(during August 2002–August 2006) and then decreased to 0.23 infections per 1,000 patient-days (during September 2006–February 2008) (Figure). There was also a significant decrease in the mean LOS in the MRSA unit, in comparison of 2002 with 2003-2006, from 23.9 days to 12 days ($P = .009$).

Patient benefits include the freedom to ambulate in the hall and lounge area. Physical therapy is available for gait training and stair walking in the unit's mini–physical therapy room. Patients have verbalized how important this is, in contrast to isolation for their entire hospitalization. Patients are frequently assigned the same nursing personnel during their stay and on readmission. The level of visitor emotional stress, compared with seeing loved ones placed "in isolation," decreased because visitors no longer had to wear gowns or gloves; this new ward allowed for a closer relationship to develop among family, visitor, and nurse during this and possible subsequent hospitalizations. Crouse Hospital was able to decrease costs because fewer gowns were used and the LOS for patients with MRSA infection or colonization decreased, which represented a cost savings of $1.5 million. Bed placement in the general and medical and surgical unit population has eased because of the decreased need to isolate beds.

Just cohorting staff to care for patients has been reported as an effective way of reducing transmission of infection in hospitals.[7] The rate of hand-washing compliance on this designated unit exceeds 90%; the staff is more likely to comply because they are aware that the unit patients are colonized or infected with a resistant organism. The rates of MRSA-colonized or MRSA-infected patients may have decreased because patients are considered "once positive, always positive" and are no longer rescreened on subsequent hospitalizations. A small census with fewer staff members makes it easier to care for unit patients and to attend to their needs. This could explain why the average LOS has decreased significantly.

Cohorting patients on this dedicated MRSA unit has been a challenging and successful intervention. Creation of this designated unit has helped reduce both the rate of hospital-acquired MRSA infection in the medical and surgical units and the LOS in the MRSA unit.

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Shelley A. Gilroy, MD; Barbara Miller Stahl, RN; Charlotte Noonan, RN; Rhonda Susman, RN; Lynette Johnson, MS; Mary Kullman, RN; Kaye Barrington; James Turchik, MD; Helen Mahoney-Clancy, RN; Hadley J. Falk, MD

From the Division of Infectious Diseases at University Hospital (S.A.G.; J.T.); the Departments of Infection Control, Nursing, and Surgery, Crouse Hospital (B.M.S.; C.N.; R.S.; L.J.; M.K.; K.B.; H.M.-C.; H.J.F.), Syracuse, New York.

Address reprint requests to Shelley A. Gilroy, MD, 725 Irving Ave., Syracuse, NY 13210 (gilroys@upstate.edu).

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Antimicrobial Stewardship Programs Must Apply to All

To the Editor—We read with great interest the letter from Kenichi Nomura, MD, PhD,[1] from the Department of Oncology and Hematology of Kyoto, Japan, in the May issue of the journal, that questioned the utility of antimicrobial stewardship programs that apply to all clinicians. First of all, we agree that there is plenty of evidence of the benefits of antimicrobial stewardship programs worldwide. The structure for antimicrobial stewardship programs has been published by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America.[2] A multidisciplinary team is needed, and, although there is no agreement about which is the best approach, a combination of education, the need for a preapproval order (ie, a "front-end approach"), and a postprescription review of the case and streamlining of the prescription process (ie, a "back-end approach") might be a good option.

Furthermore, to prevent the emergence of drug resistance, an intervention combining antibiotic stewardship programs with other infection control practices, such as isolation precautions and adherence to hand hygiene practices, is even more important.[3] The Centers for Disease Control and Prevention has published a 12-step program to reduce resistance, and one part of the program is to use antimicrobials wisely.

Wise use means to practice antimicrobial control, to stop treatment when the patient is cured, to say no to vancomycin, to treat infection not colonization, to treat infection not contamination, and to use local data.[4]

Nomura[1] cited a study by Singer et al.[5] about an intervention that was unsuccessful in reducing resistance and questioned the utility of an antibiotic stewardship program. At the same time, a recent systematic review found that 12 of 16 studies had interventions (ie, antibiotic stewardship programs) that reduced the incidence of antimicrobial drug resistance.[6] In the study by Singer et al.,[5] the use of education and an active intervention to stop vancomycin use resulted in a statistically significant 22% decrease in its use, but most of the indications of vancomycin use did not meet published guidelines. The conclusion by Singer et al.[5] was that more aggressive interventions are needed to change prescribing patterns. The point is: the intervention used was not broad enough to meet the goal of reduction of antimicrobial drug resistance. A systematic review and meta-analysis showed that the risk of acquiring methicillin-resistant *Staphylococcus aureus* infection or colonization was increased not only by the use of glycopeptides but also by the use of fluoroquinolones, cephalosporins, and other β-lactams.[7]

The problem of antagonism between the infection control team and the hematologist and the role played by febrile neutropenia guidelines were addressed by Zuckerman et al.[8] Adherence to a local data protocol for the management of febrile neutropenia was tested in a hematology ward. The rate of full compliance with this protocol was very low (21.6%). The use of standardized practices in protocols has been shown to improve patient outcomes. A critical component of the management of febrile neutropenia is an infection control team, which should help the clinicians in the decision-making process, save them time and labor, and share their responsibilities in relation to the final decision.

In our institution, a 250-bed surgical hospital for cardiology patients, we initiated, in 2005, an antibiotic stewardship program based on education, a back-end approach, and a front-end approach. This intervention reduced significantly the total consumption of antibiotics, mostly carbapenems. The trends of increasing resistance also stabilized during the 5-year study period. The program resulted in a reduction of more than 80% in antibiotic costs, without an increase in patient mortality. Our program is addressed to all our clinicians, irrespective of knowledge, specialty, number of years of practice, or position in the hospital; and the mean rate of acceptance of our recommendations was 58.7%, which was considered high. Most of the recommendations were to stop therapy (49.6%); to change antibiotic therapy (35.5%); to switch to oral therapy (13.9%); and to change the dose (1.1%). The most prepared clinician, even the hematologist who is familiar with antibiotics, is not necessarily aware of trends in hospital or community resistance. It is the role of the infection control team to provide colleagues with information on trends of resistance and on the best option for therapy in each hospital, on the basis of local data. Most physicians underestimate the true degree of antimicrobial resistance in their own institution.[9] The question is not who has the accountability for the outcome; both the clinician and the infection control team must work for the patient's well-being, but from different perspectives. The infection control practitioner has a broader view, in terms of local resistance trends, and his or her decisions must take into account both the problem of resistance and the benefits of aggressive early therapy. The clinician has responsibilities to an individual patient, and, for him, antimicrobial resistance is rated as the least important factor, in terms of antibiotic choice.[10]

The final recommendation by Nomura,[1] about education for clinicians who do not have sufficient knowledge about antibiotics, seems awkward. Studies on the passive dissemination of information for behavior change have shown a low rate of effectiveness.[11] Besides, with which physician or specialty would one choose to start a focused educational antibiotic program? One study found that inappropriate antibiotic prescribing increased with time in practice. Physicians with a high practice volume, compared with those with a low practice volume, were more likely to prescribe antibiotics for viral respiratory infections (relative risk [RR], 1.27 [95% confidence interval {CI}, 1.09–1.48]) and to prescribe second- and third-line antibiotics as first-line treatment (RR, 1.20 [95% CI, 1.06–1.37]).[12]

Antibiotic stewardship programs must apply to all clinicians in a hospital. We can not preclude clinicians from using this important component of quality improvement and patient safety in their decision-making process.

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Rodrigo Pires dos Santos, MD, PhD;
Lucas Magedanz, PharmD;
Erci Maria Onzi Siliprandi, ICP

From the Hospital de Clínicas de Porto Alegre (R.P.d.S.), the Instituto de Cardiologia Fundação Faculdade de Cardiologia (R.P.d.S., L.M., E.M.O.S.), Porto Alegre, Rio Grande do Sul, Brazil.

Address reprint requests to Rodrigo Pires dos Santos, MD, Section of Infectious Diseases, Hospital das Clínicas de Porto Alegre, Ramiro Barcelos, 2350, PO Box 90035-903, Room 2225, Porto Alegre, RS–Brazil (rpsantos@hcpa.ufrgs.br).

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