

Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Schools: Prevention and Control Recommendations

Background

Staphylococcus aureus, often referred to as “staph,” is commonly found on the skin or in the nose of healthy people. Approximately 25% to 30% of the population are colonized with staph bacteria (i.e., carry the bacteria without becoming ill). Sometimes staph causes a minor skin infection (pimple, pustule, or boil) that can be treated conservatively, without antibiotics. However, on occasion, staph bacteria can cause more serious illnesses, such as infections involving soft tissue, bone, the bloodstream or the lungs.

Over the past years, treatment of some staph infections has become more difficult because the bacteria have become resistant to various antibiotics. *S. aureus* that is resistant to methicillin/oxacillin is called methicillin-resistant *Staphylococcal aureus* (MRSA). While 25% to 30% of the general population is colonized with *S. aureus*, approximately only 1% is colonized with MRSA. Infections caused by MRSA have historically been associated with ill persons in health-care institutions (e.g., hospital and long-term care facilities). However, MRSA has now emerged as a cause of skin and soft tissue infections in previously healthy adults and children who have not had prior contact with health-care settings. This type of MRSA infection is known as community-associated MRSA (CA-MRSA).

CA-MRSA can be transmitted from person to person through close contact. Risk factors associated with the spread of MRSA includes direct skin-to-skin contact with colonized or infected persons (non-intact skin serves as a point of entry for the bacteria), sharing contaminated personal items (e.g., body towels, razors, soap, clothing), poor personal hygiene, direct contact with contaminated environmental surfaces, and living in crowded settings.

Although outbreaks of MRSA should be routinely reported to the New Jersey Department of Health and Senior Services (NJDHSS), sporadic cases of MRSA infection are not. Recently, NJDHSS has received increasing reports of both outbreaks and sporadic cases of CA-MRSA infections. Likewise, there has been an increase in the number outbreaks of CA-MRSA skin and soft-tissue infections reported at the national level. Outbreaks of CA-MRSA have occurred among prison inmates, participants in contact sports (e.g., football, wrestling), military recruits, and men who have sex with men.

Strategies for the Prevention and Recognition of MRSA in School Settings

To limit the spread of MRSA infections in school settings, NJDHSS recommends the following with respect to policy, infection control, and education/increased awareness:

- **POLICY**

- The school nurse or physician should take an active role in evaluating students who complain of painful skin lesions, including lesions that resemble a “bug bite,” or other pustule skin lesion that appears to be infected. Any unusual skin lesion or other draining wound is potentially infectious to others and infection control measures should be in place to prevent the spread of infection.
- Transmission of MRSA infection among students and student athletes can have substantial public health impact. Therefore, a policy for active surveillance for skin infections should be implemented by the school nurse; school physician; and/or director, coach or trainer of sports teams (especially those teams involved in contact sports) to expedite referral for medical evaluation. Coaches and/or athletic trainers should be encouraged to assess student athletes for any unusual skin lesions before practice or competition.
- When MRSA infection is suspected, athletes should be referred to their primary care provider for evaluation and treatment. Following the medical evaluation, the student or parent should be asked to provide verification of the healthcare provider’s treatment plan. (Those infected with MRSA should follow their healthcare provider’s treatment plan, including completing antibiotic therapy, if an antibiotic was prescribed.)
- If MRSA is diagnosed, interview the student (parent/guardian for young children) to investigate the possibility of other cases among their friends, roommates, teammates, and/or family members. Evaluate other risk factors, as appropriate.

- **INFECTION CONTROL**

Any student with a draining skin lesion could transmit potentially infectious agents to others. When a student with a suspect or confirmed MRSA skin infection is in the classroom, the following infection control measures (based on Centers for Disease Control and Prevention [CDC] guidance) should include, but may not be limited to:

- Keeping the wound covered. All skin infections, particularly those that produce pus must be covered with a clean, dry bandage to contain the drainage. Because bandages can shift or dislodge with activity or when wet, students that participate in contact sports or other contact activities should ensure that the wound dressing stays intact during the anticipated activity. Keeping the site covered will help control the spread of potentially infectious drainage to others and can protect the environment from contamination. If a wound cannot be adequately covered or the drainage cannot be adequately

contained by the bandage, consider excluding the player from practice or competition until the lesion is healed. When providing wound care or dressing changes in the school setting, the infirmary staff must follow contact precautions. Contaminated dressings and other materials associated with the infected lesion should be placed in a plastic bag before discarding, as appropriate.

- Practicing Good Basic Hygiene. The infected student, medical staff, sport team staff, and anyone expected to have contact with the infected student must be diligent with hand hygiene. To this end, ensure availability of adequate soap and hot water. Advise the MRSA-infected student and all those who might have contact with the infected wound or wound dressing to thoroughly wash their hands using soap and warm water or, if this is not practical, to use an alcohol-based waterless hand sanitizer immediately after contact. In addition, emphasize the importance of good hygiene overall, including showering and washing with soap after all practices and competitions, before using the gymnasium, or immersing in a whirlpool, hot tub, or swimming pool.
- Prohibiting students from sharing personal items. Instruct students and athletes to avoid sharing personal hygiene supplies and other items such as athletic clothing, towels, uniforms, skin balms, skin lubricants, razors, and certain sports equipment at all times. It is particularly important to avoid sharing personal items that may have been in contact with the infected wound or bandage. Also, do not permit students to share soap in the shower or at the sink for hand washing by using soap dispensers. Provide antiseptic waterless hand gel rubs when soap and water is not available.
- Laundering soiled clothing appropriately. Parents/caregivers should be instructed to wash clothes and other soiled items (e.g. towels, sheets) with hot water and laundry detergent as appropriate. They should also be advised to dry items in a hot dryer to help eliminate bacteria when possible.
- Cleaning environmental surfaces. Establish a written procedure and schedule for routine surface cleaning of shared athletic equipment. Clean and disinfect environmental surfaces and athletic equipment that has been in contact with potentially infectious wound drainage, blood, or non-intact skin utilizing an EPA-registered disinfectant cleaner that meets the requirements of the Bloodborne Pathogens Standard developed by the Occupational Safety and Health Administration. Athletic equipment that is in contact with intact skin or not normally in contact with individuals (e.g., wrestling mats) can be cleaned with an intermediate (e.g., ready-to-use tuberculocidal solution) or low-level disinfectant (e.g., quaternary ammonium solution).

- **EDUCATION/INCREASED AWARENESS**

- Transmission of MRSA skin and soft tissue infections among students who participate in competitive sports is a concern. All persons (e.g., coaches, trainers, parents/caregivers, and teammates) associated with the school's competitive sport activities and sport teams should engage in initiatives to increase awareness and adherence to the school's policies and procedures designed to prevent transmission of MRSA skin infections.
- Possible risk factors for MRSA skin and soft tissue infection among students who participate in competitive contact sports include:
 - Physical contact/skin trauma
 - "Turf burns" (football players)
 - Contact with teammates' uncovered skin lesions
 - Sharing protective equipment, clothing, or towels
 - Sharing sports equipment
 - Sharing personal hygiene items
 - Reuse of unlaundered towels
 - Inadequate supply of dispensable soap for hand washing or showering
 - Poor personal hygiene practices
 - Poor environmental cleaning of locker rooms/sport rooms

To reiterate: Skin infections must be recognized promptly and steps must be taken to limit the spread of infection to others. Students with any open, weeping, or pustular lesion on the skin should be immediately referred to their primary care provider for appropriate medical management.

Schools should consider developing policies related to CA-MRSA infected students and student athletes and may wish to review various CDC-published reports and guidelines for the prevention of staphylococcal infections.

Additional Resources:

CA-MRSA Information for the Public. Centers for Disease Control and Prevention. Available at: http://www.cdc.gov/ncidod/hip/ARESIST/ca_mrsa_public.htm

The changing epidemiology of *Staphylococcus aureus*? Emerg Infect Dis. 2001;7(2):178-82. Available at: <http://www.cdc.gov/ncidod/eid/vol7no2/chambers.htm>

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National Collegiate Athletic Association. Skin infections in wrestling. In: NCAA Sports Medicine Handbook 2005-06. Available at:

http://www.ncaa.org/library/sports_sciences/sports_med_handbook/2005-06/2005-06_sports_medicine_handbook.pdf

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