

## LETTERS TO THE EDITOR

## Methicillin-Resistant *Staphylococcus aureus*, Public Concern, and Legislative Mandates

*To the Editor*—The recent position statement from the Society for Healthcare Epidemiology of America (SHEA) and the Association for Professionals in Infection Control and Epidemiology (APIC) regarding current trends towards regulated mandates for control of methicillin-resistant *Staphylococcus aureus* (MRSA) is well thought and articulated.<sup>1</sup> The call to develop more encompassing and comprehensive approaches for MRSA control is a critical conclusion. Whereas the legislation and its technical consequences may at first draw the most attention, it is the main thrust of such action that may be lost in the plethora of discussions that arise.

That MRSA is a major nosocomial pathogen in North America is not new.<sup>2</sup> The epidemic and consequences of community-acquired MRSA have more recently drawn increased attention from a lay perspective. It is becoming apparent that the increasing burden of MRSA infection, whether hospital-acquired or community-acquired, is being associated with rising mortality due to MRSA infection.<sup>3</sup> Proportionately, the costs of infection and its containment continue to escalate.<sup>4</sup> Whereas the public is less likely to recognize an infection that predominantly occurs in institutions, it is more likely to respond when seemingly healthy individuals succumb to serious and dramatic consequences of infection: a central nervous system MRSA infection after clean neurosurgery, death of a newborn because of MRSA sepsis, or a series of major boils and cellulitides among healthy athletes, are a few examples.

The legislated attempts to enhance MRSA control by elected officials reflects both a sense of urgency and a sense of futility regarding the existing circumstances. They are a call to action for a problem that has long been festering, despite decades of knowledge and scientific publication. Does the public not have a right to activate duly elected representatives to improve the human condition? If infection control staff and public health officials were selected by democratic election, would the public choose the status quo, given their perception of MRSA infection?

Use of public policy to control infection is not new. The obligation to notify public health authorities about certain diseases, public health interventions regarding sexually transmitted diseases, historic routine screening at hospital admission for syphilis, and routine screening for various infections during pregnancy are but a few such time-honored interventions. In the United Kingdom, the control of MRSA has attracted considerable political attention, to the point that it has entered national health policy and debate within legislative assemblies.<sup>5</sup>

Even if proposed state legislation never comes to be

adopted or enforced, the message from the public, through its elected officials, is clear. The public aspires to better control of MRSA and improved outcomes. It wishes that the currently fractionated approaches would become cohesive so that a major gain in public safety is realized. It is sending a message to unelected medical staff and administrators and to unelected public health officials for them to move beyond current levels of activism. As a potential benefit to health care personnel, a public call to control MRSA may also be viewed as a public acknowledgement that use of additional resources may be acceptable to achieve that goal. The true societal impact of MRSA infection may go beyond the eye of public perception but not beyond the public's sense that change is long overdue.

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## Occupational Exposures to Bloodborne Pathogens in Smaller Hospitals

*To the Editor*—In 2004, the Victorian Hospital Acquired Infection Surveillance System (VICNISS) Coordinating Centre

TABLE. Rates of Occupational Exposure Involving Acute-Care Inpatients at Smaller Hospitals in Victoria, Australia

Exposure type, hospital category	No. of participating hospitals	No. of acute-care occupational exposures	No. of occupied bed-days	Rate <sup>a</sup> (95% CI)
Parenteral occupational exposure				
Statewide	89	199	568,619	3.5 (3.0-4.0)
Small	54	9	124,126	0.7 (0.3-1.4)
Medium	24	59	215,818	2.7 (2.1-3.5)
Large	11	131	228,675	5.7 (4.8-6.8)
Nonparenteral occupational exposure				
Statewide	89	52	568,619	0.9 (0.7-1.2)
Small	54	4	124,126	0.3 (0.1-0.8)
Medium	24	17	215,818	0.8 (0.5-1.3)
Large	11	31	228,675	1.4 (0.9-1.9)

NOTE. A smaller hospital had <100 acute-care beds. The group of smaller hospitals was further subdivided into small (1-14 acute-care beds), medium (15-49 acute-care beds), and large (50-99 acute-care beds) hospitals. The table does not include information on 2 exposures that resulted from human bites. CI, confidence interval.

<sup>a</sup> No. of acute-care occupational exposures per 10,000 acute-care occupied bed-days.

established a surveillance program for smaller hospitals (those with fewer than 100 acute-care beds) located across the state of Victoria, Australia. From January 2005 onward, this program included a module that involved collecting and reporting data on occupational exposures to bloodborne pathogens. This letter reports on the results from the hospitals that participated in this module between January 1, 2005, and June 30, 2006. Most published reports on the epidemiology of occupational exposures are from larger hospitals.<sup>1-4</sup>

Across Victoria, there are now 91 smaller hospitals. These hospitals are further categorized according to the number of acute-care beds—there are 55 small smaller hospitals (with 1-14 acute-care beds), 23 medium smaller hospitals (15-49 acute-care beds), and 13 large smaller hospitals (50-99 acute-care beds). The type and intensity of health care provided vary among these subcategories and are described elsewhere.<sup>5</sup>

Infection control nurses were asked to collect data on all occupational exposures reported by noncasual staff members employed at their hospital during the surveillance period. An occupational exposure was classified as parenteral if the skin or mucous membrane was pierced with a contaminated sharp device or object. These devices and objects included, but were not limited to, needles, scalpels, and broken glass. An occupational exposure was classified as nonparenteral if there was eye, mouth, other mucous membrane, or nonintact skin contact with blood or other potentially infectious materials. A noncasual staff member was defined as someone who had an ongoing expectation of work and was engaged in a regular work roster or pattern of employment.

The number of parenteral and nonparenteral occupational exposures was reported for the following 3 categories of source patients (categorized according to the type of service in which they were treated): acute-care inpatient, other, and unknown. The rate of occupational exposure to acute-care

source patients statewide, as well as at small, medium, and large smaller hospitals, was expressed as the number of parenteral or nonparenteral exposures per 10,000 acute-care occupied bed-days. The occupied bed-days included single-day and multiple-day hospital stays. Emergency department patients were reported as "other" source patients because they were not included in the data on acute-care occupied bed-days. The statewide data were also analyzed according to occupational group, the location where the exposure occurred, and the serostatus of the source patient.

For each occupational exposure rate, a corresponding rate at the population level was calculated under the assumption that the occupational exposure count followed a Poisson distribution with a mean proportional to the acute care occupied bed-days; the constant of proportionality in this relationship was the population occupational exposure rate. The effect of hospital size on occupational exposure rates was tested by including it as a 3-category exposure variable in a Poisson regression model for the log (rate) of occupational exposure. All statistical analyses were performed using Stata software, version 9.0 (Stata).

A total of 89 smaller hospitals participated in the occupational exposure module. Aggregate results are presented in the Table. In total, 395 occupational exposures were reported, involving 253 acute-care inpatient source patients, 103 other source patients, and 39 unknown source patients. Two human bites were reported, involving 2 acute-care inpatients. There was strong evidence of a trend of increasing occupational exposure rates with increases in hospital size (ie, the number of acute-care beds) for both parenteral ( $P < .001$ ) and nonparenteral ( $P = .002$ ) exposures.

Nurses, the largest segment of the workforce in the Victorian smaller hospitals, were the most commonly affected occupational group (accounting for 59.3% of exposures), fol-

lowed by doctors (35.2%). The majority of occupational exposures occurred in operating rooms (44.7%) or inpatient wards (41.1%).

Of the 356 source patients categorized as "acute-care inpatient" and "other," 42 had a reported serostatus of either "refused testing" (9.5%) or "unknown" (90.5%). Of the 314 remaining source patients in this group, 1 (0.3%) tested positive for hepatitis B surface antigen, and 9 (2.9%) tested positive for hepatitis C virus antibody. No source patients were reported to have tested positive for human immunodeficiency virus antibody.

The VICNISS occupational exposure surveillance module highlighted some useful information about the epidemiology of occupational exposures in the smaller Victorian hospitals. The majority (97.8%) of eligible hospitals participated in the module over 19 months. During this period, there were 3.5 parenteral and 0.9 nonparenteral occupational exposures (from an acute-care inpatient source patient) per 10,000 occupied bed-days. Crude comparisons made with another Australian state's aggregate occupational exposure rates suggested that the Victorian aggregate parenteral occupational exposure rate was relatively high. In 2003, New South Wales Group 2 hospitals (described as district hospitals and acute-care and nonacute-care community hospitals) reported 2.7 parenteral occupational exposures per 10,000 patient-days, and in 2004, they reported 2.5 parenteral occupational exposures per 10,000 patient-days.<sup>6</sup> As in a multihospital study from the United States, the exposure rates were significantly higher in the larger hospitals than in the smaller hospitals.<sup>1</sup> This is possibly because in smaller hospitals, there are fewer risks per patient for sustaining an occupational exposure (eg, fewer sharp devices are used).<sup>7</sup> The Victorian results in regard to occupational group, location where the exposure occurred, and serostatus of the source individual were consistent with the literature.<sup>1,4,8,9</sup>

This report has 2 important limitations. First, it did not assess the frequency of underreporting (or any reasons given for underreporting) of occupational exposures by healthcare staff. The literature highlights the fact that underreporting of occupational exposures is common.<sup>3,9</sup> Second, some denominators used to calculate occupational exposure rates are more meaningful than others.<sup>7</sup> For example, interpretation of the occupational group data could have been strengthened by obtaining the number of persons in each occupational category (ie, the denominator). This would have enabled the calculation of specific rates for occupational groups, rather than percentages from reported occupational exposures, and it is likely, for example, that the relatively low number of doctors employed would have had significantly higher occupational exposure rates.

To improve the usefulness of the occupational exposure surveillance module, in the future the core data set will include questions about potential precipitating factors. For example, what device or item caused the occupational exposure,

and when and how did the occupational exposure occur? Reports will continue to be forwarded to the infection control nurses at participating hospitals, outlining their hospital's results and the aggregate results. It is assumed that, as has been reported elsewhere,<sup>10</sup> these comparative reports act as an incentive to implement appropriate intervention strategies.

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