

# Methicillin-resistant *Staphylococcus aureus* in hospitals: time for a culture change

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*Infection control principles need to be at the core of Australian hospitals, not just an afterthought*

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections continue to be an entrenched problem in hospitals throughout Australia,<sup>1-3</sup> and create an added burden for hospital care, rather than simply replacing infections caused by more antibiotic-susceptible bacteria. The cost of not dealing with MRSA, as is currently the case in most Australian states, appears to be huge, including prolonged patient length of stay and reattendances to outpatient clinics, not to mention the suffering of affected patients. Yet many in the health sector feel overwhelmed by the MRSA problem, and see it as a part of life about which little can be done.

We believe this is a faulty assumption — it is possible to make an impact. In some countries (eg, Denmark and the Netherlands), where “search and destroy” campaigns have been implemented, MRSA has been kept at very low levels in hospitals.<sup>4,5</sup> In Western Australia, infections caused by multiresistant strains of MRSA in hospitals remain uncommon, partly due to screening and isolation of patients transferred from endemic areas, such as the eastern Australian states.<sup>6</sup> In Brisbane, marked reductions of MRSA occurred when major hospitals were refurbished and more vigorous infection control programs introduced.<sup>3</sup> In Victoria, significant reductions in hospital MRSA infections have been achieved by introducing better hand hygiene practices.<sup>2</sup>

We should not be surprised that bacteria such as *S. aureus* have learned to adapt and survive in the antibiotic-rich environment of a modern hospital. Ultimately, we cannot avoid the Darwinian principle of natural selection and thus will always need new antibiotics. However, we also need to consider another unavoidable principle, not from evolution, but from history: when you crowd sick or stressed people together, epidemics are likely to emerge. Military history is replete with examples of disease outbreaks in the crowded ranks causing more damage than the enemy itself. Australia is “at peace”, yet we have overcrowded emergency departments, where rows of casualties wait endlessly for a bed in the completely full hospital — making our hospitals resemble war zones! This crowding results in worse outcomes for patients.<sup>7</sup> How many Australian health care workers and students, all with varying goals and agendas, understand and practise infection control principles well enough to protect their patients from cross-infection? What about the patient’s agenda — getting better and getting home without a hospital-inflicted wound or complication?

Clearly, we who work in hospitals can and should improve our act. However, regardless of how much we improve our personal infection control practices, there is still an irreducible philosophical tension between an economist’s model and an ideal hospital. Our current hospital system seems to be run predominantly with reference to economic outcome measures — more and more throughput, same staff numbers, but with older and sicker patients. We need hospitals to be built and managed so that

infection control is their main priority. Somewhere between our current reality and the dream of infectious diseases physicians, a new balance needs to be reached.

## What do we need to do?

We already have numerous guidelines — we need to follow them. Recently, the “Protecting 5 million lives from harm” campaign again highlighted many of the crucial issues.<sup>8</sup> Leadership is needed, in hospitals and at the state and national levels. We need basic infection control practices to be followed by all clinical staff and students — in particular, hand hygiene. We can’t continue to accept that a good result is when 50% of staff comply. Enough equipment and supplies (eg, gloves, gowns) must always be available so that health care workers can comply easily. These workers also need backup, with adequate personnel in infection control, microbiology and environmental services.

The basic components of any infection control campaign are:

- Hand hygiene — use of an alcohol-based hand rub, soap and water, and gloves;
- Decontamination of the environment and shared equipment;
- Contact precautions for infected and colonised patients;
- Active surveillance and screening;
- Effective programs that prevent common infections (eg, intravascular catheter sepsis, surgical site infections);
- Good antibiotic stewardship; and
- Better hospital design to include more single rooms for patients.

To make these components work, we need staff in our hospitals to accept that MRSA causes needless morbidity and mortality, and to aim for a near-zero infection rate for health care-acquired infections. We need to accept that health care workers are key conduits for spreading MRSA. Staff can then make a major contribution to stopping its spread by adhering to basic infection control practices.

Hospital managers and health departments are equally responsible for ensuring that people can do their jobs under reasonable working conditions. We need to recognise that MRSA is a signal that the system is stressed. We need to measure our successes and failures.<sup>9</sup> Is it a coincidence that the state with the lowest prevalence of health care-associated MRSA (Western Australia) is also the only state in which MRSA infections are notifiable?

We need better hospital design so that contact precautions and single-room isolation can be achieved. This means we need to insist, as is now recommended in many countries, that all new hospitals have nearly all patient accommodation as either single rooms or shared rooms with a maximum of two patients. Otherwise, how can adequate spatial separation of MRSA-colonised or infected patients be ensured?

MRSA remains a scourge. Programs that effectively reduce the rate of MRSA infections in hospitals are well known, and some have been successfully implemented in Australia. For these to be effective, however, requires a culture change in the attitude of most Australian health care workers and a new era of government leadership in providing adequately resourced modern hospital facilities with infection control principles at the core of their design, not just added as an afterthought. A better understanding of MRSA and basic infection control issues is needed by the entire community (taxpayers, architects, engineers, health care workers, students, governments, administrators, and patients) if we are to ever finally control MRSA and other health care-associated pathogens.

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