

Editorial

Control of Methicillin-Resistant *Staphylococcus aureus*: The Ambivalence Persists

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See also pages 69 and 105.

The ambivalence regarding methods of dealing with methicillin-resistant *Staphylococcus aureus* (MRSA) among hospitals and nursing facilities is highlighted in this issue of *Infection Control and Hospital Epidemiology*. On the one hand, the American Hospital Association (AHA) special report on MRSA¹ is a rational but somewhat inconsistent evaluation of various measures to deal with MRSA. The overall tone of the special report is one of moderation in handling this problem. In contrast, a letter by Simor et al² reports an intense epidemiologic effort (culturing all residents and staff) after finding two residents with MRSA infection or colonization in a long-term care facility in Toronto, Ontario, Canada.

These two reports are sending two different messages regarding MRSA to hospitals and nursing facilities trying to deal with this organism. The AHA report implies that hospitals and nursing facilities should be concerned about endemic MRSA and provides opinions as to which approaches may be useful. The Task Force suggests that each hospital and nursing facility adopt a plan that is based on surveillance data and resources available. The message by Simor et al² is that MRSA needs to be sought out and eliminated at all cost to prevent it from becoming an increasing problem in an institution. This editorial will try to put these reports into perspective and to highlight issues that are not addressed.

AHA SPECIAL REPORT

Mulligan et al³ in their recent review of MRSA state that "the microbiology, pathogenesis, and epidemiology of MRSA ... provide the basic rationale for contemporary management practices" in the absence of controlled studies. The AHA Task Force¹ has used this approach to evaluate various MRSA control and preventive measures.

The section on MRSA epidemiology is brief but more than adequate in providing basic information about MRSA. Several points deserve emphasis because they are critical in developing control and prevention measures. First, the major reservoir of MRSA is the colonized or infected patient or resident. Second, it appears that patient-to-patient transmission of MRSA occurs when healthcare workers (including physicians) with transient hand carriage of MRSA fail to follow proper handwashing techniques between patient contacts. Third, carriage of MRSA by healthcare workers is transient and rarely is there a need to obtain cultures in the endemic situation. Fourth, airborne transmission of MRSA does not appear to be an important mode of transmission, except possibly in burn units. Fifth, the inanimate environment is not a reservoir for MRSA, except possibly in burn units. An additional sixth point: certain body sites colonized by MRSA, eg, wounds,

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respiratory tract secretions in those with a tracheostomy, and the oropharynx, are particularly resistant to eradication efforts.

In the section on the rationale for special measures to control MRSA, the Task Force has evaded the issue about the influence of MRSA on the nosocomial infection rate of a facility. One of the reasons for the conflicting and confusing approaches to MRSA has been the notion among some clinicians that since MRSA is no more virulent than methicillin-sensitive *S aureus*, there is no need to develop special techniques to control MRSA or to try to eradicate it from colonized patients.⁴ Recent review articles^{3,5} and the AHA report⁷ do not address this issue. In addition, there appears to be the belief that if overall nosocomial infection rates are not increased with the appearance of MRSA, there is little need to be concerned. This notion has been most recently promulgated in studies of MRSA in long-term care facilities (LTCFs).⁶ However, it also is important to consider the overall nosocomial *S aureus* infection rate when MRSA appears in an institution. Boyce et al⁷ were the first to call attention to this issue. More recently, other studies^{8,9} have reported an increase in nosocomial *S aureus* infection rates in hospitals with the appearance of MRSA and one of these studies⁹ has documented an increased nosocomial infection rate overall with the occurrence of MRSA infection. These findings, coupled with the high morbidity and mortality of serious *S aureus* infection and the narrow therapeutic options available to treat MRSA infections, form the basis for development of a *reasonable* plan to deal with this organism among hospitals and nursing facilities.

In the section on strengths and weaknesses of special control measures, the Task Force lists several factors to take into consideration when deciding on measures to deal with MRSA. In general, most would agree that these factors are important. However, what is missing from the report¹ (as well as from recent review article^{3,5}) is some indication of what experts believe to be low or high rates of MRSA nosocomial transmission or prevalence. In other words, how does a facility know whether its endemic MRSA situation represents a problem? This is an important issue for hospitals and nursing facilities.

The other factor that affects a facility's response to MRSA is infection control resources, as pointed out in the report.⁷ In small hospitals (<100 beds), infection control practitioners often have multiple duties including employee health, use of antibiotics, and other quality assurance duties. Time allotted for nosocomial infection surveillance is limited. In nursing facilities, my colleagues and I have documented¹⁰ that the intensity of infection control efforts tends to be low, with practitioners often spending less than 25%

of their weekly effort on infection control. Thus, a facility's infection control resources must be taken into consideration when designing MRSA control measures.

SPECIFIC RECOMMENDATIONS OF THE TASK FORCE

Surveillance

Laboratory-based surveillance is used most commonly to detect patients with MRSA. However, many patients colonized with MRSA will be missed if only laboratory surveillance is used. The Task Force suggests conducting periodic prevalence surveys to define this latter group of patients. Such surveys are impractical for most facilities, as they are labor-intensive and expensive.

A related and important issue, however, is not addressed by the Task Force and that is the question frequently posed by hospitals and nursing facilities: Is there a need to use specific infection control measures to control MRSA? If airborne transmission and fomites are not involved in MRSA transmission in most instances, adherence to the principles of Body Substance Isolation [BSI]¹¹ should be more than adequate to contain spread. This point has been suggested recently by Mulligan et al.³ It is surprising that the Task Force fails to mention this, especially since one of the architects of BSI, Marguerite Jackson, was a member of the Task Force. Use of BSI, rather than developing a separate category for MRSA, would eliminate the need for prevalence surveys as all patients would be treated the same regardless of which organisms are present. However, unless healthcare workers comply with proper technique neither BSI nor any other special precautions will work. Therefore, I would suggest that facilities put more effort (resources) into assessing and maintaining compliance with infection control techniques. If there was consistent compliance with simple infection control techniques, such as barriers and handwashing, the nosocomial transmission of MRSA and other bacteria and nosocomial infection rates probably would decrease.

The Task Force states that MRSA prevalence surveys are not indicated in nursing facilities in most instances. In addition, they suggest that cultures of newly admitted patients or residents for MRSA are not warranted. The Task Force is to be commended for these strong recommendations.

Housekeeping

The Task Force has appropriately taken a strong posture in this section and notes that no special housekeeping practices are necessary.

Handwashing

It is disappointing that the Task Force did not make a stronger positive statement about the importance of handwashing in controlling MRSA. Since MRSA hand carriage by healthcare workers is supposedly the major mode of transmission of this organism from patient to patient, handwashing should have been stressed more strongly. The Task Force makes a good point that antimicrobial soap for handwashing is not necessary. It is not what one uses to wash hands that is important, but rather whether one washes or not.

Barriers

The comments of the Task Force regarding the use of various barriers are excellent. In this section basic principles of BSI reveal themselves although this isn't mentioned by name. The Task Force provides very specific recommendations that will be helpful to hospitals and nursing facilities.

Patient Placement

In dealing with placement of patients with MRSA in acute care facilities, the Task Force has been vague. They have evaded the issue by describing various ways hospitals have dealt with colonized and infected patients but have not given their recommendation (consensus). I presume consensus among Task Force members could not be achieved on this issue. However, better guidance could have been provided.

Patients with MRSA in tracheostomy secretions and in wounds may transmit MRSA readily because of the need for frequent intensive "hands-on" care by healthcare workers. Therefore, such patients should be in a private room. Patients with only nares colonization probably do not need to be in a private room but should not be placed with patients with a tracheostomy, an open wound, or a foley catheter. Studies in nursing facilities have demonstrated that there is infrequent transmission of MRSA from the nares.^{3,5} Sharing of a room by patients colonized with MRSA is an appropriate method to deal with colonized patients. The comments relative to nursing facilities in this section are very good and give specific recommendations that are useful.

Decolonization Therapy

The use of antibacterial agents to eradicate MRSA colonization is a controversial area. The Task Force has dealt with it carefully and fairly. Some hospitals and especially nursing facilities¹⁰ have made eradication a major component of their control program, rather than emphasizing compliance with infection control techniques. The "seek-and-destroy" mentality regarding MRSA colonization is all too common.

Nevertheless, there may be a role for the use of eradication procedures in controlling endemic MRSA if it is done selectively and combined with monitoring of compliance with infection control techniques.

Personnel

This section of the special report deals with obtaining cultures of healthcare workers for MRSA and treating those who are colonized. The Task Force has made several important comments in this section. However, they have failed to answer clearly the question most often asked by various facilities: Should cultures be obtained from healthcare workers? In the endemic situation, it does not appear to be useful; some healthcare workers always will be found to be colonized, but colonization usually is transient. Even in the setting of an outbreak, the need to obtain cultures of healthcare workers has been questioned.

This section concludes with a statement that work restriction for colonized healthcare workers is controversial. However, if a facility decides to obtain cultures of healthcare workers, it must be consistent in its total approach to this issue. By obtaining cultures of healthcare workers, a facility implies that the colonized worker is an important reservoir of MRSA that needs to be eradicated. It logically follows, therefore, that colonized healthcare workers should be excluded from direct patient care until MRSA is eradicated. Facilities using eradication procedures for colonized healthcare workers are advised to have a written policy to handle this situation so that there is no confusion.

My suggestion would be to avoid obtaining cultures of healthcare workers unless there is a concern about an epidemiological link between a healthcare worker and a cluster of cases. The Task Force does make a strong statement that healthcare workers in nursing facilities should not have cultures done. The comments about personnel staffing will be very useful to all facilities.

Decolonization Therapy for Patients Requiring Transfer

This last section of the report is the strongest part of the document. The Task Force has given very specific and strong recommendations. These comments are excellent and should be heeded by all facilities.

OVERALL ASSESSMENT OF THE AHA REPORT

The report¹ adequately fulfills the intention of the AHA: "to serve as a resource for those ... responsible for developing and implementing infection control programs ... for control of ... MRSA." However, the Task

Force's message is not consistent throughout the report. Some sections provide clear-cut recommendations, whereas others describe what has been done without making any recommendations. This inconsistent quality is due to the lack of studies evaluating many of the control measures for MRSA, especially in the endemic setting, as well as the need of the Task Force to reach some consensus on various issues. It is likely that consensus could not be achieved for some issues, which led the Task Force to leave out some considerations or deal with them in a vague way. Despite these drawbacks, the report does provide useful comments in several areas, especially for nursing facilities. One of the positive aspects of the report is that it does not try to be a compendium of information but rather deals with practical issues posed by MRSA that all institutions face. In addition to the references cited in the report the recent review article by Mulligan et al³ also provides excellent background and suggestions for dealing with MRSA.

REPORT BY SIMOR ET AL

The thrust of the letter by Simor et al² is that MRSA in nursing facilities can be controlled effectively with intense measures and, in so doing, will not become endemic. A question to ask is: Do their findings support only an intense infection control effort to deal with MRSA or are there other valid explanations for their findings?

In this report it is difficult to determine the temporal sequence of events, especially the timing of the various control methods. Two chronic care hospital patients were found to have MRSA in "early" 1992. However, surveillance cultures were not performed until April 1992. Cultures of several hundred people (residents and personnel) resulted in identifying only three additional hospital residents with MRSA. No residents in the nursing facility or personnel were found to have MRSA. The MRSA isolates from the five residents could not be distinguished by several molecular typing techniques, suggesting they were the same strain. This resulted in active treatment of MRSA infection and topical and systemic antimicrobial agents to eradicate MRSA colonization.

After performing the intense surveillance, eradication procedures, and follow-up surveillance, the authors concluded that they were successful in preventing further spread of MRSA because of "early recognition of the significance of two residents infected with the organism, subsequent intensive surveillance for colonized residents, strict enforcement of hand-washing and barrier precautions for colonized residents, and eradication of the carrier state...." However, it seems that by the time the culture surveillance of residents and personnel was undertaken, MRSA could

have disseminated extensively in the chronic care hospital; it did not. This suggests other reasons for control of this situation. First, the inherent transmissibility of the MRSA strain involved may have been low. Second, infection control techniques already in place may have prevented, for the most part, the spread of this MRSA strain. Spread of MRSA occurred to a small number of residents but it is likely that there were many residents of the chronic care hospital at risk for colonization prior to institution of the multiple control measures.

What, therefore, is the value of this report? I would not use this report as an example of a reasonable approach to dealing with MRSA in community nursing facilities. This report should be taken in the context of its origin, ie, a university-affiliated facility with excellent expertise in infection control and unusual laboratory support. Community nursing facilities with no such expertise should not have to defend a less intense and less costly approach to dealing with MRSA. It would not be possible for most nursing facilities to duplicate the effort of Simor et al² even if it was proven to be the best approach to limiting spread of MRSA. The AHA report¹ provides an alternative approach to MRSA that is rational and that most facilities can put into practice.

In conclusion, the AHA report¹ and recent reviews of MRSA^{3,5} lament the lack of studies documenting the efficacy of most control measures commonly used for this organism, especially in nursing facilities. Until such studies are performed, no consensus will be reached about MRSA control measures and the ambivalence regarding this organism will persist.

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DOT Extends Compliance Date Again for Medical Waste Regulations

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In a *Federal Register* notice published on December 20, 1993, the Department of Transportation's (DOT) Research and Special Programs Administration has further extended the compliance date for regulations concerning transportation of infectious substances

and regulated medical waste. The new compliance date is October 1, 1994. The regulations originally were published December 21, 1990, and materially changed in revisions issued December 20, 1991. In its petition for reconsideration, filed January 17, 1992, the American Hospital Association questioned the provisions' application to medical waste, called for

interagency coordination, and urged the DOT to issue any changes in proposed form with an opportunity for public comment. The agency reportedly will issue a notice of proposed rulemaking some time in 1994, although no publication schedule has been announced.