Editorial

Methicillin-Resistant *Staphylococcus aureus* in Nursing Homes: Putting the Problem in Perspective

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Strains of methicillin-resistant *Staphylococcus aureus* (MRSA) are presently endemic in many university, community-teaching, and Veterans' Affairs (VA) medical centers, particularly in the eastern half of the United States. Because elderly patients often are transferred between affected hospitals and extended-care facilities, many nursing homes are being asked to care for patients with MRSA.

In parts of the country where MRSA is prevalent, nursing homes have felt compelled to implement special infection control measures for MRSA similar to those used in hospitals. Some facilities have adopted very restrictive policies, which have caused colonized or infected residents to be excluded from many activities that are important for their health and well-being. In addition, more than a few nursing homes have refused to accept patients colonized with MRSA, resulting in prolonged hospital stays while patients await nursing home placement.

Why have nursing homes decided to exclude patients with MRSA but willingly accept patients with methicillin-susceptible strains of S *aureus* or with multi-drug resistant, gram-negative rods? Perhaps such policies have emerged in part because MRSA strains are mistakenly assumed to be more virulent. Alternatively, nursing home personnel may assume that the special MRSA precautions implemented in some hospitals also must be used in nursing homes, even though the two environments (and patient populations) are different in many respects.

Much of the problem stems from our lack of knowledge regarding the epidemiology of MRSA in nursing homes. To date, very few reports have described investigations of MRSA in nursing homes or other extended-care facilities.[1-10] The most thorough studies of MRSA in extended-care facilities have been conducted in VA-affiliated long-term care units.[7-10] Unfortunately, the results of studies performed at VA-affiliated facilities may not be applicable to most nursing home residents. The VA-affiliated facilities at which careful studies have been conducted are located at or near VA medical centers where MRSA is highly endemic. In addition, the VA medical centers often have house staff and care almost exclusively for men. In contrast, in most of the 15,900 certified nursing homes in the United States, there are no house staff, and more than 70% of the residents are women, a majority of whom are more than 80 years old. Because the residents in the two types of facilities differ substantially, further studies are needed to determine patterns of MRSA infection in free-standing, non-federal nursing homes.

This issue of *Infection Control and Hospital Epidemiology* includes an article that adds to the small amount of information available regarding MRSA in community nursing homes. The article by Hsu[11] describes periodic point prevalence culture surveys of residents in a 150-bed community nursing home located in an area where MRSA is endemic in nearby hospitals. All consenting residents had periodic nasal

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swab cultures performed at roughly one-and-a-half-month intervals over a 15-month period.

The study yielded several interesting findings. First, about 9% of the residents harbored MRSA in their nares at the time of each prevalence survey, a finding similar to that noted in two other surveys conducted in community nursing homes.[2,3] Interestingly, this rate is substantially lower than that observed in several VA-affiliated long-term care facilities, where prevalence rates ranged from 23% to 34%.[7,9]

The study reported in this issue also found that a total of 23% of the 198 residents were colonized with MRSA at least once during the 15-month study period. However, point prevalence rates were much lower because MRSA nasal carriage was apparently transient in many residents. Again, this finding differs from those reported from VA-affiliated facilities, where residents often remained colonized for long periods.[8,9]

Finally, Hsu[11] found that there were few occasions wherein the roommate of a known carrier also acquired MRSA. In several instances, antibiotic susceptibility patterns of MRSA isolates from the two individuals were different, suggesting that transmission of a given strain between roommates was uncommon. The evidence would be more compelling if plasmid profiling or restriction endonuclease digestion of chromosomal or plasmid DNA had been used to establish the degree of relatedness of isolates from roommates. Nevertheless, it is an important finding, and it is supported by the results of another recent study that found transmission of MRSA occurred infrequently among roommates in a long-term care facility.[5,9]

The article by Hsu[11] does not shed much light on several other important issues dealing with MRSA in nursing homes. These include the following: once residents become colonized, do they develop clinically significant infections more often than those colonized with methicillin-susceptible S *aureus;* and do the morbidity and mortality associated with MRSA infection in nursing home residents warrant restrictive control measures or exclusion of patients from nursing homes? For the most part, these questions have not been addressed in studies performed in community nursing homes. One investigation found that 9% of residents developed clinically significant MRSA infections, but the high rate was due in part to a concomitant outbreak of influenza that predisposed patients to the development of staphylococcal pneumonia.[2] No case-control study was performed to determine if MRSA infections were more common or more serious than methicillin-susceptible S aureus infections in the affected nursing home.

Unfortunately, most of the data available regarding the above questions were obtained primarily in VA-affiliated facilities and may not be applicable to community nursing homes. The findings are worth noting, however. In one VA-affiliated skilled nursing facility where MRSA became prevalent, the incidence of bacteremia and the case-fatality rate were not significantly different in residents with MRSA infections and those with methicillin-susceptible S *aureus* infections.[10] Thirteen percent of residents who required transfer to an acute-care hospital had MRSA infection; 87% had other conditions that precipitated hospital admission. Only 6% of deaths in nursing home residents were caused by MRSA infection.

A recent article by Muder et al[8] described a study of MRSA colonization and infection in a VA-affiliated facility that included an intermediate-care unit and a nursing home unit. Of 32 patients who were found to have MRSA, 72% were positive at the time of the first culture survey. Most of the patients with MRSA were on the intermediate-care unit. Only 4.6% of 197 residents on the two units acquired persistent MRSA carriage during the two-year prospective surveillance period, and few of them were on the nursing home unit. Fourteen of the 15 staphylococcal infections occurred among patients on the intermediate-care unit; only one occurred on the nursing home unit.[8] MRSA carriers developed infection more frequently that those carrying methicillin-susceptible S *aureus,* but this could well have been due to the fact that underlying diseases such as chronic obstructive pulmonary disease and chronic renal failure (and the need for dialysis) were significantly more common among MRSA carriers on the intermediate-care unit. As noted by the authors, the findings do not prove that MRSA is more virulent than other S *aureus* strains. Unfortunately, the accompanying editorial seemed to conclude that MRSA strains are more virulent. It should be emphasized that several hospital-based comparisons of patients with MRSA and methicillin-susceptible S *aureus* infections suggest that MRSA is no more virulent than other strains of S *aureus.*

To put MRSA into perspective, it is important to bear in mind that most infections and infection-related hospitalizations in nursing home residents are due to organisms other than MRSA. These include organisms that comprise patients' normal flora, such as aspiration pneumonia, gram-negative bacilli, pneumococci, enterococci, methicillin-susceptible S *aureus, Clostridium difficile,* and influenzavirus. Less frequent pathogens responsible for major outbreaks in nursing homes include *Mycobacterium tuberculosis,* multi-drug resistant gram-negative bacilli that produce extended-spectrum β-lactamases, *Salmonella* species, group A streptococci, and *Escherichia coli* O157:H7.

In summary, many of the questions regarding optimal management of MRSA in extended-care facili-

ties exist because so few studies have been conducted in community nursing homes. The paucity of appropriate studies is presumably due to difficulties in conducting research in the nursing home setting, limited infection control resources and laboratory support in nursing homes, and a lack of federal funding for such projects. It is time that funding agencies responsible for promoting the health and well-being of the more than 1.5 million nursing home residents in this country give higher priority to studies of nosocomial infections and their prevention in the nursing home setting.

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