BACKGROUND/OBJECTIVES:

Quaternary ammonium disinfectants are frequently used on hospital surfaces. Recently, concern has arisen about the discovery that the active substance in these agents is capable of electrostatically attracting and immobilizing proteins. Furthermore, quaternary ammonium disinfectants have a tendency to adsorb onto fibers, cotton, or plastic, by direct contact or through secondary migration. This results in the partial neutralization of the quats becoming unavailable to proteins for disinfection reactions that may be present.

One study suggests that spiking cloths is ineffective instead of using a spray barrier of disinfectant may provide a reduced likelihood of releasing either MRSA or VRE from the environment. The use of spray instead of a spray barrier would significantly decrease the effectiveness of quats concentration with respect to bacterial inactivation.

Both cotton terry cloth and microfiber cloths are used for handwashing in healthcare facilities to apply disinfectant. Microfiber cloths have surface-active properties that allow for effective inactivation of both pathogens as well as prevent subsequent cross-contamination of surfaces. Therefore, the use of microfiber cloth is advantageous when compared to cotton-terry cloth.

The study of the effects of quats absorption and antimicrobial efficacy of both types of fabrics continues to be the focus of investigation. One study observed with the use of microfiber terry cloth, this is – those studies do not describe the effects of quats absorption and antimicrobial efficacy of both types of fabrics.

METHODS:

Evaluation of Quat Absorption and Efficacy of Cleaning Cloths

Evaluate the effectiveness of microfiber and cotton terry cloths at delivering the proper disinfectant level to a surface. The effectiveness of these cloths is measured by the "fibers" in cellulose and cotton terry cloth fabrics that have been tested for their ability to deliver the appropriate disinfectant level to a surface. The method of delivering the disinfectant use-solution allows the solution to plateau at the disinfection level. The proper disinfectant level will provide disinfection efficacy, as well as in preventing organism transfer to clean surfaces. When using a quaternary disinfectant,quat absorption should be considered with any application which requires the use of a textile tool (cloth, mop, etc.).

Neutrophil Absorption Controls

*99 mL of D/E Broth neutralizer in the stomacher bag is considered 10^-1 dilution of the number of bacteria. Consider an inoculated plate as the 10^-1 dilution of the number of bacteria. The control for this experiment is a sterile cloth that has been used to wipe inoculated plates.

Neutralization Controls

The ability of the hydrocolloid solution of Product A and Product B to deliver a high ppm active quat in solution to account for the quat absorption and antimicrobial efficacy of cleaning cloths. The method of delivering the disinfectant use-solution allows the solution to plateau at the disinfection level. The proper disinfectant level will provide disinfection efficacy, as well as in preventing organism transfer to clean surfaces. When using a quaternary disinfectant, quat absorption should be considered with any application which requires the use of a textile tool (cloth, mop, etc.).

RESULTS:

Table 1: Quat Absorption by Microfiber and Cotton Terry Cloth

<table>
<thead>
<tr>
<th>Cloth Type</th>
<th>CFU per Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microfiber Cloth</td>
<td>1</td>
</tr>
<tr>
<td>Cotton Terry Cloth</td>
<td>10^-1</td>
</tr>
</tbody>
</table>

Figure #4: Cotton cloth swatch saturated with product B

Figure #3: Results of the third plates in the six plate series of contaminated plates: cotton cloth, microfiber cloth saturated with product A.

Figure #2: Microfiber cloth swatch saturated with product A applied to a contaminated petri dish.

Figure #1: Microfiber cloth swatch saturated with product B applied to a contaminated petri dish.

Figure #5: Cotton cloth swatch saturated with product B applied to a contaminated petri dish.

Figure #6: Cotton cloth swatch saturated with product B applied to a contaminated petri dish.

Figure #7: Microfiber cloth swatch saturated with product A applied to a contaminated petri dish.

Figure #8: Cotton cloth swatch saturated with product B applied to a contaminated petri dish.

Figure #9: Cotton cloth swatch saturated with product B applied to a contaminated petri dish.

REFERENCES: