Letters to the Editor

Control of MRSA in a Long-Term Care Facility

See also pages 73 and 105.

To the Editor:

Methicillin-resistant *Staphylococcus aureus* (MRSA) is an important cause of infection in hospitalized patients. Outbreaks of nosocomial infection due to MRSA have been difficult to control and the organism has become endemic in many hospitals. More recently, there has been an increased awareness of MRSA among elderly residents of long-term care facilities.[1-3] However, relatively few reports have been published describing effective control of MRSA in nursing homes or other chronic care institutions.[4-7]

The Baycrest Centre for Geriatric Care is a university-affiliated long-term care facility in Toronto, Ontario, which includes: 1) Baycrest Hospital, a 300-bed chronic care hospital with patients requiring long-term hospitalization, palliative care, physical rehabilitation, or psychogeriatric assessment; and 2) the adjoining Jewish Home for the Aged, a 374-bed, multilevel skilled nursing facility. Residents of the center who become acutely ill with nonsurgical problems are treated in a concentrated care unit (3E) of Baycrest Hospital.

Between 1986 and 1991, only one or two residents infected or colonized with MRSA had been detected annually in our long-term care facility. In each case, it was evident that MRSA had been acquired prior to admission to our facility and none of these cases could be linked epidemiologically. Two chronic-care hospital residents with MRSA were identified in early 1992. As the source of their isolates was not initially apparent, further investigations were carried out. We describe the results of these investigations and the measures instituted to limit transmission of this organism.

Residents with MRSA were placed in private rooms with the institution of "wound and skin" isolation precautions. The need for handwashing and appropriate use of gloves was reinforced. Colonized residents were treated with 2% mupirocin ointment in a polyethylene glycol base applied to the anterior nares twice daily for one month, and with oral rifampin (300 mg bid) and trimethoprim-sulfamethoxazole (160/800 mg bid) for one week. This treatment was well tolerated by all residents.

Nose and skin lesion swabs were obtained from all Baycrest Hospital residents, except for those on the palliative care unit, in April 1992. Specimens were also obtained from a sample of the Home for the Aged residents, including those who had been hospitalized in the previous three months, those with open skin lesions, and those known to have been in contact with the residents previously identified with MRSA. In addition, cultures were obtained from a random sample of residents selected by surname beginning with a preselected letter of the alphabet. A chart review was done for all residents from whom MRSA was recovered. Follow-up surveillance cultures were obtained from residents of Baycrest Hospital three and six months afterward. Nose and skin lesion swabs were obtained from full-time and part-time staff working on units where residents with MRSA had been identified. Casual or relief staff (from external agencies) were not sampled.

MRSA was recovered from five (3%) of 159 Baycrest Hospital residents but from none of the 102 home for the aged residents sampled. None of the 83 staff sampled were colonized with MRSA. As shown in the Table, four of the five residents with MRSA had been admitted to the concentrated care unit (3E) of Baycrest Hospital during two weeks in January 1992. It was subsequently determined that resident B had been hospitalized in December 1991 in a local teaching hospital for the two weeks prior to readmission to Baycrest Hospital. Resident B had been on the same hospital ward as another patient (F) who had leg ulcers infected with MRSA. MRSA was not detected in follow-up surveillance cultures obtained from Baycrest Hospital residents three and six months later.

MRSA isolates were typed by determination of bacteriophage susceptibility, restriction endonuclease analysis and pulsed-field gel electrophoresis. Isolates from the five Baycrest residents obtained in 1992 (A,B,C,D,E) and from patient F could not be distinguished by any typing method, whereas isolates obtained in previous years from the Centre were clearly different.

These results indicate that MRSA was introduced into our long-term care facility by an asymptomatically colonized resident who had acquired the organism during a previous hospitalization. Typing of isolates by conventional restriction endonuclease analysis and by pulsed-field gel electrophoresis of large DNA fragments was useful in indicating that there had been transmission of a single strain of MRSA within the facility and these results were available weeks before phage-type results could be obtained. Although it is possible that no further transmission of this strain of MRSA would have occurred in our facility

TABLE
MRSA AMONG RESIDENTS OF A LONG-TERM CARE FACILITY, 1992

Resident	Date of Culture	Site of Culture	Clinical Findings	Unit	Dates
A	1/17/92	Sputum	Pneumonia	3E	1/7/92 to 1/20/92
B	3/26/92	Urine	Asymptomatic	3E	1/6/92 to 2/17/92
				6E	2/17/92 to —
C	4/13/92	Foot	Infected foot ulcer	6E	11/91 to —
D	4/13/92	Nose	Asymptomatic	3E	12/10/91 to 1/22/92
				5E	2/3/92 to —
E	4/15/92	Hip	Infected decubitus ulcer	7E	1/22/92/ to —

even without any intervention, we believe we were successful in preventing further spread because of early recognition of the significance of two residents infected with the organism, subsequent intensive surveillance for colonized residents, strict enforcement of handwashing and barrier precautions for colonized residents, and eradication of the carrier state with a combination of topical and systemic antimicrobial therapy.

Various infection control interventions have been recommended for limiting the spread of MRSA in hospitals.[3] These recommendations have included laboratory surveillance for MRSA, implementation of a variety of barrier precautions, isolation procedures and cohorting, eradication of MRSA from colonized patients and staff, and disinfection of the inanimate environment of infected individuals. However, infection control measures recommended for hospitals may not be readily applicable in a long-term care facility. Staff may be less aware of the significance of MRSA and it may be more difficult to ensure that adequate barrier precautions remain in place when dealing with confused or wandering residents or with those requiring physical rehabilitation. It may also be more difficult to eradicate MRSA carriage from debilitated individuals with colonization at sites other than the nares.[3] In fact, efforts to control MRSA in long-term care facilities have been reported to be only partially effective,[4-7] possibly because MRSA colonization rates were already high in those facilities by the time the problem was recognized and control measures were implemented. The role of continued transmission of MRSA within those long-term care facilities was uncertain, but colonized residents continued to be admitted to the nursing homes in significant numbers. Clearly, the chances of successful control of MRSA in long-term care facilities are increased if infection control interventions are implemented early on, before the organism becomes endemic. More effective strategies for managing elderly residents of long-term care facilities who are infected or colonized with MRSA need to be developed.

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Prolonged, Multipatient Use of Oxygen Humidifier Bottles

To the Editor:

In a recent article by Henderson et al (14:463-468), an assertion was made that prefilled disposable oxygen humidifier bottles could be reused at a significant cost savings without an increase in infection rates. Seven years ago, our institution was using a new disposable humidifier for each patient. However, after research of the current literature at that time, we reviewed a study presented at the 1984 American College of Chest Physicians' National Conference on Oxygen Therapy that stated: "Currently, there is no subjective or objective evidence that routine humidification of oxygen is necessary at flow rates of 1 to 4 L/min when environmental humidity is adequate. Elimination of unnecessary humidification of oxygen can result in substantial savings."

At that time, our hospital conducted a trial period eliminating these humidification devices. Humidifiers were used on all newborn and pediatric patients and on adult patients who were receiving oxygen flow rates >6