

Case Study: Bio-decontamination of a three private hospitals in Singapore using hydrogen peroxide vapour

The Challenge

As the Severe Acute Respiratory Syndrome (SARS) epidemic worsened in Singapore, it became clear that hospitals were forming focal points for the spread of the virus. At the height of the crisis Government sources estimated that 87% of new infections were hospital acquired. Although little was known about the method of transmission, research indicated that SARS could survive outside its host for up to 6 days, thereby representing a serious risk to staff and patients who came into contact with potentially contaminated hospital surfaces.



RBDS Equipment in operation during the bio-decontamination of East Shore Hospital

In response to this problem our client, Parkway Healthcare Group, the largest private healthcare provider in Asia, sought to arrest the potential spread of the virus by bio-decontaminating risk areas of three hospitals.

Client Requirements

The client sought to bio-decontaminate eight partially occupied hospital wards, comprising 88 rooms of total volume 6700m³. It was essential that patients were not unduly inconvenienced or worried and that wards not only remained open, but retained some capacity for new admissions.

The Solution

BIOQUELL's rapid, residue-free Room Bio-decontamination Service (RBDS) utilises the microbicidal power of free radicals released by hydrogen peroxide vapour to bio-decontaminate rooms. The RBDS equipment distributes hydrogen peroxide vapour throughout the area, ensuring all surfaces are bio-decontaminated, before converting the gas to oxygen and water vapour.

Independent verification of the technology against extremely resilient organisms such as anthrax, 'superbugs' such as MRSA and a number of viruses allows BIOQUELL to be absolutely confident of its efficacy against the SARS virus.

Methodology

By working closely with hospital staff BIOQUELL was able to safely decontaminate the required 88 rooms in 16 days, remaining flexible and sensitive to patients needs throughout.

For the sake of efficiency BIOQUELL decontaminated 'blocks' of five or six

adjacent rooms at one time, the residue free nature of the technology allowing patients to be instantly moved into newly bio-decontaminated rooms. When blocks of rooms could not be made available BIOQUELL worked with hospital staff to find alternative solutions, moving the equipment to vacant areas in other wards, and even other hospitals. This flexibility was achieved through the project management skills of the BIOQUELL staff combined with frequent planning meetings with hospital managers; and not least by the light and portable nature of the equipment, which is designed to be handled by a single operator.

Gassing Cycle Validation

The efficacy (or effectiveness) of the gas was proven using ‘biological indicators.’ These highly resilient *Bacillus stearothermophilus* spores were placed in challenging locations during gassing and then subjected to ideal growth conditions in an incubator afterwards. None of the biological indicators grew, indicating that full bio-decontamination had been achieved in all rooms.

Conclusions and Feedback

BIOQUELL is confident that any SARS virus in the gassing zones was bio-deactivated – therefore negating the risk of SARS spreading from those areas and realising the main requirement of the client. Indeed, there have been no incidents of SARS in any of the three Parkway.

As an added benefit of the process, other environmentally associated hospital acquired pathogens (such as MRSA and VRE) were bio-deactivated, with the likely result of reducing hospital acquired-infection and all its associated costs. The implementation of a regular bio-decontamination programme would sustain this reduced re-infection level.

The publicity generated by the presence of BIOQUELL greatly contributed to restoring patient numbers, which had dwindled to a critical level as the public actively chose to avoid hospitals. This example demonstrates the financially compelling case for RBDS in private hospitals, where patients are in the position to choose other hospitals or simply stay away.

Parkway group have volunteered to act as a reference for the RBDS service. For details please contact BIOQUELL.



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