

MRSA (methicillin-resistant *Staphylococcus aureus*) in Prison Settings

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When bacteria are placed under selective pressure through the use of antibiotics, resistance almost always develops. Shortly after the introduction of methicillin in 1959, outbreaks of methicillin-resistant *Staphylococcus aureus* (MRSA) infections were reported in the early 1960s. MRSA was at first primarily a hospital-acquired (nosocomial) infection, with only small numbers of community-associated cases. However, it is now well established in the environment and the majority of skin and soft tissue infections in many communities in the United States are now due to MRSA [1-3]. MRSA infections have even been reported among Australian aboriginals and northern aboriginals in Canada [4].

Because *S. aureus* and strains of streptococci are the most common cause of skin infections and post operative wound infections it is not surprising that we are seeing reports of MRSA infection. An estimated 10% to 30% of normal persons are colonized with *S. aureus* in their nares, mucous membranes, or breaks in their skin. A smaller subset of normal persons is colonized with MRSA. A majority *S. aureus* infections arise from the bacteria colonizing our bodies. Infection can also arise from bacteria transmitted among individuals through physical contact with a person who has a draining lesion or is a carrier of MRSA, and by sharing equipment that is not cleaned or laundered between users.

Data from the United States National Nosocomial Infection Surveillance (NNIS) system through June 2004 revealed that MRSA accounted for a mean of 53 percent of *S. aureus* isolates recovered from intensive care unit (ICU) patients, 46 percent from non-ICU patients, and 31 percent of *S. aureus* recovered from outpatients. A recent study by R. M. Klevens, et al in the Journal of the American Medical Association estimates that 94,360 invasive MRSA infections occurred in the United States in 2005; these infections were associated with death in 18,650 cases [5].

They report that most serious or invasive cases of MRSA infection are still caused by MRSA strains of health care origin.

MRSA can be a particular problem when individuals are held in close proximity to each other, as in the prison setting [6]. M Tobin-D'Angelo, et al identified the following four factors that contributed to spread of MRSA among prison inmates during outbreaks of MRSA infection in Georgia, California, and Texas correctional facilities: They report that most serious or invasive cases of MRSA infection are still caused by MRSA strains of health care origin.

MRSA can be a particular problem when individuals are held in close proximity to each other, as in the prison setting [6]. M Tobin-D'Angelo, et al identified the following four factors that contributed to spread of MRSA among prison inmates during outbreaks of MRSA infection in Georgia, California, and Texas correctional facilities:

- Barriers to routine inmate hygiene Access to soap often was limited or was restricted for security reasons.
- New alcohol-based hand rubs were difficult to introduce because of misuse of these products.
- Mental health and behavior problems among inmates might have contributed to poor adherence and hindered efforts to improve hygiene.
- Inmates' clothing was washed by hand or in bulk loads, and potentially contaminated laundry might not have undergone sufficiently high water temperatures or drying to eliminate bacteria.

Proper access to medical care was hindered by co-payments required for acute care visits and by inadequate supplies and staff for wound care. Frequent medical staff turnover was a challenge to providing education on proper infection-control procedures.



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MRSA might have been an unrecognized cause of skin infections among inmates; wounds often were attributed to spider bites, and cultures might have been collected infrequently even in cases in which antimicrobial treatment failed. Developing a strategy to improve hygiene and infection-control practices in correctional facilities will likely be the most effective approach for long-term success. Such a strategy should include [6, 7]

- skin infection screening and monitoring (e.g., maintaining a log of skin infections and visual skin screening on intake)
- identify and regularly clean surfaces exposed to sweat, e.g., exercise benches
- culturing suspect lesions and providing targeted antimicrobial therapy
- efforts to improve inmate hygiene (e.g., education about appropriate hand and body hygiene, appropriate laundering techniques, measures to limit use of shared items, and greater availability of soap)
- improved access to wound care and trained health-care staff
- adapting traditional hospital-based approaches to preventing MRSA transmission (e.g., placing infected persons in a separate area or eradicating nasal colonization) might not be feasible in most correctional facilities.

References:

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