

Managing Infection Control Challenges: *MRSA and Beyond*

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The successful control of any outbreak or epidemic relies on detection of those persons (infected and colonized) or inanimate sources harboring the pathogen combined with eliminating spread to new individuals. This is typically accomplished by identification of the target pathogen source(s) followed by some type of quarantine, possibly combined with treatment, to eradicate the offending organism, in order to eliminate new cases. The approach to containment and reduction of the global MRSA pandemic is no different. A challenge for this infectious disease is that most persons harboring MRSA do not exhibit signs of infection and thus in order to detect all those who are potential spreaders of this organism some surveillance must be done. Much has been learned in recent years about what is needed to contain and reduce MRSA infection. For a given MRSA prevalence, the factor that seems crucial in reducing spread is the percentage of potential isolation days captured for patients admitted to the hospital with this pathogen. The operational processes that most influence this are 1) the sensitivity of screening detection (including sites tested and laboratory methods used), 2) the speed at which reports of newly detected positive patients are reported from the laboratory (assuming pre-emptive isolation is not employed), and 3) the selection of patient populations who are to undergo screening. Recent work has shown that laboratory testing has a major impact on detecting MRSA colonized patients with real-time PCR having a sensitivity of 98% and a possible 2 hour reporting time compared to direct chromogenic agar cultures with a sensitivity of 80% and >24 hour reporting and enriched chromogenic agar testing with a sensitivity of 90% and >48 hour reporting; both reduced sensitivity and prolonged reporting time negatively impacting the success of MRSA timely isolation. We have shown that capturing 33% of MRSA isolation days in a modest MRSA prevalence setting (9 infections/10,000 patient days) with a high sensitivity test having a >24 hour result reporting time did not reduce hospital-wide MRSA disease. However, we demonstrated that universal admission surveillance and decolonization capturing 85% of possible MRSA isolation days had a dramatic impact by reducing 70% of all in-hospital infections from MRSA. A critical issue often raised is that of solely focusing on MRSA. During our MRSA containment program, we also managed an outbreak of *Acinetobacter baumannii* in our intensive care units as well as an increase in *Clostridium difficile*-associated diarrhea across our 3-hospital organization. We also developed a new program to minimize our surgical site infections from *S. aureus*. All of these required separate investigation and intervention initiatives that were successfully completed; illustrating that MRSA need not be the only focus of an infection control program. A successful program is not a zero-sum game, in which control of an infection necessarily leads to fewer funds for the control of another. In our case, success with MRSA and the cost savings that resulted have, in fact, led to a greater willingness of our hospital administration to support other infection control efforts.