Efficacy of Alcohol-based Hand Sanitizers (ABHS): A 65.9% Ethanol Hand Wipe Erodes the Killing Capacity of a 62% Ethanol Gel Rub

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Abstract

In accordance with the method cited in the Federal Register Vol. 59, No. 116 Section 333.470, the hands of seven subjects were inoculated with a 0.5 McFarland suspension (approximately 1.5E+08 cfu/mL) of Serratia marcescens, ATCC No. 14756. Subjects washed with each of three different products with an interval of time separating each product usage.

The rank order of product efficacy was: antibacterial soap > 65.9% ethanol hand wipe > 62% ethanol gel hand rub. Compared to the alcohol based products, the 65.9% ethanol hand wipe showed a significantly greater log reduction of Serratia marcescens than the 62% ethanol gel rub (p<0.001).

Results

Discussion and Implications

The 65.9% ethanol gel hand wipe was significantly more effective in reducing the amount of viable bacteria on the hands than the 62% ethanol gel rub. The greater effectiveness of the wipe product may have been due to higher ethanol content and physical removal of bacteria from the hands.

Although effective, waterless hand sanitizer products should be used in conjunction with regular soap and water hand washing to ensure optimal reduction of bacterial transmission.

Conclusions

References


Materials and Methods

Objectives

The overall mean bacterial log reduction was 3.23 (SD 1.065). The mean log reduction decreased over time across the recovery cycles: a decrease in mean log reduction was observed between Cycle 7 (2.42 log) and Cycle 10 (1.90 log); see Figure 3.

Antimicrobial soap and water: The overall mean bacterial log reduction was 2.44 (SD 1.018). Standard hand washing with antimicrobial soap and water showed a greater mean bacterial log reduction than either of the alcohol products; see Figure 3.

References