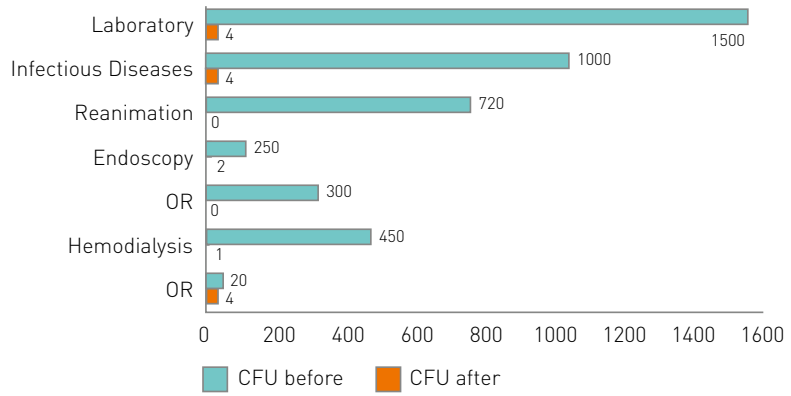
Field Trial

Dry-mist of hydrogen peroxide compares favorably with manual cleaning with ammonia for decontamination of hospital rooms

Introduction: The efficacy of dry-mist hydrogen peroxide decontamination has been determined in various healthcare settings in several countries, including operating rooms, intensive care units, infectious disease units, laboratories, and ambulances. (See Figure 1) The dry-mist disinfectant diffuses over a wide area, reaching even inaccessible areas that may be missed by manual wiping. To further study* the technique, investigators in France conducted a comparison of dry-mist hydrogen peroxide with directed spray decontamination. Efficacy of the technique against *Aspergillus spp* contamination in a laboratory also was studied. Results indicated that dry-mist hydrogen peroxide can be used both preventively and as a treatment during nosocomial bacterial outbreaks.

Figure 1. Effectiveness of dry-mist hydrogen peroxide process in real-use conditions after one cycle in several hospital centers



"A comparison between manual surface disinfection using directed spray and [dry-mist hydrogen peroxide decontamination] has shown that the latter is more effective in actual healthcare situations in high-risk medical facilities."

Study project: Six to eight contamination-prone areas in hospital rooms recently vacated by patients were sampled using Count-Tact agar plates (BioMeriéux). Sets of samples were collected in the department of infectious diseases and the reanimation unit. After sampling, the rooms were cleaned and then decontaminated with either a dry-mist of hydrogen peroxide (Gloster Sante Europe) or manual spraying with quaternary ammonium, selected randomly. After decontamination, surfaces were resampled. In all, 80 sets of samples were collected, for a total of 560 samples.

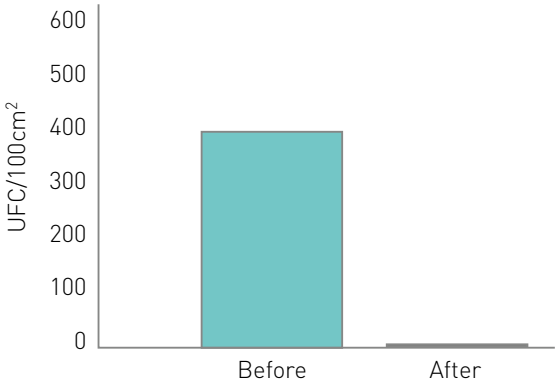
Findings: Before cleaning and decontamination, bacteria were recovered at average densities ranging up to 690 cfu/100cm2. The following pathogenic bacteria were identified in the samples: *Enterobacter aerogenes*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, multidrug-resistant *Staphylococcus aureus* (MRSA; only in the infectious diseases department), *Clostridium perfringens*, and *Acinetobacter baumanii* (only in the infectious diseases department). After decontamination with a dry-mist of hydrogen peroxide

(standard cycle), bacteria were recovered at mean densities of 0 to 7 cfu/100cm^2, and no pathogens were recovered. This decrease in recovered pathogens was statistically significantly better than the decrease seen when cleaning was followed by decontamination by manual spraying with quaternary ammonium (200-fold compared with 150-fold, P<0.0001).

Study project: Three laboratories were suspected of becoming contaminated with mold while undergoing upgrade of a fire prevention system. Eight to 12 samples were taken from each laboratory before it was cleaned. After cleaning followed by decontamination with a dry-mist of hydrogen peroxide (standard cycle), sampling was repeated.

Findings: *Aspergillus* was recovered from all three laboratories before they were cleaned. After cleaning and decontamination, no *Aspergillus* or other mold was recovered, even from surfaces that were difficult to reach, such as racks inside incubators. (See Figure 2) The difference in presence of *Aspergillus spp* before and after cleaning/disinfection was statistically significant (P<0.05).

Figure 1. Comparison of *Aspergillus spp* contamination in a hospital laboratory before and after decontamination with dry-mist hydrogen peroxide. *(P<0.05)*



Conclusion: The authors concluded that the dry-mist hydrogen peroxide decontamination system should provide facilities with an effective method for controlling the spread of infectious diseases, noting that the method can be used both preventatively during routine decontamination and as a treatment during infectious disease outbreaks.

Source*: Marty N, Cavalié L, Conil J, Roques C. Dry fog disinfection: an assessment of microbiological efficacy and practical advantages. *Revue Hygienes* 2007;15:317-20.

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