

BIOQUELL Micro News

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1. Recontamination following HPV on an ICU

A study from Birmingham Heartlands hospital investigated the rate of recontamination following Hydrogen Peroxide Vapour (HPV) decontamination on a 9-bed ICU. The ICU was sampled monthly for MRSA to provide baseline data, decontaminated using HPV and then re-sampled after 24 hours, 48 hours and then weekly for 8 weeks. MRSA was cultured before cleaning, after cleaning but not after HPV and total bacterial counts showed a similar trend. Recontamination with MRSA returned to pre-cleaning levels within 24 hours, but the next two environmental screens at 48 hours and 1 week were inexplicably virtually negative. Total bacterial counts returned to pre-cleaning levels one week after HPV. MRSA positive patients were re-admitted immediately after HPV and the molecular types of the environmental MRSA generally matched the types of the patients on the ICU, so the patients were almost certainly the source of the recontamination. Healthcare worker hand contamination was not monitored at any stage so cannot be ruled out as a confounding factor. Careful post-process patient management is necessary to retain the benefit of HPV decontamination in open plan hospital units (Hardy et al., 2007).

2. RT-PCR is not suitable for detecting MRSA on hospital surfaces

There may be some circumstances in which a quick answer on whether widespread environmental contamination has occurred in the healthcare setting may be helpful, for example in the case of an outbreak to determine whether special decontamination measures are warranted. Real-time (RT)-PCR provides the facility for a positive or negative MRSA result from clinical specimens in a matter of hours, but the system has not been tested for environmental swabs. In a study by BIOQUELL and the Hospital of St. Raphael, a Yale-university affiliated US hospital, the sensitivity of RT-PCR, compared with culture, for the detection of MRSA on 150 environmental surfaces was 92.5%, and the specificity was 51.4%. The poor specificity may well be explained by the detection of DNA from dead MRSA. Because of poor specificity, RT-PCR is not suitable for the detection of MRSA on hospital surfaces (Otter et al., 2007).

3. Bacteriophage therapy for MRSA: cheaper than antibiotics?

There is an increasing body of literature, beginning in the pre-antibiotic era, to suggest that bacteriophage (viruses that destroy bacteria) may be useful for the treatment of bacterial infections. A study from a journal not often included in Micro News, *Postępy higieny i medycyny doświadczalnej* (a Polish medical journal), reports that the cost of a typical course of bacteriophage therapy (£90 or \$175) in an experimental treatment centre is in the region of 10-fold less than a comparable course of antibiotics for the treatment of chronic staphylococcal infection (Miedzybrodzki et al., 2007). Further

research is required to determine whether bacteriophage therapy fulfils its promise.

4. Multiple interventions to reduce %MRSA

A 7-year Scottish study published in the *International Journal of Antimicrobial Agents* reports the impact of multiple interventions on the proportion of methicillin resistance amongst hospital *S. aureus* (%MRSA) (Mahamat et al., 2007). The study chose comparable intervention and control hospitals, although these did not seem to be particularly well-matched in terms of case-mix. Alcohol gel was introduced at both hospitals and the other interventions, including environmental sampling and ward-based feedback, terminal bleach cleaning following the discharge of MRSA-positive patients, admission and discharge screening and environmental auditing were implemented in the intervention hospital only. Using interrupted time-series analysis, alcohol hand gel, environmental sampling, terminal bleach cleaning and admission screening were all significantly associated with a decrease in the %MRSA whereas discharge screening and environmental auditing did not. Increases in the usage of certain antibiotics were associated with increases in %MRSA. This study was concerned with 'reversing the trend' of methicillin resistance in *S. aureus* rather than patient infections per se and it is always difficult to assess the impact of multiple interventions. Despite these limitations, the study shows that the trend of increasing methicillin resistance in *S. aureus* is, at least partially, reversible!

5. And finally...the dangers of having green fingers!

A patient with a central intravascular device visited a botanical garden and took an inadvertent shower in an automatic watering jet-spray in one of the greenhouses as well as handling exotic plants. His intravenous device became infected with *Pantoea agglomerans* shortly after visiting the gardens and this organism, which is most commonly associated with plants and agriculture, was thought to have been acquired during his visit to the gardens (Russell et al., 2007)!

References

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