degree* of contamination in the tubes failing the disinfectant might also be relevant. In the absence of the rough data, one might even reach the rather implausible conclusion from Table 1 that the disinfectant became more effective with time since the only perfect results were obtained with the 26 to 30-day-old disinfectant.

Detergent wash alone appeared to reduce the number of organisms by 100 fold in contaminated tubing, and a further treatment in the disinfectant

resulted in a second 100 to 10,000 fold decrease in average number of organisms found. Since the treatment with a disinfectant also involved a second immersion in a liquid and three additional rinses one wonders what effect this physical treatment alone might have had on the results. Apparently this aspect was not controlled.

We performed our own AOAC use-dilution tests on samples of the glutaraldehyde-phenate as it was being used over a 30-day period. The test organism was *Pseudomonas aeruginosa*, and all tests were conducted according to AOAC protocol in which killing in 59 of 60 replicate tubes is required for a 95% confidence level.<sup>2</sup> In these tests freshly prepared disinfectant produced killing in all 60 tubes. The killing proportion dropped to 54/60 and 36/60 after three and four weeks use respectively. Even though routine sterility monitoring of cleaned, re-usable respiratory therapy equipment during that period gave satisfactory results for up to 30 days use-life, we have decided to change the solution after 14 days as an added precaution.

Thus, although our cultures of cleaned and dried equipment is consistent with the conclusions of Townsend et al that this glutaraldehyde-phenate can be used for up to 30 days, we doubt that the results reflect the true germicidal capability of the disinfectant. Since Rutala<sup>3</sup> also found that on-site AOAC use-dilution tests of disinfectants did not support manufacturers' laboratory test results, we believe it may be important for each institution to make an assessment of the efficacy and use-life of such products in their own clinical setting. This

may be especially pertinent to dilutable disinfectants where the load volume and water quality may differ radically from one geographic area to another. This is not a new idea since it was suggested by Litsky and Litsky<sup>4</sup> almost 15 years ago, but perhaps it bears re-stating.

### **REFERENCES**

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4. Litsky BY, Litsky W: Investigations on decontamination of hospital surfaces by the use of disinfectant-detergents. *Am J Public Health* 58:534-543.

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*Dr. Timothy R. Townsend, author of the article in question, was invited to respond.*

I appreciate the thoughtful comments from Pfaffenroth and co-workers. They raise an issue that we debated during preparation of the manuscript and their letter provides an opportunity to present some of the pertinent raw data and explain in