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## Journal Watch

*Journal Watch* presents a brief description of articles recently published in other journals and thought to be of relevance or interest to the AIC readership. Readers are encouraged to refer to the full article for complete information.

### The business case for infection control

Nosocomial infections are acknowledged to consume substantial health care resources, result in productivity loss and cause pain and suffering to patients. A programme that reduces rates of infection will incur a cost in terms of staff time and other resources but, for every infection averted, substantial benefits will accrue.

This article by Dunagan *et al.* develops this argument and achieves a number of ends. The fundamental aspects of cost and benefit estimation are reviewed, with the reader guided through the issues by reference to the 'costs of poor quality'. The implication is that an investment in 'good quality' would more than pay for itself. The article also explains why some

potential cost savings may not be realised in practice. A number of financial and economic concepts are defined so the reader may have a better grasp of technical language when it comes to putting together a business case for any investment in prevention activities.

This is an excellent overview article that sets the issues in context, offers useful definitions of financial and economic jargon and makes the economic arguments transparent and accessible for a wider audience. This article provides useful background information for those interested in pursuing a financial or economic analysis of infection control procedures.

*Dunagan WC, Murphy DM, Hollenbeak CS & Miller SB. Making the business case for infection control: pitfalls and opportunities. Am J Infect Cont* 2002; 30:86-92.

## Rapid detection of MRSA from clinical specimens

In order to facilitate MRSA control programmes where screening for carriage is an integral part of the strategy, it is important to identify carriers as rapidly as possible. As most culture-based techniques take 48-72 hours to produce a definitive result, laboratories are moving towards the application of polymerase chain reaction (PCR) techniques to reduce the delay.

This article by Jonas *et al.* describes one such application of PCR which involves the simultaneous recognition of two genes, *mecA* and *femB*, detecting both methicillin resistance and a *S. aureus* specific product in one step. This duplex PCR is preceded by an enrichment step in broth containing oxacillin. The PCR method identified 36 MRSA-positive samples from 439 routine screening swabs, in concordance with the results obtained using conventional culture-based methods. The PCR method also appears to be able to eliminate false positives from the possible simultaneous detection of sensitive *S. aureus* and methicillin-resistant coagulase-negative staphylococci.

*Jonas D, Speck M, Daschner FD & Grundmann H. Rapid PCR-based identification of methicillin-resistant Staphylococcus aureus from screening swabs. J Clin Microbiol 2002; 40:1821-23.*

## Duration of colonisation with VRE

This study by Byers *et al.*, conducted at a teaching hospital in the USA, retrospectively assessed a cohort of 116 patients colonised with vancomycin-resistant enterococci (VRE) for faecal carriage for up to 2 years following initial isolation of the organism. Follow-up perirectal cultures were collected in inpatient and outpatient settings, at least 1 week apart, when patients were not receiving antibiotics with activity against VRE. A total of 423 follow-up cultures were collected.

The first follow-up culture, collected a mean of 125 days after the initial positive isolate, was negative in 74 patients (64%). After one negative follow-up culture, the next one was negative in 80 of 87 patients (92%). After two negative cultures, 69 (95%) of 73 patients remained culture-negative. After three sequential negative cultures, the fourth culture was negative in 35 (95%) of 37 patients. Twenty two patients (19%) remained persistently colonised for more than 100 days. Two patients relapsed after three consecutive negative cultures, confirmed as the same strain as the initial isolate by pulsed field gel electrophoresis typing. The risk of remaining positive on re-culture was associated with time spent in hospital, days in intensive care and antibiotic administration.

The data presented support the current CDC recommendation for three consecutive negative screening cultures collected at least 1 week apart prior to removing patients from VRE isolation. However, reappearance of VRE after antibiotic administration did occur. It is possible that carriage of VRE is not completely eliminated in some patients, but reduced to an undetectable level. Therefore, re-screening after antibiotic administration is recommended.

*Byers KE, Anglim AM, Anneski CJ & Farr BM. Duration of colonization with vancomycin-resistant Enterococcus. Infect Cont Hosp Epid 2002; 23:207-211.*

## Marketing hand hygiene in hospitals

This paper by Rao *et al.* describes the successful use of a marketing strategy to improve compliance with hand hygiene in a 600 bed teaching hospital in the UK. The article describes very clearly the steps that were taken by the infection control team to identify the problem, the analysis of their strengths, weaknesses, opportunities and threats, the implementation strategy and the problems encountered along the way.

The authors describe the ways in which these difficulties were overcome. Alcohol-based hand gel was promoted for use at every patient bedside and an innovative education campaign was employed. Active endorsement by the hospital administration raised the profile of infection control and assisted the implementation. Marketing methods were used to 'sell' hand hygiene to health care workers.

Post-implementation surveillance of hospital-acquired MRSA rates and the incidence of *C. difficile* associated diarrhoea demonstrated a consistent reduction in both measures over the 12 months following introduction of alcohol-based gel and the education campaign. This paper has some good ideas for any infection control team struggling with the issue of hand hygiene compliance.

*Rao GG, Jeanes A, Osman M, Aylott C & Green J. Marketing hand hygiene in hospitals – a case study. J Hosp Infect 2002; 50:42-47.*

## Outcomes of VRE bacteraemia

This article describes a case control study of bacteraemia caused by vancomycin-resistant and vancomycin-sensitive enterococci (VRE and VSE).

The 53 patients in each group were matched for age, APACHE II score, hospital unit and length of stay (LOS) prior to onset of bacteraemia. The study covered the period 1996-2000 in a large tertiary referral Detroit hospital. The VRE

group consisted mostly of *E. faecium* isolates whereas the VSE group mostly consisted of *E. faecalis*. Inappropriate antibiotic use was significantly more common in the VRE group. The major significant differences between the two groups (VRE vs VSE): were:

	Odds ratio	95% confidence interval
• Crude mortality odds ratio	4.0	1.2-13.3
• Infection related mortality	5.2	1.4-20.0
• Clinical failure at 7 days	4.6	1.2-17.3
• Clinical failure overall	4.3	1.3-14.5

LOS after bacteraemia was diagnosed at 22.7+/-1.88 days (VRE) versus 15.9+/-1.7 days (VSE) (p=0.006).

The authors conclude that, in their study, vancomycin resistance in enterococcal bacteraemia adversely affected outcome.

*Lodise TP, McKinnon PS, Tam VH & Rybak MJ. Clinical outcomes for patients with bacteremia caused by vancomycin-resistant enterococcus in a level 1 trauma centre. Clin Infect Dis 2002; 34: 922-9.*

## CDC targets multi-resistant organisms

In an effort to curb the growing number of infections in health care settings due to antibiotic resistant organisms, the US Centers for Disease Control has launched a campaign to prevent antimicrobial resistance. The four goals of the campaign are: preventing infection; effectively diagnosing and treating infections; using antimicrobial drugs wisely; and preventing transmission.

The CDC has developed a 12 step programme of practices based on existing evidence and guidelines to help clinicians achieve the four goals. These practices involve encouraging immunisation of susceptible populations, early removal of catheters, targeting the pathogen, seeking treatment advice from experts, practising antimicrobial control, using local data, treating infection rather than colonisation or contamination, knowing when to use vancomycin, stopping treatment when infection is cured or ruled out, isolating the pathogen and breaking the chain of transmission. A laminated pocket card highlighting the recommended practices has been produced. Initially, the programme is targeted towards clinicians caring for hospitalised adults; future education programmes will target clinicians caring for a range of patients vulnerable to infection.

*Stephenson J. CDC campaign targets antimicrobial resistance in hospitals. JAMA May 8 2002; 287:18. Free full text available at <<http://jama.ama-assn.org/issues/v287n18/toc.html>>.*

## Alcohol-based hand rinses better than gels

Alcohol-based hand hygiene products are widely used in Europe if hands are not visibly dirty, and have been shown to increase compliance with hand hygiene and reduce the infection rate.

Kramer *et al.* report a study comparing the efficacy of alcohol-based hand rinses and alcohol-based gels with the European standards for antimicrobial efficacy of alcohol-based hand hygiene products. Ten brands of alcohol-based gels and four brands of hand rinses were tested under practical conditions for their adherence to the established standards.

The results showed that a 30 second hand rub using an alcohol-based gel containing up to 70% (v/v) alcohol was significantly less effective than application of the reference disinfectant; whereas most alcohol-based hand rinses met the European standard in less than 30 seconds. The authors note that, in practice, the average application time of alcohol-based hand hygiene products is between 8-15 seconds and unlikely to exceed 30 seconds. Therefore, they recommend use of alcohol-based hand rinse products in health care settings because of their greater antimicrobial efficacy in a short period of time compared with the gel products currently available.

*Kramer A, Rudolph P & Pittet D. Limited efficacy of alcohol-based hand gels. Lancet Infect Dis 2002; 359:1498-90.*

## Outbreak management guidelines: small round structured viruses

The Public Health Laboratory Service has previously published recommendations for the management of outbreaks due to small round structured viruses (SRSV) and Norwalk-like viruses (NLV) in the *Journal of Hospital Infection* (Chadwick *et al.*, 2000). The full text of these guidelines is now available free through the *Journal of Hospital Infection* website. This report reviews the epidemiological aspects of SRSV/NLV infection and outlines the underlying principles for outbreak management. The guidelines will be of use in both hospital and community based institutional settings.

*Chadwick PR, Beards G, Brown D, Caul EO, Cheesbrough J, Clarke I et al. Management of hospital outbreaks of gastroenteritis due to small round structured viruses. J Hosp Infect 2000; 45:1-10. Free text available at: <<http://www.harcourt-international.com/journals/jhin>>.*