

## Consumers Union Policy Brief on MRSA

### Hospitals Should Screen Patients for MRSA to Prevent Infections

The Centers for Disease Control and Prevention (CDC) estimates that nearly 19,000 Americans died in 2005 from Methicillin-resistant *Staphylococcus aureus* (MRSA) infections acquired in hospitals and other health care settings.<sup>1</sup> MRSA is resistant to many available antibiotics and is spreading quickly in healthcare facilities across the country. Unfortunately, most hospitals are not taking the steps they need to stem the alarming incidence of MRSA.

*Staphylococcus aureus*, or “staph,” is a bacterium that is found on the skin or in the nose of an estimated 25 percent of the population.<sup>2</sup> Individuals who are colonized with staph are normally healthy and without any symptoms, although they may experience minor skin infections. In the hospital, staph can cause more serious infections, such as surgical wound infections, bloodstream infections, and pneumonia.

Staph infections are usually treated with methicillin, but some staph bacteria have developed a resistance to this and other antibiotics. Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are becoming more common. In 1974, only two percent of staph infections in hospitals were caused by MRSA. By 2004, MRSA infections made up nearly 63 percent of all staph infections in healthcare settings.<sup>3</sup>

#### MRSA Infections Are Widespread

In June 2007, the Association for Professionals in Infection Control and Epidemiology (APIC) released the first-ever nationwide analysis on the prevalence of MRSA in U.S. healthcare facilities based on data collected from more than 1,200 hospitals in all 50 states. The APIC report found that MRSA hospital-acquired infections are 8.6 times more prevalent than previous estimates and those MRSA infections are found in all wards throughout most hospitals. This is significant as APIC found that less than half (45 percent) of hospitals are tracking infections throughout the hospital – the rest are focusing only on intensive care, surgical, or high risk nursery patients.<sup>4</sup>

An estimated 95,000 people developed MRSA infections in 2005, according to CDC researchers.<sup>5</sup> Hospitalizations due to MRSA infections have doubled in recent years. Between 1999 and 2005, the number of patients hospitalized with MRSA infections went from 127,000 to almost 280,000.<sup>6</sup>

While MRSA once affected primarily the sick and elderly in hospitals, according to many published reports it has now spread outside of these facilities. The bugs, typically different strains than the types found in hospitals, are striking young, healthy people through contact with infected skin mainly by sharing towels or other personal items. However, the community strain is now being spread in hospitals when patients unknowingly carry it in.

Even though reports of community-acquired MRSA infections are increasing, recent CDC sponsored research shows that 85 percent of such infections are picked up in the hospital or some other health care setting.<sup>7</sup>

Patients who develop MRSA infections end up staying longer in the hospital, have higher medical care bills, and are more likely to die from their infection. A study by the Pennsylvania Health Care Cost Containment Council found that hospital patients with MRSA infections are four times as likely to die, will stay in the hospital two and a half times as long, and are charged three times as much compared to patients without MRSA.<sup>8</sup>

### **Poor Hand Hygiene in Hospitals Spreads MRSA**

In the hospital setting, MRSA can get in the bloodstream or organs and cause an infection through a surgical wound, urinary catheter, or ventilator.<sup>9</sup> The infection can spread from patient to patient through contact with unwashed hands or contaminated gloves. Unfortunately, studies have shown that hand washing compliance rates in hospitals are generally less than 50 percent, which helps to explain why so many patients develop MRSA and other infections.<sup>10</sup> The CDC considers proper hand hygiene to be the single most important factor in protecting patients from hospital acquired infections.<sup>11</sup>

Healthcare workers can come in contact with MRSA without touching patients infected with the bacteria. One study found that 42 percent of nurses' gloves became contaminated with MRSA when they touched surfaces in the room of a patient with MRSA even though they did not come in direct contact with the patient.<sup>12</sup> MRSA may survive for weeks to many months on various surfaces, which increases the likelihood that health care workers may come into contact with the bacteria and unwittingly pass it on to patients.<sup>13</sup>

Some research has suggested that health care workers with clothing contaminated with MRSA may spread the bacteria from patient to patient. One study found that 65 percent of health care workers' gowns or uniforms were contaminated with MRSA after performing routine morning care for patients with MRSA in their wound or urine.<sup>14</sup>

### **MRSA Can Be Beat With Stricter Infection Control**

As MRSA infection rates have climbed, more and more attention has focused on preventing the spread of these superbugs. In addition to strict hand hygiene, successful strategies for controlling MRSA include screening patients using active surveillance cultures, isolating patients colonized with MRSA, using gowns, gloves, and masks when treating them, and routine decontamination of patient rooms and operating rooms.<sup>15</sup>

Many hospitals in northern Europe have used these strategies to successfully control MRSA infections for decades. MRSA made up 33 percent of all staph infections in Denmark in the 1960s, but has declined steadily after aggressive control practices were instituted and has hovered around 1 percent for the past 25 years.<sup>16</sup> Likewise, the prevalence of MRSA has been kept under .5 percent in both Finland and the Netherlands.<sup>17</sup>

APIC found that only 29 percent of infection control professionals it surveyed for its 2007 MRSA prevalence study reported that their hospitals used active surveillance cultures to identify patients who are colonized with MRSA. Fifty percent of the infection control professionals

surveyed said their hospital “was not doing as much as it could or should to stop the transmission of MRSA.”<sup>18</sup>

A number of hospitals in the U.S. following this “bundle” of infection control strategies have documented impressive results. A pilot program at the Veterans Health Administration’s (VHA) Pittsburgh Healthcare System in Pennsylvania in 2001 has reduced infections in the hospital’s surgical unit by 70 percent.<sup>19</sup>

All patients admitted to the hospital underwent a nasal swab upon admission to screen for MRSA. Patients who tested positive were isolated from other patients and were treated by health care workers who wore disposable gowns, masks, and gloves. Medical equipment – like stethoscopes and blood pressure cuffs – was disinfected after each use. Patients received another nasal swab right before discharge to see if they developed a MRSA infection during treatment.<sup>20</sup>

This pilot was so successful that the VHA issued a directive in January 2007 “to interrupt the chain of transmission of MRSA” by requiring all of its 150 hospitals to follow this MRSA protocol. Initially, the directive required screening patients in intensive care units, then in other high risk units such as transplant units and general surgical wards, and continuing to phase in other units of the hospitals “until all inpatient areas (with the exception of inpatient psychiatry) are incorporated in the initiative.”<sup>21</sup>

The University of Pittsburgh Medical Center has reduced MRSA in its intensive care units by 90 percent using this approach<sup>22</sup> and significant results have been documented at the University of Virginia Health System<sup>23</sup> and Evanston Northwestern Healthcare in Illinois.<sup>24</sup>

The effectiveness of MRSA screening efforts at three hospitals in the Evanston Northwestern Healthcare system were documented in a study published on March 18, 2008 in *Annals of Internal Medicine*. Researchers studied MRSA interventions and found that universal screening of all patients upon admission resulted in an over 50 percent reduction in hospital-acquired MRSA infections.<sup>25</sup>

Another study published recently in the *Journal of the American Medical Association* concluded that MRSA screening of surgical patients was not effective for preventing surgical infections. However, this study did not measure the impact on the spread of infections throughout the hospital, rather it only measured infections among the surgical patients screened. The study revealed that the results of 31 percent of the patients’ tests were not received prior to their surgery, thus negating the benefit of screening. Further, the study actually found those patients who were pre-screened and who got results prior to surgery, were able to receive the appropriate preventive antibiotics for MRSA and to “decolonize” prior to surgery. In this group, no infections occurred.<sup>26</sup>

### **Screening For MRSA is Cost Effective**

Critics argue that this bundled approach for controlling MRSA is too expensive. But numerous studies have shown that screening and isolating patients who test positive for MRSA ends up saving money by preventing infections that would result in even higher costs for patients and hospitals.<sup>27</sup> For example, the infection control program at Evanston Northwestern saves the hospital \$25,000 in uncovered medical costs per patient every time a MRSA infection is prevented.<sup>28</sup>

Similarly, a recent analysis found that hospitals nationwide would save over \$231 million annually if all elective surgery patients were screened for MRSA upon admission and proper precautions were taken with those found colonized with MRSA.<sup>29</sup>

### **States Begin Requiring MRSA Screening**

Consumers Union supports proposals that have been debated in a number of states to require hospitals to screen certain patients for MRSA and take special precautions with those colonized with the bacteria to prevent its spread. Screening patients for MRSA is a critical part of an effective strategy to prevent the spread of this deadly superbug.

So far, three states – Illinois, New Jersey, and Pennsylvania – have passed laws requiring hospitals to screen certain patients upon admission for MRSA. All three states require hospitals to screen patients admitted to Intensive Care Units and other high risk patients (such as those being transferred from nursing homes) to identify those colonized with MRSA.<sup>30</sup>

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<sup>1</sup> R. Molina Klevens, DDS, MPH, et al, "Invasive Methicillin-Resistant *Staphylococcus aureus* Infections in the United States," Journal of the American Medical Association, 298 (October 17, 2007) 15, p. 1769.

<sup>2</sup> MRSA: Information for Patients & Visitors (Saskatoon Health Region: Infection Prevention & Control Program, May 2004), p. 1.

<sup>3</sup> MRSA in Healthcare Settings (Washington, D.C.: Centers for Disease Control and Prevention, 2006), p. 2. [http://www.cdc.gov/ncidod/dhqp/ar\\_mrsa\\_spotlight\\_2006.html](http://www.cdc.gov/ncidod/dhqp/ar_mrsa_spotlight_2006.html)

<sup>4</sup> Executive Summary: National Prevalence Study of MRSA in U.S. Healthcare Facilities (Washington, D.C.: Association for Professionals in Infection Control and Epidemiology, 2007), p. 4.

<sup>5</sup> Klevens, p. 1769

<sup>6</sup> Klein, Elli, et al., "Hospitalizations and Deaths Caused by Methicillin-Resistant *Staphylococcus aureus*, United States, 1999-2005," Emerging Infectious Diseases, 13 (December 2007) 12, p. 1840.

<sup>7</sup> Klevens, p. 1763.

<sup>8</sup> MRSA in Pennsylvania Hospitals (Harrisburg, Pennsylvania, Pennsylvania Health Care Containment Council, August 2006), p. 2.

<sup>9</sup> Alex Cukan, "Caregiving: Choosing a Hospital, Part 5," United Press International, 22 August 2006, p. 1.

<sup>10</sup> Harbath, S. et al., "The Preventable Portion of Nosomial Infections: An Overview of Published Reports," Journal of Hospital Infection (2003)54, p. 261, citing Pittel et al (2000).

<sup>11</sup> Hand Hygiene in Healthcare Settings: An Overview (Washington, D.C. : Centers for Disease Control and Prevention, 2002), Slide 2.

<sup>12</sup> Boyce, JM et al, "Environmental contamination due to methicillin-resistant *Staphylococcus aureus*: possible infection control implications," Infection Control & Hospital Epidemiology, 1997; 18: 622-627.

<sup>13</sup> Neely, AN et al, "Survival of enterococci and staphylococci on hospital fabrics and plastics," Journal of Clinical Microbiology, 2000; 38:724-726.

<sup>14</sup> Boyce, p. 622-627.

<sup>15</sup> Muto, Carlene A., et al, "SHEA Guideline for Preventing Nosocomial Transmission of Multidrug-Resistant Strains of *Staphylococcus aureus* and *Enterococcus*," Infection Control and Hospital Epidemiology, 24 (May 2003) 5, p. 368.

<sup>16</sup> Bager, F DANMAP 98: "Consumption of Microbial Agents and Occurrence of Antimicrobials in Bacteria from Food Animals, Food and Humans in Denmark," Copenhagen: Statens Serum

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Institute, Danish Veterinary and Food Administration, Danish Medicines Agency, Danish Veterinary Laboratory; 1998.

<sup>17</sup> Verhoef, J., et al, "A Dutch Approach to Methicillin-Resistant *Staphylococcus Aureus*," European Journal of Microbiology and Infectious Diseases, 1999; 18: 461-466.

<sup>18</sup> Jarvis, William R.A. et al, "National prevalence of methicillin-resistant *Staphylococcus aureus* in inpatients at U.S. health care facilities," American Journal of Infection Control, December 2007, pp. 631-637

<sup>19</sup> Joann Loviglio, "Doctors Say Superbug Can Be Controlled," Associated Press, 6 February 2007, p. 1

<sup>20</sup> Loviglio, p. 1

<sup>21</sup> Department of Veterans Affairs, VHA Directive 2007-002, Corrected Copy, January 22, 2007

<sup>22</sup> Hall, Gerri et al, "Approaches to Infection Control: Active Surveillance Culture as a Promising New Tool," Infection Control Today, February 1, 2006.

<sup>23</sup> Allen, Arthur, "Squash the Bug," Slate, October 24, 2006.

<sup>24</sup> Colias, Mike, "Turning Tables on Infection," Chicago Business, October 23, 2006.

<sup>25</sup> Robicsek, Ari et al, "Universal Surveillance for Methicillin-Resistant *Staphylococcus aureus* in 3 Affiliated Hospitals," Annals of Internal Medicine, March 18, 2008, p. 416.

<sup>26</sup> Harbath, Stephen et al, "Universal screening for Methicillin-Resistant *Staphylococcus aureus* at hospital admission and nosocomial infection in surgical patients," Journal of the American Medical Association, March 12, 2008, pp. 1149-1157.

<sup>27</sup> Hall, p. 2.

<sup>28</sup> Loviglio, p. 1.

<sup>29</sup> Noskin, Gary A., et al, "Budget Impact Analysis of rapid Screening for *Staphylococcus aureus* Colonization Among Patients Undergoing Elective Surgery in U.S. Hospitals," Infection Control and Hospital Epidemiology, November 21, 2007.

<sup>30</sup> See summary and link to state laws at

<http://www.consumersunion.org/campaigns/2008%20state%20legislative%20web%20chart.pdf>

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