Endemic MRSA management: is screening useful?

Denis Spellman

Head of Microbiology and Deputy Director of Infectious Diseases, The Alfred VIC
Tel: (03) 9076 8491
Fax: (03) 9076 2451
Email: D.Spellman@alfred.org.au

Endemic hospital methicillin-resistant Staphylococcus aureus (MRSA) remains a cause of significant morbidity and mortality. However, there is no universal consensus on optimal control measures. MRSA screening has been reported as a successful intervention but generally in association with a raft of other measures. Improved hand hygiene, antibiotic stewardship and the availability of isolation facilities are considered to be basic components in MRSA control. Targeted screening of high risk patients is likely to be useful for MRSA control but only if results are available in a timely manner and with resources that allow appropriate response to positive results.

Much of the MRSA control literature describes interventions in the outbreak setting. This experience may not be able to be directly generalised to the more common MRSA endemic setting. The main arguments for screening patients are to inform hospital epidemiology and to direct infection prevention strategies. Such screening is often used as a part of a ‘search and isolate’ or ‘search and destroy’ strategy with contact precautions and attempted decolonisation used for patients found to be MRSA positive. Contact isolation of MRSA patients is considered important – one study, although in an outbreak rather than an endemic setting, reported that the rate of MRSA transmission was 16 times higher for a carrier not in contact isolation compared with those in contact isolation. However, although there are reports of MRSA control resulting from a series of co-interventions which included MRSA screening, there are also reports of MRSA control without MRSA screening.

Within Australian hospitals there is wide variation in screening practices. Screening may be passive or active, targeted or universal. Passive surveillance using results of clinical specimens will only identify a minority of MRSA colonised and infected patients – 17.8% in one study. Active screening with patients considered at high risk, e.g. intensive care patients, has been associated with decrease in MRSA disease.

References


Ronan Murray is an Infectious Diseases Physician and Clinical Microbiologist, Head of the Infectious Diseases Service at Royal Perth Hospital, WA, and Adjunct Senior Lecturer in Microbiology at the University of Western Australia. His research interests include staphylococcal infection, the development of rapid tests in the diagnosis and management of severe infection, and refugee health.
Universal surveillance of all patient admissions has infrequently been reported. Two recent studies have generated conflicting results. In a multi-hospital study 1, MRSA screening of all ICU admissions and then of all hospital admissions in consecutive time periods was undertaken; these two time periods were then compared with baseline. Positive patients underwent topical decolonisation therapy and were managed with contact isolation including private rooms, cohorting, gown and glove for all room entry and dedicated room equipment. The primary outcome measure was the aggregate hospital-associated MRSA disease per 10,000 patient days – this figure fell from 8.9 at baseline, to 7.4 with ICU admission surveillance and then a statistically significant reduction to 3.9 with universal admission surveillance.

In the second study 2, admission MRSA screening (using a rapid PCR method) combined with standard and contact precautions was compared with the infection control precautions alone. In this study, admission MRSA screening was not associated with a reduction in hospital-acquired MRSA infection. This second study questions the value of universal MRSA screening in the setting of good compliance with contact and standard infection control precautions.

For campaigns to reduce MRSA to be successful, a number of co-interventions are likely to be necessary. The decision to undertake screening needs to be informed by individual hospital epidemiology, the institution’s laboratory facilities, current infection control strategies and the ability to respond appropriately to a positive result in a timely manner. Such a programme often requires high level commitment within the institution.

Patient screening may be undertaken from one or more anatomical sites. Nose cultures will identify most MRSA carriers, although swabs of multiple sites such as nose, throat, axilla and groin, and of any accompanying wounds, have greater sensitivity. The question to screen also includes the decision of whether to use traditional culture measures, more rapid chromogenic agars or even more rapid molecular methods. Recent availability and increased use of rapid turnaround time PCR methods may have impacted on recent studies of the effectiveness of MRSA screening 5, 6.

Different expert bodies, some individual State governments and some State jurisdictions have taken a stand concerning MRSA screening. The expert group, the Healthcare Infection Control Practices Advisory Committee (HICPAC) 8 now recommends screening high risk patients, with this recommendation given the status of category 1B. Within Victoria, the Start Clean Victorian Infection Control Strategy 2007-11 includes resources for patient screening using rapid molecular technology 9. Within the United States, some State legislatures have recently mandated MRSA surveillance.

In view of the conflicting results from published studies and the likelihood of differing MRSA epidemiology at different institutions, it is naïve to consider that, for MRSA control, ‘one strategy fits all’. Importantly, strategies, including MRSA screening, need ongoing rigorous evaluation at the local level with feedback into, and the ability to direct, specific infection control strategies.

References