



Disinfection Using Dry-Mist Hydrogen Peroxide Improves Eradication of VRE in Hospitals

Introduction: Researchers at University Hospital, Toulouse, France, evaluated the efficacy of a portable, automated dry-mist hydrogen peroxide decontamination system (Gloster Sante Europe) against Vancomycin-resistant *Enterococcus faecium* (VRE).*

Study Project: The *in vitro* experiment was carried out in a patient room under real hospital conditions. Inox steel and polyvinyl chloride supports were contaminated with Vancomycin-resistant *E. faecium* (clinical isolates expressing vanA and vanB phenotypes). The supports were positioned vertically facing away from the source of the dry mist and horizontally facing up.

Findings: Decontamination by dry-mist hydrogen peroxide resulted in the eradication of clinical isolates expressing both VRE phenotypes (vanA and vanB) from all of the supports tested, leading to a logarithm reduction of >6.85 for *E. faecium* vanA and >7.25 for *E. faecium* vanB.

Discussion: VRE is associated with the spread of healthcare-acquired infections, resulting in increased patient morbidity and length of stay, as well as increased costs. VRE outbreaks have dramatically increased in the United States and other countries throughout the world since the 1990s. A critical factor in VRE transmission is the ability of the bacteria to survive on surfaces for extended periods of time, leaving patients and healthcare workers at risk for infection.

While thorough cleaning and disinfection are essential to reduce environmental contamination, studies have shown that the bacteria can remain on surfaces in patient rooms even after manual cleaning. A number of factors may contribute to this problem, including the ineffectiveness of decontamination protocols, poor compliance with protocols, multiplanar/configurational surfaces, and the wide variety of surface materials found in healthcare settings. These factors point to the need for an automated system that can disinfect patient rooms and the surfaces of medical equipment through homogenous spraying, such as provided by the dry-mist hydrogen peroxide system. A further benefit of the dry-mist system is that it does not require the presence of a healthcare worker.

“Results collected after the use of this innovative technology [dry-mist hydrogen peroxide system] were very convincing, suggesting that a rigorous control procedure including an adapted cleaning and surface disinfecting protocol leads to rapid control of VRE transmission in hospitals.”

Table: Results of the *in vitro* experiment evaluating the efficacy of a dry-mist hydrogen peroxide decontamination system against VRE

Experiment	Results
<i>In vitro</i> experiment	>6.85 log reduction for <i>E. faecium</i> vanA >7.25 log reduction for <i>E. faecium</i> vanB

Conclusion: The authors concluded that the dry-mist hydrogen peroxide system has proven its efficacy in VRE reduction on artificially contaminated surfaces. They also mentioned that this system, in association with recommended practices, may lead to rapid control of VRE transmission in the hospital environment.

Source*: Roques, C. Improvement of Vancomycin-resistant *Enterococci* eradication in hospitals by combined barrier precautions and disinfection using an automatic dry mist system. *European Infectious Disease* 2010;4(1):63-5.

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