

MRSA UPDATE

Methicillin-Resistant *Staphylococcus aureus* update

A recent article in the *Journal of the American Medical Association* (*Journal of the American Medical Association* 2007;298(15):1763-1771.) and media coverage of a boy who died in Virginia due to an invasive strain of methicillin-resistant *Staphylococcus aureus* (MRSA) has stimulated a great deal of interest and discussion. Although the media coverage of these two events occurred almost simultaneously, the stories are not related. In addition, it is important to note that there are different types of MRSA. There are strains known as hospital acquired MRSA (HA-MRSA), as well as strains known as Community-Acquired MRSA (CA-MRSA). These are distinctly different organisms. The JAMA article is primarily discussing the HA-MRSA, which is primarily seen in people who have received health care.

Community-Acquired MRSA (CA-MRSA) is a different strain of MRSA that is easier to treat, infects younger populations, and most often causes nothing more than boils and soft tissue infections. **HOWEVER**, if left untreated, it can cause very serious disease due to a specific toxin that it can produce. CA-MRSA primarily causes infection in athletes, military personnel, children in daycare, and intravenous drug users (the same groups in which other *Staphylococcus*, or “staph”, *bacteria tend to cause infections*). The reason these groups are susceptible to staph infection is that they often have close skin-to-skin contact, tend to acquire cuts and abrasions, often share contaminated items, often are in crowded conditions, and may have poor hygiene. There is also an increased risk in persons who have chronic skin conditions such as eczema.

Although the media have termed CA-MRSA as “super-bugs”, they actually are generally treatable with a simple medical procedure or with other antibiotics that are not traditionally used to treat staph infec-

tions. Therefore the most important issue is that they are diagnosed early and accurately. The discussion below will provide a better overview of the issue of staphylococcal infections.

Staphylococcus aureus are bacteria commonly carried on the skin or in the nose of healthy people. Approximately 25% to 30% of the population carry the bacteria in the nose, without being infected. Sometimes, however, staph can cause an infection.

These organisms are one of the most common causes of skin infections in the United States. Most of these skin infections are minor (such as pimples and boils), and can be treated without antibiotics. However, staph bacteria also can cause serious infections (such as surgical wound infections, bloodstream infections, and pneumonia).

Some staph are resistant to antibiotics. MRSA is a type of staph that is resistant to a family of antibiotics commonly used to treat staph infections, including methicillin, oxacillin, nafcillin, penicillin and amoxicillin. Overall, 25% to 30% of the population are carriers of staph; about 1% of the population are carriers of MRSA.

Staph infections, including MRSA, occur most often among persons in hospitals and healthcare facilities (such as nursing homes and dialysis centers) who have weakened immune systems. These healthcare-associated staph infections include surgical wound infections, urinary tract infections, bloodstream infections, and pneumonia.

MRSA and other staph can also cause illness in persons outside of hospitals and healthcare facilities. MRSA infections that are acquired by persons who **have not** recently (within the past year) been hospitalized or had a medical procedure (such as dialysis, surgery, or catheters) are known as CA-MRSA infections. Staph infections, including those caused by

MRSA, in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people.

Although the majority of MRSA infections occur among patients in hospitals or other healthcare settings, these infections are becoming more common in the community setting. Data from a prospective study in 2003, suggests that 12% of clinical MRSA infections are community-associated, but this percentage varies by geographic region and population.

The Centers for Disease Control and Prevention (CDC) has investigated clusters of CA-MRSA skin infections among athletes, military recruits, children, Pacific Islanders, Alaskan Natives, Native Americans, men who have sex with men, and prisoners. Factors that have been associated with the spread of MRSA skin infections include: close skin-to-skin contact, openings in the skin such as cuts or abrasions, contaminated items and surfaces, crowded living conditions, and poor hygiene. In the outbreaks of MRSA investigated by CDC, the environment has not played a significant role in the transmission of the organism. MRSA is transmitted most frequently by direct skin-to-skin contact.

You can best prevent these infections by practicing good hygiene:

1. Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer.
2. Shower after working out
3. Keep cuts and scrapes clean and covered with a bandage until healed.
4. Avoid contact with other people's wounds or bandages.
5. Avoid sharing personal items such as towels or razors.
6. Use a barrier (e.g., clothing or a towel) between your skin and shared equipment (e.g., exercise equipment in a gym), and wipe the surfaces of the equipment before and after use.

If you think you might have a MRSA infection, see your health care provider. Most staph infections, including those caused by MRSA, are treatable with antibiotics. If you are given an antibiotic, take all of the doses, even if the infection is getting better, unless your provider tells you to stop taking it. Do not share antibiotics with other people or save unfinished antibiotics to use at another time. Many staph skin infections can be treated by draining the abscess or boil and may not require antibiotics. Drainage of skin boils or abscesses should only be done by a healthcare

provider. If, after visiting your healthcare provider, the infection is not getting better within a few days, contact your provider again. If other people you know or live with get the same infection, tell them to go to their healthcare provider.

The following web-sites will provide more in-depth information about MRSA

CDC. Overview of CA-MRSA:

http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html

CDC. Clinical management of MRSA:

http://www.cdc.gov/ncidod/dhqp/pdf/ar/CAMRSA_ExpMtgStrategies.pdf

Federal Bureau of Prisons. Guidelines for Prisons:

<http://www.bop.gov/news/PDFs/mrsa.pdf>

Wisconsin Division of Public Health. Community Guidelines (Including schools):

<http://www.unc.edu/depts/spice/WisconsinCAMRSA-Guide.pdf>

MRSA in Schools

In the absence of an outbreak, individual cases of infections caused by these organisms in school do not warrant school closures or massive cleaning and disinfection efforts.

To prevent MRSA infections at the school, consider these guidelines:

- Regular handwashing is the best way to prevent getting and spreading staph/MRSA. Encourage and practice hand hygiene.
- Practice and encourage good skin care. Since staph infections start when staph enter the body through a break in the skin, keeping skin healthy and intact is an important preventive measure.
- Ensure access to sinks, soaps, and clean towels.
- Ensure the availability of alcohol-based hand sanitizers, if soap and water are not accessible.
- Encourage daily showers with soap and water.
- Discourage sharing of personal items such as towels, razors, and toothbrushes.
- Regularly clean sinks, showers, and toilets by saturating with disinfectant.
- Disinfect athletic equipment between users, especially wrestling mats, benches and

- other items where there is skin contact.
- Launder sheets, towels, sports uniforms, and underclothing with hot water and detergent, and dry on the hottest setting.
 - Wear gloves when handling dirty laundry.
 - Wear gloves when caring for another person's wounds, and protect clothing from touching wounds or bandages.
 - Encourage those infected to always keep draining lesions covered with dressings.
 - Dispose of dressings containing pus and blood carefully.

The following web-sites will provide more in-depth information about MRSA

CDC. Overview of CA-MRSA:

http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html

CDC. Clinical management of MRSA:

http://www.cdc.gov/ncidod/dhqp/pdf/ar/CAMRSA_ExpMtgStrategies.pdf

Federal Bureau of Prisons. Guidelines for Prisons:

<http://www.bop.gov/news/PDFs/mrsa.pdf>

Wisconsin Division of Public Health. Community Guidelines (Including schools):

<http://www.unc.edu/depts/spice/WisconsinCAMRSA-Guide.pdf>