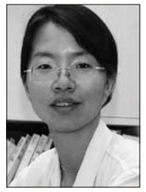

Nosocomial MRSA: the classic threat in the hospital continues

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Although recent data have shown a decrease in the rates of invasive health care-associated MRSA infections between 2005 and 2008, and community-associated MRSA (CA-MRSA) strains have rapidly disseminated among the general population in many countries and affect patients with and without exposure to the health care environment, nosocomial MRSA remains a threat in the hospital.

Methicillin resistant S. aureus (MRSA) isolates were once confined largely to hospitals, other health care environments, and patients frequenting these facilities. Colonization, recent hospitalization or surgery, dialysis, residence in a long-term care facility, and the presence of percutaneous devices and catheters are risk factors for MRSA infection. And several studies have demonstrated increased mortality, length of hospitalization and hospital costs from infections due to MRSA compared with those associated with methicillin-susceptible S. aureus (MSSA).

Nosocomial MRSA were resistant to all available penicillins and other β-lactam antimicrobial drugs, and some important new options, such as vancomycin, linezolid and daptomycin are becoming of less value due to the ability of the bacterium to develop efficient mechanisms to neutralize these agents. Nine vancomycin-resistant S. aureus (VRSA) isolates have now been reported in the United States, vancomycin intermediate S. aureus (VISA) and heteroresistant vancomycin-intermediate S. aureus (hVISA) strains have be identified more commonly in many countries. And a more important concern comes from the observed slow but steady increase in the level of resistance to vancomycin among unselected S. aureus strains that can occur with vancomycin therapy. Moreover, the increased MIC of linezolid and daptomycin in some patients with severe, deep-seated S. aureus infections have been described in several case reports, which resulted in clinical failure. Additionally, many nosocomial MRSA carrying a specific

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set of virulence-associated genes have been found in Japanese hospitals during the nationwide epidemiological study.

Surveillance for nosocomial MRSA infections should be done prospectively, because patients should be actively and continuously monitored for infections while they are still in the hospital. However, in order to decrease nosocomial MRSA rates, active surveillance must be combined with HCW education, hand hygiene, environmental cleaning, contact precautions, and antimicrobial stewardship.