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## Searching Many Guidelines for How Best to Control Methicillin-Resistant *Staphylococcus aureus* Healthcare-Associated Spread and Infection

*To the Editor*—Controversy has persisted for decades over whether proactive measures are required to control methicillin-resistant *Staphylococcus aureus* (MRSA) healthcare-associated spread and infection, and, if so, which measures.

As MRSA healthcare-associated infections (HAIs) escalated 32-fold over the past 3 decades in hospitals that are a part of the Centers for Disease Control and Prevention (CDC) National Nosocomial Infections Surveillance (NNIS) system, MRSA guidelines proliferated, but the details of those guidelines often differed. Which guideline should an infection control practitioner now follow?

We recommend the 2003 Society for Healthcare Epidemiology of America (SHEA) guideline<sup>1</sup> for reasons such as these:

1. Antibiotic use throughout the healthcare system provides a selective advantage for antibiotic-resistant microorganisms like MRSA.
2. Patients coming into contact with contaminated hands, clothing, medical equipment, and/or environmental surfaces provide a means of transmission throughout the healthcare system.

3. Because all healthcare facilities contribute to this problem, all must routinely prevent the spread of MRSA for optimal results throughout the healthcare system.

4. Over 160 studies have reported that active detection and isolation (ADI) effectively halts the spread of antibiotic-resistant microorganisms such as MRSA or vancomycin-resistant *Enterococcus* (VRE), and 14 cost-effectiveness studies found savings.<sup>2</sup>

5. After ADI kept rates of HAI very low at the University of Virginia for a decade, MRSA HAI rates began to rise—not because of a change in infection control measures but because of increasingly frequent admissions of patients colonized elsewhere in the healthcare system, usually in small, lower-risk facilities.<sup>3</sup>

6. A similar pattern has been reported elsewhere (ie, a decade of infection control with ADI followed by increasingly higher rates of HAI due to the increasingly more frequent admission of patients colonized with healthcare-associated strains of MRSA).<sup>4</sup>

7. When the University of Virginia began testing all nonisolated, transferred patients, increasing rates of unrecognized MRSA and VRE colonization were documented among surrounding healthcare facilities—mostly small hospitals and nursing homes.<sup>5</sup>

8. A medium-sized hospital began using ADI and maintained lower rates of unrecognized and unisolated MRSA-colonized patients than did the surrounding, generally smaller healthcare facilities.<sup>5</sup>

9. Others have suggested that optimal control of antibiotic-resistant microorganisms will require effective infection control measures exerted throughout the healthcare system, not just in healthcare facilities with the highest rates of HAI.<sup>6</sup>

10. Guidelines (eg, CDC isolation guidelines in 1983 and 1996 and UK MRSA guidelines in 1986 and 1990) that did not recommend routine ADI to find and control the full reservoir failed to achieve infection control.

11. A guideline recommending ADI only among patients at higher risk of infection and for whom MRSA was already known to be present also failed to achieve infection control (1998 UK MRSA guideline). There was no recommendation to find and control the full reservoir for spread.

12. Multiple northern European nations and the state of Western Australia, which recommend routine ADI in all healthcare facilities to find and control the full reservoir, have managed for decades to keep the rate of MRSA HAI exceedingly low.

13. The most bewildering guideline was a CDC guideline published electronically on October 18, 2006, offering 87 different options in 2 tiers. It argued against the 2003 SHEA guideline's emphasis on ADI but then seemed to contradict itself by making option V.B.6.a.i in the second tier its only category 1A infection control measure: "Implement Contact Precautions routinely for all patients col-

onized or infected with a target MDRO [multidrug-resistant organism]."<sup>7(p45)</sup> In the first tier, it had recommended multiple options that were known not to work without ADI (eg, isolating only those found by MRSA-positive clinical cultures). Problems with the 2006 CDC guideline have been previously discussed elsewhere.<sup>8</sup>

14. A 2008 SHEA guideline<sup>9</sup> seemed to be patterned after the 2006 CDC guideline, providing options arrayed in 2 tiers and relegating ADI to the second tier. It had some of the same problems (eg, recommending multiple first tier options known not to work without ADI—like isolating only those patients found by use of MRSA-positive clinical cultures). A curiosity was that it seemed to equate as second tier options ADI, for which more than 100 supportive studies were available, including infection control across entire nations for decades, with chlorhexidine bathing of intensive care unit (ICU) patients, for which it referenced only one as yet unpublished study suggesting that MRSA HAIs were reduced. Most HAIs, even in tertiary care hospitals conducting hospital-wide surveillance (like the University of Virginia), don't involve ICU patients, and focusing infection control efforts only on ICU patients has left many MRSA HAIs uncontrolled in prior studies.<sup>10,11</sup>

15. Some have argued that a 2009 CDC study showing that NNIS/National Healthcare Safety Network hospitals had halved the rate of catheter-related bloodstream infections due to MRSA from 2001 to 2007 in ICUs after implementing 1996 and 2002 CDC guideline recommendations for preventing catheter-related bloodstream infection meant that controlling the other 95% of MRSA HAIs with ADI would be unnecessary. We find such arguments unconvincing.

16. A propitious development has been reports of significant decreases in MRSA HAI rates in the United Kingdom (after many years of failure to control such rates) after a 2006 MRSA UK guideline recommended ADI in all hospitals. The UK Department of Health has reportedly recently suggested making ADI mandatory.

17. French hospitals have begun using ADI, and the rates of MRSA HAI are decreasing.

18. After impressive preliminary results, the US Veterans Administration Healthcare System mandated ADI.

19. Because optimal screening criteria vary by time and place, the 2003 SHEA guideline<sup>1</sup> encourages each healthcare facility, on the basis of data from its screening program and clinical microbiology results, to flexibly adjust screening criteria for finding and isolating the full reservoir.

Americans are often interested in assigning fault. When a patient dies of an MRSA HAI, someone often wants to know who's to blame. Because MRSA HAIs represent a system failure, the answer to that question is complex and would have to include more than a single individual or even the healthcare facility where the MRSA was acquired and/or where the HAI occurred; for example, it would have to include all the

guidelines that didn't "get it" and all the facilities that therefore didn't proactively stop the spread of MRSA they kept facilitating.

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