ANTIMICROBIAL RESISTANCE & INFECTION CONTROL

POSTER PRESENTATION Open Access

P027: Semmelweis versus C. difficile: efficacy of chlorinated lime and other hand hygiene interventions

S Edmonds[1*], C Zapka[1], J Rutter[1], C Fricker[1], J Arbogast[1], D Macinga[1], R McCormack[2]

From 2nd International Conference on Prevention and Infection Control (ICPIC 2013)
Geneva, Switzerland. 25-28 June 2013

Introduction

*Clostridium difficile*infection is a significant issue in healthcare facilities, and proper hand hygiene is recommended to help prevent *C. difficile* transmission. It is known that alcohol based-handrubs are ineffective at killing *C. difficile* spores and recent studies demonstrate that the efficacy of hand washing is limited.

Objectives

The objective of this study was to evaluate several aggressive chemistries including chlorinated lime (the Semmelweis hand disinfection procedure) for reduction of *C. difficile* spores.

Methods

A modification of the ASTM method E1174 was used to evaluate *C. difficile* spore removal and inactivation. Approximately $1x10^6$ spores of non-toxigenic *C. difficile* ATCC #700057 were distributed onto the palms of subject's hands. A series of hand hygiene procedures were evaluated including a 30-second non-antimicrobial handwash and a 5 minute hand disinfection procedure with a scrub brush using 4% chlorinated lime, 2000 ppm peracetic acid, or 1000 ppm acidified bleach. Log_{10} reductions from baseline for each product were compared using ANOVA and post-hoc analysis ($P<0.05$) to identify statistically significant differences.

Results

The handwash, acidified bleach, peracetic acid, and chlorinated lime achieved log_{10} reductions of 0.66, 0.79, 1.64, and 2.45, respectively. Although log_{10} reductions were low, those for chlorinated lime and peracetic acid were statistically superior to acidified bleach and the non-antimicrobial handwash.

Conclusion

These data further reinforce that elimination of *C. difficile* spores from hands is very difficult. The two best chemistries, peracetic acid and chlorinated lime, still only achieved log reductions of <2.5 log_{10}, despite aggressive and lengthy application procedures not feasible for healthcare workers. These data reinforce the need for contact precautions including gloving when caring for a *C. difficile* infected patient; and the importance of cleaning and disinfection to reduce environmental spore contamination. Further research is needed to identify hand hygiene approaches to effectively eliminate *C. difficile* from hands and to reduce patient safety risk.

Disclosure of interest

None declared.

Author details
[1]GOJO Industries, Inc, Akron, OH, USA. [2]BioScience Laboratories, Inc., Bozeman, MT, USA.

Published: 20 June 2013

doi:10.1186/2047-2994-2-S1-P27
Cite this article as: Edmonds *et al.*: P027: Semmelweis versus C. difficile: efficacy of chlorinated lime and other hand hygiene interventions. *Antimicrobial Resistance and Infection Control* 2013 **2**(Suppl 1):P27.

[1]GOJO Industries, Inc, Akron, OH, USA
Full list of author information is available at the end of the article