

What is MRSA?

MRSA stands for methicillin-resistant *Staphylococcus aureus*. It is a strain of *Staph aureus* distinguished from most other bacteria by its resistance to beta-lactam, which include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin.

What is MRSA colonization?

People who are colonized with MRSA are asymptomatic. Colonization most often occurs in the nasopharynx or on the skin as with methicillin-sensitive *Staphylococcus aureus*. MRSA colonization can follow MRSA infection, and can persist for several months. It is only recommended to treat colonization in outbreak situations where a colonized source is identified or to prevent self-inoculation in a surgery patient. Mupirocin is the agent recommended when colonization eradication is indicated, however relapse is common and antibiotic resistance has developed to mupirocin.

What is MRSA infection?

Clinical manifestations of MRSA infection can be non-invasive such as skin infections or invasive such as pneumonia, bacteremia, surgical wound infections and urinary tract infections.

MRSA infections also fall into the following two categories.

- **Healthcare-associated MRSA** infections are those occurring in persons with a history of hospitalization or admission to a healthcare setting in the past year, or with previously diagnosed MRSA infections or colonization, or with indwelling percutaneous medical devices. These are typically invasive in nature.
- **Community-associated MRSA** infections are usually non-invasive skin infections occurring in otherwise healthy persons who do not have the risk factors described above.

What is the recommended treatment for MRSA skin infections?

MRSA skin infections should be treated with incision and drainage along with scrupulous wound care and hygiene. Antibiotic treatment of skin infections is recommended when this treatment is not effective. Oral antibiotics are recommended, typically trimethoprim-sulfa or doxycycline. For specific recommendations, contact the Communicable Disease Division.

What is the recommended treatment for MRSA invasive infections?

Invasive infections are treated with antibiotics, depending on the site. Consultation with an infectious disease physician is recommended as well as obtaining a culture and sensitivity test to confirm appropriate antibiotic use. Appropriate use of vancomycin is important to prevent development of vancomycin-resistant MRSA.

Who is at risk for MRSA invasive infections?

Healthy people are not usually at risk for invasive MRSA infections. Risk factors include recent hospitalization or surgery, residence in a long-term care facility, dialysis treatment, and indwelling medical devices such as catheters.

How is the MRSA spread?

MRSA is spread from person-to-person by direct or indirect contact. Direct contact most often occurs on caregivers' hands in healthcare settings, thus the emphasis on hand hygiene to prevent transmission. MRSA organisms can persist on inanimate objects for hours, contributing to indirect contact transmission. Environmental cleaning is important to reduce the bacterial load on contaminated objects and surfaces in healthcare settings.

What is the most important measure to prevent the spread of MRSA?

Hand hygiene is the single most important measure necessary to control the spread of MRSA. When hands are visibly soiled, washing with soap and warm running water for 20 seconds is recommended. Use of an alcohol-based hand gel is effective for cleaning hands that are not visibly soiled, following product instructions. The appropriate form of hand hygiene should be performed after the care of each patient, after handling soiled dressings and clothing and after removing gloves.

What infection control measures are recommended in healthcare facilities?

In addition to standard precautions, healthcare facilities that determine MRSA to be an organism of special clinical and epidemiologic significance are advised to place patients in contact isolation. In non-hospital healthcare settings such as nursing homes, dialysis centers, etc., the use of precautions should be determined on a case-by-case basis, especially in patients with uncontrolled draining wounds or difficulty controlling body fluids. Place in a private room or cohort the patient with another patient who is colonized or infected with the same organism (and has no other active infection). A third option is to place the patient in a room with another patient who does not have risk factors for infection. In dialysis settings, limit exposure and possible environmental contamination by locating the patient in an area with the least number of adjacent patients.

Standard precautions, personal protective equipment and other infection control practices:

1. **Hand Hygiene:** Wash hands after touching blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different body sites.
2. **Gloving:** Wear gloves when touching blood, body fluids, secretions, excretions, and contaminated items; put on clean gloves just before touching mucous membranes and non-intact skin. Change gloves that become heavily contaminated. Remove promptly after use, before touching environmental items and surfaces, and before caring for another patient, and wash hands immediately.
3. **Masking:** Wear a mask when within three feet of a coughing patient. Add eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions. Remove promptly after use, before touching environmental items and surfaces, and before caring for another patient, and wash hands immediately.
4. **Gowning:** Wear a gown to protect skin and prevent soiling of clothes during procedures and patient-care activities that are likely to cause soiling of clothing. Remove promptly after use, before touching environmental items and surfaces, and before caring for another patient, and wash hands immediately.
5. **Appropriate device handling:** Handle all soiled patient-care equipment in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments. Properly discard single-use items, and ensure that reusable equipment is not used for the care of another patient until it has been appropriately cleaned and reprocessed.
6. **Appropriate handling of laundry:** Handle, transport, and process soiled linen in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments.

Should a healthcare facility perform routine cultures to detect MRSA?

The infection control committee should determine whether this is recommended, based on the patient population and the history of MRSA occurrence and transmission in the facility and in the community.

Should patients who have a history of MRSA or who are colonized with MRSA be placed into isolation in a hospital setting?

Again, the infection control committee should determine whether this is recommended, based on the patient population and the history of MRSA occurrence and transmission in the facility and in the community.

Can patients with MRSA participate in group activities?

It is safe for patients to participate in social and rehabilitative activities when hand hygiene is followed, wound drainage is adequately contained by an intact dressing, and body fluids are contained.

What MRSA guidelines are available in Oklahoma?

In 1990, the Oklahoma State MRSA Working Group (consisting of physicians and nurses) and the Oklahoma State Department of Health (OSDH) wrote guidelines for the control of MRSA in nursing homes in Oklahoma. These guidelines can be obtained by calling the OSDH Communicable Disease Division.

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Acute Disease Service

Oklahoma State
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