

## Editorial

# Volume 25: An Important Milestone Despite Continuing Infection Control Challenges

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*When meditating over a disease, I never think of finding a remedy for it, but instead a means of preventing it.*—Louis Pasteur,<sup>1</sup> 1884

When the first volume of *Infection Control* was published in 1980 from an editorial office at the University of Virginia Hospital (UVA), methicillin-resistant *Staphylococcus aureus* (MRSA) had been spreading out of control since 1978 and had come to account for almost half of all nosocomial *S. aureus* infections at the hospital (vs only 2% being methicillin resistant in National Nosocomial Infections Surveillance [NNIS] System hospitals that year).<sup>2</sup> Dr. Richard P. Wenzel, the founding editor of *Infection Control*, had been hired in 1972 as an Assistant Professor in UVA's Division of Epidemiology and Virology with plans to become a clinical virologist. He also was assigned the responsibility of overseeing the fledgling UVA infection control program. That assignment changed Wenzel's career. Wenzel, in turn, changed the history of infection control by founding *Infection Control* "to present scientifically sound investigations, reviews and articles . . . on nosocomial infections . . . and issues similar to those mentioned in communities around the globe."<sup>3</sup> In the first volume, most articles did not contain statistical methods sections or inferential statistics, but 6 reviews were published of the importance of using statistics and of particular statistical methods.

Meetings had been held at the Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) in 1978 and 1979 discussing whether a new scientific society (ie, separate from the Infectious Diseases Society of America and the American Society for Microbiology) should be formed with a clear focus on the epidemiology and prevention of nosocomial infections. In

the fifth issue of *Infection Control*, Frank Rhame listed reasons why a new society of hospital epidemiologists might be formed and potential pitfalls that such a society would need to avoid.<sup>4</sup> He said that two of the most important reasons were to respond collectively and perhaps more effectively to proposed legislation and regulations and to seek modification of federal research funding policies so that they would include support for research regarding the epidemiology and prevention of nosocomial infections through "a rigorous, highly academic and persistent campaign, perhaps even extending to the congressional level."<sup>4</sup> At ICAAC in 1980, a vote was taken and a new society, initially called the Society for Hospital Epidemiologists of America (SHEA), was created. Its first slate of officers took office in January 1981. In 1988, *Infection Control* became the official journal of SHEA and the journal's name was simultaneously changed to *Infection Control and Hospital Epidemiology*.

In 1993, Michael Decker became Editor and said that his goal was to have *Infection Control and Hospital Epidemiology* "recognized as the premier journal of hospital epidemiology in all its facets."<sup>5</sup> He said that this would involve continuing a "strong focus on infection control, while at the same time following the injunction to 'reach beyond nosocomial infections to the rates, distributions, preventive measures, and cost benefit studies of all adverse events in patients' by soliciting contributions reflecting the full range of hospital epidemiology."<sup>5</sup> During the next 7 years, submissions of original articles more than doubled and *Infection Control and Hospital Epidemiology* became the "most cited journal in its field" and "a convincing leader in the impact and immediacy of its publications."<sup>6</sup> The proportion of original articles coming from countries other than the United States and Canada increased steadily dur-

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ing those same years.<sup>6</sup> In 2003, *Infection Control and Hospital Epidemiology* went online and now has five volumes available for online searching and scholarship (ie, volumes 20 through 24 covering the years 1999 through 2003). The 11 years before that (1988 through 1998) are also available electronically in CD-ROM format, obtainable at a discount from the publisher, SLACK Incorporated, by calling its Customer Service Department at 1-800-257-8290.

Volume 25 of *Infection Control and Hospital Epidemiology* represents an important milestone for SHEA, for the journal, and for the field of infection control. As attested by this issue, the effort to control nosocomial infections has spread worldwide. The field has made tremendous strides since 1980 as reflected by the progressive increase in the quality and quantity of studies regarding the epidemiology and prevention of nosocomial infections published in this and many other journals, but still stands at some important crossroads.

Controversy has recently arisen as to both the effectiveness and the safety of isolation,<sup>7,8</sup> one of the primary tools for preventing nosocomial transmission of epidemiologically important pathogens. MRSA, an epidemiologically important pathogen that appears to be significantly more deadly than methicillin-susceptible strains<sup>9-11</sup> and now accounts for about half of all nosocomial *S. aureus* infections in NNIS System hospitals, has been at the center of the controversy for both of these issues.<sup>7,8</sup> Thompson and Wenzel found during 1981 that MRSA could be controlled at UVA using active surveillance cultures and isolation.<sup>2</sup> This approach resulted in eradication from the hospital and then low MRSA infection rates for the next decade.<sup>12</sup> Others had already found the same in Northern Europe, where MRSA has been kept less than 1% of all nosocomial *S. aureus* infections in multiple countries using this approach routinely in all facilities.<sup>13,14</sup> This remained true through 2002 despite the presence of the *mec IV* strains that began appearing in the mid 1990s.<sup>15</sup> Some have suggested that those strains must mean that MRSA is now uncontrollable in the healthcare system, but the continued success in controlling nosocomial MRSA infections to less than 1% of all *S. aureus* infections in Northern European countries through 2002 suggests otherwise. The low prevalence of MRSA in multiple prevalence studies (including a population-based study in a community reporting high rates of community-acquired MRSA<sup>16</sup>) has also suggested otherwise.<sup>17-20</sup>

A SHEA guideline recommended the use of surveillance cultures and contact precautions for control of nosocomial MRSA infections,<sup>21</sup> but some objected that the study by Thompson et al.<sup>2</sup> and the other 70 studies confirming control of nosocomial MRSA (and vancomycin-resistant *Enterococcus* [VRE]) infections with surveillance cultures and contact precautions cannot be accepted as a basis for action because none was a randomized, controlled trial.<sup>7</sup> The same objection was not voiced to recommendations regarding all other types of isolation for other types of nosocomial infections (virtually none of which seems to have been based on randomized, controlled trials), howev-

er, suggesting that this objection may have been about something other than scientific rigor. Adding support to the latter conclusion, some of those objecting to MRSA isolation measures "not based on randomized, controlled trials" have recently coauthored other infection control guidelines that include recommendations not based on randomized, controlled trials.<sup>22,23</sup>

It is possible that the controversy about MRSA isolation relates more to concerns about money than it does to concerns about methods. When shown data supporting the SHEA guideline, the chief executive officer of one Virginia hospital said, "I can see that that way is better for patient safety from these infections, but which way is cheaper?" Others have asked similar, although perhaps less blunt, questions about the cost-effectiveness of controlling nosocomial MRSA and VRE infections with this approach.<sup>7</sup> All available cost-effectiveness studies to date have suggested that it is more expensive to use standard precautions and allow MRSA and VRE to keep spreading at current rates than it is to use surveillance cultures and contact precautions and control the more expensive infections to a low level.<sup>21,24-27</sup>

Another topic currently generating as much heat as light regarding isolation is the adverse effects of isolation. Several studies have reported that healthcare workers enter isolation rooms less often and one recent unrandomized study found a statistically significant increase in the rate of adverse effects (31 vs 15/1,000 patient-days).<sup>8</sup> These prominently included pressure sores, falls, and fluid or electrolyte disturbances, suggesting either that staff were being less attentive or that patients with MRSA were somewhat more prone to such complications. Nurses recorded vital signs and physicians wrote progress notes less frequently. There were no significant increases in adverse events involving diagnostic, operative, anesthetic, or medical procedures or drugs. There was no significant increase in mortality. The authors emphasized that their findings will require confirmation in follow-up studies by other investigators.

Knowledge of potential adverse effects of hospital care, including things done in the name of infection control, is valuable knowledge. The English poet Robert Browning said, "I would never unknow anything," and hospital epidemiologists should have a similar attitude. If confirmed, the findings could lead to the creation of continual quality improvement programs to assess and optimize care for isolation patients. On the other hand, these findings should not be viewed as a reason to stop using isolation to control nosocomial infections due to epidemiologically important pathogens such as *Mycobacterium tuberculosis*, influenza, the severe acute respiratory syndrome (SARS) coronavirus, and antibiotic-resistant pathogens such as MRSA, as the adverse effects of inadequate isolation in many studies have been larger than those reported by Stelfox et al.<sup>8</sup> to be due to isolation. For example, in one MRSA outbreak in a neonatal intensive care unit that continued for 51 months, almost half of all neonates became colonized with MRSA and 75 developed MRSA bacteremia with 14 related deaths.<sup>28</sup>

The other hot topic in infection control is research funding, or rather the relative lack of it. As mentioned above, this was squarely addressed as a major problem in the first volume of *Infection Control* in 1980.<sup>4</sup> Almost a quarter of a century later, there are still no dedicated funds at the National Institutes of Health or the Centers for Disease Control and Prevention to fund investigator-initiated grants regarding nosocomial infections. A couple of years ago, the long-running National Institute of Allergy and Infectious Diseases (NIAID) Mycology Study Group, which has conducted studies of therapy for fungal infections during the past couple of decades, was enlarged to include "bacterial infections" and renamed the Bacteriology and Mycology Study Group (BAMSG). With much excitement, a group of investigators who are members of SHEA and who wanted to do multicenter studies at their 10 university-related hospitals in six different states contacted NIAID to see if this meant that they could submit a research grant to BAMSG for potential funding of studies of the prevention and management of nosocomial catheter-related bloodstream infections. The oral answer was, "No." [R. J. Sherertz, MD, personal communication, December 8, 2003.]

The Agency for Healthcare Research and Quality (AHRQ) has funded some grants by healthcare epidemiologists regarding nosocomial infections, but also has no section dedicated to the problem of nosocomial infections. AHRQ's focus and behest is "patient safety" and the vast majority of the priority and the money has reportedly gone to noninfectious adverse effects of healthcare. It is good that studies are being funded regarding the epidemiology and prevention of noninfectious complications of healthcare (eg, falls, pressure sores, and prescribing errors), but the disparity in public funding of research between the two types of healthcare complications is difficult to justify based on the available data.

As summarized by Burke in an editorial in the *New England Journal of Medicine* entitled "Infection Control—A Problem for Patient Safety," nosocomial infection rates have continued to increase and now cause or contribute to an estimated 90,000 deaths in U.S. hospitals each year.<sup>29</sup> A public health problem of this magnitude deserves the type of careful research that would come from having regular, dedicated funds to support investigator-initiated grants on the topic.

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