Identification of MRSA colonised patients

In this study, the authors wanted to identify the proportion of hospital patients that were found to be colonised with MRSA by clinical microbiological cultures alone. In the United States, many hospitals do not perform active surveillance cultures, nor do they have screening guidelines, continuing to rely only on clinical specimen cultures to identify MRSA colonised patients.

Patients were swabbed on admission to the hospital; the number of clinical specimens that were positive for MRSA was compared with the number of positive screening results. Patients found to be colonised were placed under contact precautions. Results showed 437 patients were colonised with MRSA. The number of clinical specimen cultures positive for MRSA was 98 from 66 patients. The clinical specimen cultures identified only 15% of MRSA-colonised patients, therefore failing to find 85%.

Relying on clinical specimen cultures to detect MRSA-colonised patients was found to be a highly inadequate strategy, failing to identify a significant proportion of colonised patients. Many studies have demonstrated a decrease in transmission of MRSA from colonised patients through active surveillance cultures and using contact precautions instead of standard precautions. The authors concluded that so long as hospitals in the US continue to rely on clinical specimen cultures and standard precautions to manage MRSA, the healthcare associated MRSA infection rate will continue to increase.

Salgado C & Farr B. What proportion of hospital patients colonized with methicillin-resistant Staphylococcus aureus are identified by clinical microbiological cultures? Infect Control Hosp Epidemiol 2006; 27:116-121.

Routine decontamination of endoscopes: efficacy and risk factors for failure

In this Australian study, the authors sought to evaluate the survival of microbes on endoscopes after routine cleaning and decontamination in a busy endoscopy centre. There have been few attempts to assess the efficacy of infection control guidelines for endoscope reprocessing, to validate recommendations about laboratory monitoring of decontamination procedures, or pinpoint the factors leading to failure.

There were 2120 patients enrolled in the study. Patient demographics, procedural information and diagnoses were collected. 500 patients were followed up by telephone one month after their procedure. Samples were obtained by flushing the internal surface of the endoscope after the decontamination cycle was completed. The samples were cultured aerobically and anaerobically. For the endoscopes used on 14 HBV and 48 HCV viraemic patients, the samples underwent nucleic acid detection.

Generally, the numbers of bacteria cultured from the endoscopes were low (<10 organisms/mL) and the type of bacteria were found to be those commonly found in the nasopharynx and gut. Only one sample was positive for HCV RNA by PCR. The main finding was a significant association between the number of times an endoscope was found to be contaminated and its frequency of use. This finding has been interpreted as evidence of bacterial biofilm build-up on the surface of the endoscope channels which is difficult to remove. Overall, the findings suggest routine decontamination of endoscopes is effective.


Promoting behaviour change in health care workers

In this commentary the authors suggest a new approach to behaviour change and define four phases of implementation to be considered by the reader. This approach has been prompted by what the authors see as a failure of traditional methods of trying to influence behaviour, such as didactic teaching methods. A review of published data on physicians’ practices showed that education is most effective when it is social, interactive and multimodal in nature.

They believe this may be largely due to the social structure in which we find ourselves; one in which the ‘absolute’ is rejected and ‘truth’ is a constantly changing state, influenced by our experience and interpretation, often resulting in a rejection of institutional authority. They cite the increase in the popularity of complementary and alternative medicine, and the anti-vaccination lobby as examples of this change.

It is recognised that to promote and improve the safety of patients and staff, health care workers’ behaviour (HCWs) may need to change. This article suggests that we can no longer expect HCWs to accept scientific evidence as the sole source of justification for this change, and in fact they may be quite distrustful of ‘bio-medical rationalities’. The authors use this to explain why HCWs are often slow to participate in influenza immunisation programs, despite overwhelming scientific evidence that it will protect both themselves and their patients. So what does this all mean for infection control professionals?
The authors suggest infection control professionals develop a socioethical approach to educating HCWs when behaviour change is the desired outcome. It is suggested that this be done in four stages. The first, developing a ‘community of practice’, involves bringing together groups of individuals informally united by shared roles who come together to learn and improve their practice. These groups are different from a conventional multidisciplinary team in that they are self-selecting, self-organising and self-directing.

The second stage is to combine the concepts of logic, credibility and values to create an approach that uses all three of these to persuade the HCW to change their practice. This recognises that individuals need to be convinced in ways other than just scientific argument. Personal experience is valued very highly by most HCWs, and can often override the most compelling scientific evidence.

Thirdly, the authors discuss the concept of praxis, referring to action or practice that is based in a moral and social context; what we may call professional ethics. At this stage it is suggested infection control professionals provide ethical leadership by appealing to the HCWs’ responsibility to prevent transmission of infection.

Lastly, the fourth stage of the process involves moving from a didactic, paternalistic approach to behavioural issues, to one of open dialogue and acceptance of HCWs’ views, interpretations and solutions as valid and valuable. Infection control professionals are encouraged to replace traditional ‘education’ with ‘social marketing’, where an idea is ‘sold’. The authors feel this is the optimal method of effecting behaviour change in our HCWs.

This article is at times a difficult read, but one well worth the effort to explore an aspect of infection control practice that is seldom thoughtfully explored.


High filtration masks and respiratory protection

The protection level of high filtration (N95) respirators is assessed in standard tests using non-biologic, mechanically generated particles, yet they are often used to provide protection against airborne pathogens such as respiratory viruses and mycobacteria. There is a lack of direct measurement data on the efficiency of respirators and surgical masks against aerosolised viral particles.

This article by Balazy et al. attempts to measure the protection factor of two types of N95 respirators and two types of surgical masks against respiratory pathogens using the bacteriophage MS2 as a model agent. This virus is non-pathogenic to humans and has virions in the size range 40-80nm. The experimental set-up involved the application of each mask or respirator to the surface of a manikin and the edges were sealed against leaks using silicon. The penetration of virus was measured at flow rates of 30 L/min (simulating inhalation under light workload) and 85 L/min (simulating inhalation at heavy workload).

Results showed that for one of the N95 respirators, the penetration of viral particles was below 5% for both flow rates, whereas for the other brand, the penetration was below 5% for the lower flow rate, but peaked at 5.6% for particles in the size range 40-80nm at the higher flow rate. Results for the two surgical masks varied markedly, with one mask having a maximum penetration of approximately 20% and the other at over 80%.

It was noted that the filtration characteristics of the N95 masks can differ over time, since part of the filtration effect is achieved by the electrical charge on the filter fibres, which tends to degrade over duration of use. However, once the filter becomes loaded with particles, it then behaves like a mechanical filter. The authors also compared the penetration results using the MS2 virions with previous experiments using sodium chloride particles, as in the standard tests. They found good agreement overall between the two data sets.


Expressions of interest: Assistant Editors AIC

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The journal has both a national and international profile and is indexed with Cinahl, AMI and ICI. There are plans for indexation with Medline over the next 12 months.

Further information, including position descriptions, are available by contacting the AICA secretariat at: Australian Infection Control Association GPO Box 3254, Brisbane QLD 4001 E-mail: aica@ozemail.com.au