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# Monitoring the Survival and Spread of Resistant Microorganisms in the Hospital Environment

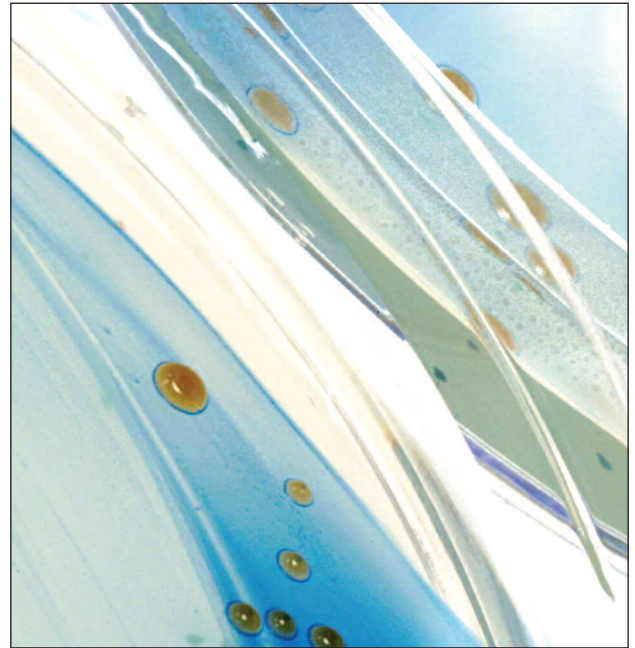


## The Client

The UK Department of Health

## The Problem

Recent reports have focussed on the fundamental need for effective hospital cleaning regimes across all hospital facilities. Audits by the Healthcare Commission have identified that standards of cleanliness in some hospitals could be improved. In addition, DH-NHS Estates Revised Guidance on Cleaning (2004) has acknowledged that, as a result of Trust budgetary constraints, cleaning standards 'were vulnerable to being driven down over an extended period until, in some cases, they reached unacceptable levels'. This may be of particular importance in the spread of MRSA and other antibiotic resistant microorganisms within the hospital environment, either by contact or dust deposition. It is possible that technologies exist, which could contribute to an improvement in hygiene standards within the hospital ward environment. This study was tasked with assessing existing (wet) disinfection methods, as well as those that might be more widely used, should their efficacy be confirmed.



## What we did

A major study was undertaken to assess the effectiveness of existing wet surface cleaning methods in controlling the spread of MRSA and other microorganism within the ward environment. Hospital work was undertaken in partnership with clinical scientists in a large West Midlands Trust, and recontamination of solid ward surfaces and the presence of bioaerosols in ward air were included in the sampling regime. Observations of physical activity on the ward, which might contribute to microbiological findings, were also made in order to link these aspects of the ward environment. HSL was also asked to evaluate commercially available vaporised hydrogen peroxide (VHP) and ozone fumigation technologies; work was initially undertaken in a 'mock' side room facility created in HSL's Controlled Air Chamber (CAC). Latterly, the same machines were applied to a real hospital side room environment in order to assess their usability and efficacy in a front line hospital situation. Because fumigation applications may offer an additional method of disinfection for ward 'deep cleaning' regimes or during outbreaks, the agreed suite of target organisms used in the CAC tests included pathogens such as MRSA, Clostridium difficile and Influenza virus.

## Outcome/Benefits

Data from HSL chamber tests have allowed us to make extensive interpretation on efficacy, usability and health and safety, when operating a range of fumigation machines. Data were obtained across four seasons for hard surface and airborne contamination levels on a busy MRSA cohort ward, and the re-colonization and observational data obtained provided an insight in to the efficacy of traditional cleaning and whether its benefits persisted.

It is likely that hygiene Policy decisions within the Department of Health may be influenced by the findings of this study, and these, in turn, may affect the future uptake of fumigation technologies within the health care sector.