



# DuPage County Health Department R E V I E W

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The purpose of this two-page surveillance update is to promote the control and prevention of **communicable disease (CD)** by providing clinically relevant information and resources to healthcare professionals in DuPage County.



## Under the Microscope MRSA

For questions or more information on health care-associated MRSA, please call the DuPage County Health Department at (630) 682-7979, ext. 7553.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a type of *S. aureus*, or "staph," that is resistant to antibiotics called beta-lactams, a broad class of antibiotics, which include penicillin derivatives and cephalosporins. While 25% to 30% of the population is colonized (when bacteria are present, but not causing an infection) with staph, approximately 1% is colonized with MRSA.<sup>1</sup>

Many *S. aureus* strains, while resistant to penicillin, remain susceptible to penicillinase-stable penicillins, such as oxacillin and methicillin. Strains that are oxacillin and methicillin resistant, historically termed methicillin-resistant *S. aureus* (MRSA), are resistant to all  $\beta$ -lactam agents, including cephalosporins and carbapenems.<sup>2</sup>

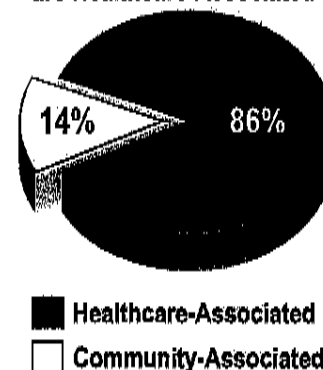
Staph infections, including MRSA, occur most frequently among persons in hospitals and healthcare facilities (such as nursing homes and dialysis centers) who have weakened immune systems.<sup>3</sup> Prior to the mid-1990s, MRSA infections were uncommon in patients without prior contact with the healthcare system, history of injection drug use, or recent receipt of antimicrobial therapy. However, recent reports suggest that the frequency of MRSA infections is increasing in Illinois and nationally among healthy patients without the traditional risk factors for MRSA infections.<sup>4</sup>

Staph and MRSA can also cause illness in persons outside of hospitals and healthcare facilities. MRSA infections that are acquired by persons who have not been recently (within the past year) hospitalized or had a medical procedure (such as dialysis, surgery, catheters) are known as **community-associated MRSA (CA-MRSA)** infections. **Staph or MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people.**<sup>1</sup>

Current evidence suggests that these CA-MRSA strains are genetically distinct from those identified from patients with nosocomial or **healthcare-associated MRSA (HA-MRSA)**, have different antibiotic susceptibility patterns, and may cause a different spectrum of illness (including skin and soft tissue infections of varying severity). CA-MRSA, like other *S. aureus* strains, less commonly cause serious invasive infections including osteomyelitis, necrotizing pneumonia, septic phlebitis, and toxic shock syndrome. The epidemiology of CA-MRSA continues to be investigated.<sup>4</sup>

A recently published study reported the estimated number of people developing a serious, **invasive MRSA infection (defined by the isolation of MRSA from a normally sterile body site, e.g., blood, cerebrospinal fluid, pleural fluid, joint/synovial fluid, bone)** in the U.S. in 2005 was about 94,360.<sup>5</sup> Approximately 18,650 persons died during a hospital stay related to these serious MRSA infections.<sup>5</sup> Serious MRSA disease is still predominantly related to exposures to healthcare delivery, and overall rates of disease were consistently highest among older persons (age >65 years), Blacks, and males.<sup>5</sup>

### Most Invasive MRSA Infections are Healthcare-Associated<sup>5</sup>



Clinicians are encouraged to **collect specimens for culture and antimicrobial susceptibility testing from all patients with abscesses or purulent skin lesions prior to initiating antibiotic treatment**, particularly those with severe local infections, systemic signs of infection, or history suggesting connection to a cluster or outbreak of infections.<sup>6,4</sup>

**MRSA infections may be prevented** by (1) practicing good hand hygiene (**frequent handwashing** with soap and water or using an alcohol-based hand sanitizer), (2) keeping abrasions or **cuts covered with a clean, dry bandage** until healed, (3) **avoiding sharing personal items (e.g., towels, razors)** that come into contact with your bare skin, and using a barrier (e.g., clothing or a towel) between your skin and shared equipment such as weight-training benches, and (4) considering consultation with a physician for **appropriate evaluation and treatment of a possible skin infection.**<sup>7</sup>

#### References:

1. [www.cdc.gov/nclidod/dhqp/ar\\_mrsa\\_ca\\_clinicians.html](http://www.cdc.gov/nclidod/dhqp/ar_mrsa_ca_clinicians.html)
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4. [www.idph.state.il.us/health/infect/MRSA\\_Provider.htm](http://www.idph.state.il.us/health/infect/MRSA_Provider.htm)
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