Survey of MRSA screening policy and laboratory practice in Australia and New Zealand acute care hospitals

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Abstract

Recently published international consensus documents have attempted to provide guidance for infection control professionals in the often contentious area of active surveillance for methicillin-resistant *Staphylococcus aureus* (MRSA). As well as hospital-based policies in this area, there are also national and state-based guidelines in both Australia and New Zealand.

In early 2007 a survey of infection control professionals in Australia and New Zealand was conducted to evaluate current local practice in the acute care setting and compare this with published recommendations. Questions were relevant only to a non-outbreak setting.

A total of 60 respondents from 57 institutions from all states and territories in Australia and New Zealand completed the survey.

There was wide variation in the reported use of active surveillance for MRSA, although 80% of respondents reported routine screening of at least some patient groups. The commonest patient groups targeted by active surveillance programs were those previously known to be MRSA positive (65%), transfers from other healthcare or residential care facilities (50%), ICU patients (42%) and prior to high-risk surgery (37%). Most laboratories used direct plating for culture of screening specimens and sampled multiple body sites in addition to nasal swabs.

This survey provides insight into current practice in this area in Australasia and should inform discussion regarding possible review of existing recommendations.

Introduction

As in other parts of the world, in Australia and New Zealand MRSA is acknowledged as a significant challenge for infection control professionals. In 2005, 32% of *Staphylococcus aureus* isolates causing infection >48 hours after hospitalisation were methicillin-resistant in a group of Australian hospitals [1]. How best to minimise the additional burden of morbidity, mortality, cost and bed occupancy following infections with this bacteria is less clear-cut, and current expert recommendations differ [2-6]. With clinical microbiological cultures failing to identify up to 85% of colonised patients, active surveillance to detect colonised patients that are the reservoir for this pathogen is an important consideration [7]. Implicit in any discussion regarding the use of active surveillance is the assumption that this intervention cannot be regarded in isolation, and requires integration with other infection control practices including the use of standard and additional precautions, infrastructure support and outcome monitoring [3]. Laboratory aspects of conducting and evaluating an active surveillance program have been recently described [3,8].

In an attempt to provide guidance for those involved in MRSA management locally, guidelines were produced by the Australian Infection Control Association (AICA) National Advisory Board and the Australian Safety and Quality Council in 2004 (available at www.hicsiganz.org). These define risk groups, screening sites and laboratory methods. In light of the production of other expert guidelines and recommendations, evolving MRSA epidemiology and advances in laboratory techniques since 2004, it has been proposed that these guidelines should be reviewed. A survey was done to assess the current MRSA active surveillance practices in Australia and New Zealand, with the expectation that this would form part of this review.

Methods

Thirteen questions were devised and placed on an online survey site with the current Australian recommendations. Subscribers to both the AICA list server and the OzBug list server were asked to complete the survey and provide basic identifying data. Duplicate responses from the same institution were removed. Responses were not subsequently verified.

Results

The survey was completed by 60 respondents from 57 healthcare organisations. Responses were received from all states and territories in Australia, five in New Zealand, and from institutions of a range of sizes (Table 1).

MRSA was self-reported as an endemic nosocomical pathogen by 18 hospitals (32%). Twenty nine (50%) regarded community aquired MRSA as locally prevalent. These were subjective assessments and no definitions of endemicity or prevalence was included in the survey.

The majority of organisations (80%) represented in the survey routinely perform some form of hospital-wide active surveillance for MRSA (Table 2). In general these strategies aim to screen patient groups judged to be at higher risk of being colonised with MRSA on admission to hospital. The 2004 national guideline recommends as a minimum that all patients with chronic wounds or indwelling medical devices should be screened.

Table 1. Size of hospital represented by survey respondents.

Number of beds	Responses
<100 beds	12
100-400 beds	24
>400 beds	21

Table 2. The use of hospital-wide screening strategies.

Admitted patient group	Number screening
Hospital-wide admission screening for all patients with chronic wounds or indwelling medical devices	15 (26%)
All transfers from all other acute or long term care facilities	22 (39%)
All transfers from other acute or long term care facilities identified as being at high risk (eg all transfers from a certain geographic location)	28 (50%)
All readmissions after recent prolonged hospital inpatient care	12 (21%)
All patients on admission	1 (2%)
Admission of patients previously known to be MRSA positive (colonised or infected)	37 (65%)
No hospital-wide strategy	10 (18%)

Another risk-based selective screening strategy is to target specific clinical specialties. These may be clinical specialties known to have higher rates of MRSA colonisation, or may include patients at higher risk of developing a severe infection if they are colonised. The 2004 document recommends as a minimum that specialised units including ICU screen all patients on admission, then weekly or fortnightly thereafter. NHS trusts in the UK have been instructed to implement pre-operative screening in certain surgical specialties on admission to critical care units, and to regularly screen patients on dialysis [6].

Of responding organisations in this survey, 32 (56%) screen patients from specified clinical specialties. The commonest target group selected were those in ICUs (24, 42%), prior to specific types of surgery (21, 37%) and renal patients (14, 25%). Haematology/oncology and geriatrics patients are screened less commonly (4, 7%).

The current Australian guidelines recommend as a minimum to sample the nose and wounds, consistent with other guidelines [3,6]. While the nares were always cultured, various other combinations of sites were reported as routinely screened in this survey (Table 3). In addition, at least seven respondents routinely sample indwelling devices. A number of sites reported varying sampling sites dependent on patient and MRSA strain characteristics. Only two hospitals sampled the nares only, although this may become more common with increased use of more sensitive molecular detection methods [8].

While a Scottish study recently recommended the use of enrichment broth as the most cost-effective method for laboratory detection of MRSA from screening specimens based on mathematical and economic modelling [9], the majority of respondents to this survey reported using direct plating without enrichment. Eight local organisations reported routinely using enrichment broth, and two reported using molecular methods. Others were actively investigating the latter. Nine organisations reported relying on clinical specimens as the sole source of MRSA detection.

Replies from Queensland, Western Australia, South Australia, New South Wales and New Zealand reported the existence of relevant guidelines at a jurisdictional level. Only New South Wales appears to be looking to mandate such practices. We did not ascertain whether there was any audit process of compliance with policy recommendations.

Table 3. Sites sampled for routine active surveillance cultures.

Sites screened	Responses
Nose	2
Nose + wounds if present	13
Nose + perirectal / rectal	2
Nose + wounds + perirectal / rectal	6
Nose + wounds + other (eg axilla, throat)	25

Discussion

Multiple reviews of the evidence underlying recommendations and practice have been published recently [3,5,10]. All include recommendations regarding the use of active surveillance for MRSA as part of a MRSA control program. However, there are differences in the approaches taken, particularly as to whether active surveillance cultures should be universally adopted or not, with ongoing debate particularly in North America [4].

There are obvious limitations in the evidence supporting the use of active surveillance cultures to control MRSA, making definitive standard recommendations difficult. These limitations in part reflect the fact that many studies are observations of real-life practice, conducted in single institutions as part of multiple interventions, and without well-established outcome data or financial support. Marked variation in patient case mix, institutional design, other practices such as hand hygiene and cleaning, and background MRSA epidemiology between hospitals also limit the ability to generalise study findings and recommendations. Mathematical models have been increasingly used to overcome some of these issues and can provide useful insights [9,11,12].

The optimum use of active surveillance is likely to remain contentious, and the variation in practice revealed by this survey reflects this. The wide variation in MRSA epidemiology and resources and the jurisdictional complexity within Australia may also mean that a simplistic 'one-size-fits-all' approach is neither practical or appropriate. A tiered approach more akin to the HICPAC guidelines may be more feasible to use as a minimum standard in Australasian hospitals without established active surveilance programs [3].

What is clear is that this issue is not going to go away, and is likely to be further complicated if the rise of MRSA in the community continues. There is growing momentum for increasing the use of active surveillance for MRSA as part of a comprehensive control strategy in Europe and North America. Relevant drivers for this change include the increasing evidence for efficacy and cost-effectiveness of active surveillance, but also the availability of new commercial tests for rapid MRSA detection and subsequent interest of industry, political pressure including patient advocacy, active promotion of patient safety and quality principles into hospital practice (see '5 Million Lives' campaign material at www.ihi.org), and medico-legal factors [8]. Legislation is pending in a number of US states to mandate hospitals to perform active surveillance for MRSA [13]. Increasing uptake of universal screening using rapid detection is likely to add further impetus. It seems likely that in the future, at least in North America, the onus will be on hospitals to justify why they **are not** performing active surveillance cultures for MRSA as part of their control strategy.

Therefore, it is incumbent upon those involved in Australasian infection control practice to review their own use of active surveillance for MRSA. This survey may provide a basis for reviewing and developing consensus guidelines that are applicable to the Australasian setting and integrate active surveillance for MRSA into the context of a program of interventions. Incorporating better monitoring and outcome measures for MRSA is likely to be key in evaluating the efficacy of various prevention and control strategies including active surveillance and hence, optimally direct scarce resources.

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