

**BOP CLINICAL PRACTICE GUIDELINES FOR THE MANAGEMENT OF
METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (MRSA)
INFECTIONS
(October 2003)**

PURPOSE

The BOP Clinical Practice Guidelines for the Management of MRSA infections provide recommendations for the prevention, treatment, and containment of methicillin-resistant *Staphylococcus aureus* infections within Federal correctional facilities.

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DEFINITIONS

Staphylococcus aureus, often referred to as "staph," is a commonly occurring bacterium that is carried on the skin and in the nose of healthy persons. *Staphylococcus aureus* may cause minor skin or soft tissue infections such as boils, as well as more serious infections such as wound infections, abscesses, pneumonia, and sepsis.

Methicillin-resistant *Staphylococcus aureus* or "MRSA" are staph bacteria that have become resistant to beta-lactam antibiotics, including: penicillin, ampicillin, amoxicillin, augmentin, methicillin, oxacillin, dicloxacillin, cephalosporins, carbapenems (e.g., imipenem), and the monobactams (e.g., aztreonam). MRSA causes the same types of infections as staph bacteria that are sensitive to beta-lactam antibiotics.

Colonization is the presence of bacteria on or in the body without causing infection.

Community-onset MRSA infections develop outside a hospital or nursing home setting and may or may not be associated with a health care setting, e.g., recent hospitalization.

Primary prevention is the implementation of screening, infection control, treatment, and administrative measures aimed at reducing the incidence of MRSA infections in the inmate population and identifying MRSA infections in inmates upon prison entry.

Secondary prevention is the implementation of augmented screening, infection control, treatment, and administrative measures aimed at preventing further MRSA infections after the initial detection of a MRSA infection within the inmate population.

A MRSA outbreak is a clustering of two or more epidemiologically-related, culture-positive cases of MRSA infection. (**NOTE:** MRSA colonization data, when available, should also be considered when

assessing outbreaks, since **new** cases of MRSA colonization without infection also indicate ongoing MRSA transmission.) Confirmation that a MRSA outbreak is caused by the same organism is suggested by similar isolate antibiotic susceptibilities and further supported if molecular analysis, such as pulsed-field gel electrophoresis, identifies a predominant MRSA strain.

Hospital standard precautions are infection control practices used in the hospital setting to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection.

- **Standard precautions apply to:** blood, all body fluids, secretions, and excretions (except sweat), regardless of whether or not they contain visible blood; nonintact skin; and mucous membranes.

- **Standard precautions include:** (1) adequate hand hygiene measures in accordance with CDC guidelines after touching blood, body fluids, secretions, excretions (includes wound drainage), and contaminated items, whether or not gloves are worn; (2) the routine use of personal protective equipment such as gloves, masks, eye protection or face shields, and gowns whenever contact with blood, body fluids, secretions, excretions (includes wound drainage) is anticipated; (3) ensuring that environmental surfaces in the health care setting are routinely cleaned and disinfected; (4) ensuring that linens are handled and cleaned in a manner that prevents staff exposures to contaminated laundry and avoids the transfer of microorganisms from person to person or from place to place; (5) the safe disposal of needles and other sharp instruments and devices in appropriate leakproof and puncture-resistant containers; and (6) the placement of patients who may contaminate the environment or cannot be expected to maintain adequate hygiene or a sanitary environment in a private room.

Correctional standard precautions are hospital standard precautions that have been adapted to the correctional setting taking into account security issues, inmate housing factors, and infection control concerns inherent to jails and prisons.

Hospital transmission-based precautions are patient-specific precautions that are indicated for hospitalized patients with suspected or diagnosed infections that are either highly transmissible or epidemiologically important. The three types of transmission-based precautions include airborne, droplet, and contact precautions. Contact precautions apply to draining MRSA skin and soft tissue infections; and droplet precautions apply to

MRSA pneumonia.

- **Contact precautions** are indicated for patients with pediculosis, scabies, impetigo and noncontained skin infections such as abscesses, cellulitis and decubiti; viral conjunctivitis; certain highly contagious enteric infections such as *Clostridium difficile* or patients with diarrhea and infection with hepatitis A virus, *Shigella*, or *Escherichia coli* O157:H7; and gastrointestinal, respiratory, skin or wound infections or colonization with certain multi-drug resistant bacteria such as MRSA. Contact precautions include routine standard precautions as well as the following additional measures:

- The patient should be placed in a private room. Patients with the same infection can be housed together if private rooms are not available.

- Clean, nonsterile gloves should be worn when entering the room. Gloves should be changed when grossly contaminated with potentially infectious material such as fecal material and wound drainage. Gloves must be removed and hands cleaned immediately (i.e., by washing with an antimicrobial agent or use of a waterless antiseptic agent) before leaving the patient's room taking care not to touch potentially contaminated environmental surfaces or items once hands have been cleaned.

- A clean, nonsterile gown should be worn when entering the patient's room whenever direct patient contact or contact with environmental surfaces or items in the room is anticipated. The gown should be removed before leaving the patient's room, taking care not to have one's clothing contact potentially contaminated environmental surfaces.

- The patient should leave the private room for essential purposes only. If the patient leaves the room, precautions should be taken to minimize the risk of transmission of microorganisms to other persons and to avoid contamination of environmental surface or items.

- Noncritical patient-care equipment should be dedicated to a single patient. Common medical equipment that must be shared between patients must be adequately cleaned and disinfected before use by another patient.

- No special requirements are indicated for eating utensils. Disposable or reusable utensils may be used. The use of detergent and washing procedures for decontamination are

sufficient.

- **Droplet precautions** are indicated for patients with illnesses such as influenza, mumps, rubella, streptococcal pharyngitis or pneumonia, invasive *Haemophilus influenzae* type b disease such as pneumonia and epiglottitis, invasive *Neisseria meningitidis* disease such as meningitis and pneumonia, as well as MRSA pneumonia.

(**NOTE:** Patients with an unknown respiratory illness compatible with tuberculosis should be managed with airborne precautions (i.e., requires patient isolation in a room with negative pressure and patient management by staff wearing adequate respiratory protection such as an N95 respirator) rather than droplet precautions until the diagnosis of tuberculosis has been excluded.)

Illnesses requiring droplet precautions are caused by infectious agents that are transmitted in large-particle droplets (> 5 µm in size) when an infectious patient coughs, sneezes, talks, or has certain procedures performed such as suctioning and bronchoscopy. Transmission of infection occurs when droplets containing the microorganism are propelled a short distance in the air and then deposited on the host's mouth, nasal mucosa, or conjunctivae. Large-particle droplets do not remain suspended in the air. Droplet precautions include routine standard precautions as well as the following additional measures:

- The patient should be placed in a private room (**NOTE:** The room does not require negative pressure or a special air handling system.) The door of the room may be opened without concern that the infectious agent will be transmitted to others. Patients with the same infection may be housed together if private rooms are not available.

- A mask, eye protection, or a face shield should be worn to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays. Masks should be worn when entering the room or when within 3 feet of the patient. An N95 respirator is not required.

- Contagious patients infected with pathogens transmitted by large-droplet particles should wear a surgical mask if they must leave their private room. Patient movement outside a private room should be limited to essential purposes.

Correctional transmission-based precautions are transmission-based infection control precautions that have been adapted to the correctional setting taking into account relevant security

concerns, inmate housing factors, and infection control issues inherent to jails and prisons.

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PROCEDURES**1. INTRODUCTION**

MRSA is an important cause of hospital-acquired infections in many U.S. hospitals; therefore, certain hospitalized inmates are at risk for MRSA colonization and MRSA infections. Inmates may develop MRSA infections not only during hospitalization, but also during the weeks to months following hospital discharge. Community-onset MRSA infections may also occur in persons who have no history of recent hospitalization, or other known risk factors such as prior antibiotic usage, injection drug use, or long-term inpatient care. Inmate populations throughout the United States have increasingly been affected by community-onset MRSA infections, that in some cases have resulted in outbreaks that have been costly and difficult to control with potentially serious public health consequences.

MRSA infections often present as mild skin or soft tissue infections, such as a furuncle, that occurs spontaneously and may evolve to include multiple lesions. Inmates with MRSA skin infections commonly complain of "an infected pimple," "an insect bite," "a spider bite," or "a sore," however, since many MRSA infections cause minor inflammation without pain, infected inmates may not seek medical attention. More serious MRSA infections such as cellulitis, deep-seated abscesses, septic arthritis, pneumonia, and sepsis may occur, even in otherwise healthy individuals. Persons with complicating medical conditions such as diabetes, HIV infection, chronic skin conditions, indwelling catheters, post-surgical wounds, and decubiti are at increased risk of serious MRSA infections.

2. COLONIZATION

An estimated 10% to 30% of persons are colonized with *Staphylococcus aureus* in their nares, mucous membranes, or breaks in their skin. A subset of these persons are colonized with MRSA. Colonized persons are more likely to develop staphylococcal infections, however, many colonized persons remain asymptomatic. Staphylococcal colonization occurs more commonly in injection drug users, persons with type 1 diabetes, hemodialysis patients, persons with acquired immunodeficiency syndrome (AIDS), surgical patients, and previously hospitalized patients.

3. TRANSMISSION

MRSA is transmitted from person to person by contaminated hands. MRSA may also be transmitted by sharing towels, personal hygiene items, athletic equipment, through close-contact sports, by sharing injection drug use equipment, and through foodborne outbreaks. Persons with MRSA pneumonia in close contact with others, can transmit MRSA by coughing up large droplets of infectious particles. Persons with asymptomatic MRSA nasal carriage can also transmit MRSA when symptomatic from a viral URI.

MRSA outbreaks in the correctional setting have been linked to poor inmate hygiene, sharing contaminated personal items, and participation in unsanitary tattooing practices; however, the source of MRSA infections in the correctional setting and the reasons for transmission to others may not be readily apparent even after thorough epidemiologic investigations.

4. DIAGNOSIS

Correctional health care providers should consider MRSA infection in the differential diagnosis for all inmates presenting with skin and soft tissue infections or other clinical presentations consistent with a staphylococcal infection. A careful examination of skin infections should be conducted to determine if there is fluctuance or other evidence of a drainable infection. MRSA infections can not be clinically distinguished from staphylococcal infections that are sensitive to beta-lactam antibiotics; therefore routine bacterial cultures should be obtained whenever possible from draining wounds, aspirated pus from soft tissue infections, and aspirated fluid from potentially infected fluid collections. Blood cultures should also be obtained in febrile patients with suspected MRSA infections and whenever injection drug use or endocarditis is clinically suspected.

MRSA infections are diagnosed by routine aerobic bacterial cultures. Oxacillin-resistance on laboratory susceptibility testing also indicates methicillin-resistance. Positive cultures from blood and sterile body fluids (e.g., joint fluid, pleural fluid, cerebrospinal fluid) are diagnostic of MRSA infections. Positive cultures from nonsterile sites (e.g., wound drainage, open sores) may indicate bacterial colonization or infection and must be interpreted in the context of the patient's clinical presentation.

An empiric (i.e., suspected, but not confirmed) diagnosis of a

MRSA infection should be considered in inmates with clinical evidence of a staphylococcal infection with associated risk factors such as a presentation in the context of a known MRSA outbreak, recent hospitalization, previous anti-staphylococcal antibiotic usage, presence of an indwelling catheter, or a history of chronic wound drainage or repeated soft tissue infections.

Assessing MRSA colonization by obtaining bacterial cultures of the nares is **not** routinely indicated, unless recommended by public health authorities in the context of a significant MRSA outbreak or as part of an inpatient surveillance program. Nares cultures should be obtained using the following guidelines:

- Remove swab collection device from its packaging material;
- Confirm that swab collection device has been pre-labeled with appropriate identifiers;
- Moisten swab with sterile saline;
- Insert pre-moistened swab approximately 2 cm into one naris;
- Rotate the swab against the anterior nasal mucosa for 3 seconds;
- **Using the same swab**, repeat for the other naris;
- Return swab to transport sleeve;
- Follow other specific manufacturer's recommendations for culture collection and transport (Store swabs at refrigerator temperature (4°-8°C) for no more than 3-4 days before shipping to laboratory by the following day.)

5. REPORTING

All confirmed MRSA infections must be documented in the inmate's medical record and in SMD. All suspected or confirmed MRSA outbreaks should be reported to the appropriate Regional Office, and the Central Office HSD, using **Appendix 1, MRSA Infection Line-Listing - (Tracking and Reporting Form)**, and as required to public health authorities.

6. TREATMENT

- **Drainage and removal of foreign devices:** Treatment of MRSA infections should always include aggressive drainage of

accessible fluid collections, particularly loculated soft tissue infections. Infections requiring drainage should be frequently reassessed to determine if repeated drainage is warranted. Catheters and other foreign devices related to the infection should be removed whenever possible. MRSA skin infections may resolve with drainage alone without antibiotics.

- Antibiotic therapy (skin and soft tissue infections):

Community-onset MRSA infections often present as limited skin or soft tissue infections such as furuncles or small abscesses. These community-onset MRSA infections are frequently caused by isolates that are sensitive to a wider range of antibiotics compared to typical hospital-acquired MRSA infections.

The selection of one or more oral antibiotics to treat skin or soft tissue MRSA infections should be based on bacterial cultures and antibiotic susceptibility results whenever possible. **The optimal treatment regimen for community-onset MRSA infections that are susceptible to a number of different antibiotics is unknown due to a lack of published data and the potential that *in vitro* antibiotic susceptibilities may not correlate with the *in vivo* (i.e., clinical) response.**

Limited clinical experience from recent community-based MRSA outbreaks suggests that many uncomplicated soft tissue MRSA infections can be successfully treated with oral trimethoprim-sulfamethoxazole with or without rifampin; clindamycin with or without rifampin; and certain oral quinolones in combination with rifampin. Each of these antibiotic regimens has its own advantages and disadvantages as a therapeutic choice as outlined in **Appendix 2, Oral Antibiotic Treatment Options for Skin and Soft Tissue MRSA Infections.**

NOTE: Directly observed antibiotic administration is strongly recommended for treating MRSA infections in the correctional setting.

NOTE: Rifampin alone (i.e., monotherapy) is always ineffective against MRSA due to the rapid development of resistance, regardless of *in vitro* laboratory susceptibility results.

NOTE: Topical mupirocin may be effective to treat mild folliculitis, but its administration for this purpose within the correctional setting is ordinarily not recommended due to concerns about widespread empiric use by the inmate population.

The duration of antibiotic therapy for MRSA skin and soft tissue

infections depends on the severity of the infection, the exact site of infection, and the clinical response to therapy. Treatment for at least 7-10 days is indicated in uncomplicated infections. Inmates with skin infections should be examined periodically during therapy to determine if drainage of the infection is warranted and to ensure that the infection is resolving. Once antibiotic therapy is discontinued the inmate should be reevaluated one week later to ensure that new lesions have not developed.

- Antibiotic therapy (hospital-acquired and serious MRSA infections): Hospital-acquired MRSA infections are usually highly resistant to most oral antibiotics and require intravenous vancomycin therapy. (**NOTE:** Oral vancomycin is poorly absorbed and should **never** be prescribed to treat MRSA infections.) Endocarditis and other endovascular infections, osteomyelitis, and certain other deep-seated infections usually require treatment with IV vancomycin for an extended period of time, i.e., 4-6 weeks or more. A second or third antibiotic may also be indicated in combination with vancomycin for certain MRSA infections (e.g., prosthetic valve endocarditis.) Consultation with a physician expert is recommended for serious MRSA infections.

Linezolid is a newly available oral and intravenous antibiotic that may be an alternative to intravenous vancomycin or allow earlier hospital discharge on an oral antibiotic regimen. Treatment efficacy and drug toxicity data using linezolid for serious MRSA infections are limited. Therefore, linezolid therapy should only be considered in consultation with a physician expert. Antibiotic options for serious MRSA infections are outlined in **Appendix 3, Antibiotic Treatment Options for Hospital-acquired or Serious MRSA infections.**

- Empiric antibiotic therapy: Skin and soft tissue infections suggestive of staphylococcal infections that cannot be cultured or have nondiagnostic culture results should be evaluated and treated on a case-by-case basis in accordance with the following:

- Minor infections can often be effectively treated with incision and drainage with warm packs without antibiotics.
- More serious infections such as infected wounds and drained abscesses should be empirically treated with a first-generation cephalosporin, amoxicillin/clavulanate, or erythromycin.
- Empiric treatment for MRSA should be considered for minor

or more serious infections if the inmate presents with associated risk factors for MRSA infections, such as a presentation in the context of a known MRSA outbreak, recent hospitalization, previous anti-staphylococcal antibiotic usage, presence of an indwelling catheter, or a history of chronic wound drainage or repeated soft tissue infections.

- Intravenous antibiotic therapy in an inpatient setting is indicated for inmates with skin or soft tissue infections that are associated with clinical evidence of sepsis, fasciitis, an evolving skin or soft tissue infection despite oral antibiotics, and toxic shock syndrome. Empiric therapy with IV vancomycin plus other antibiotics as warranted should be strongly considered for inmates with these serious infections, regardless of existing risk factors, due to the inherent risk of MRSA infection in the correctional setting.

- **Recurrent/persistent infections:** Recurrent or persistent skin and soft tissue infections during or immediately following antibiotic therapy may indicate either patient nonadherence to the prescribed treatment regimen, the development of antibiotic resistance, or re-exposure to MRSA. Inmates with recurrent or persistent skin lesions should be evaluated on a case-by-case basis to assess the most likely cause and to determine the appropriate intervention.

- **Decolonization following treatment:** Decolonization of the nares with topical mupirocin is not recommended for isolated cases of MRSA infection. Decolonization can be considered for inmates with recurrent MRSA infections (e.g., 3 or more infections in less than 6 months); and in the context of a MRSA outbreak. (**NOTE:** Decolonization is of unproven benefit in controlling a MRSA outbreak in the correctional setting and should therefore be considered on a case by case basis.)

Inmates who are being decolonized should be instructed to apply approximately one-half of 2% calcium mupirocin ointment from the 1 gm single-use tube (Bactroban™) into one nostril and the other half of the ointment to the other nostril twice daily for 5 days, avoiding contact of the medication with the eyes. The inmate should press the sides of the nose together and gently massage to spread the ointment throughout the inside of the nostrils.

An overall strategy for evaluating and treating MRSA infections is outlined in **Appendix 4, Evaluation and Treatment of Skin and Soft Tissue Infections in the Correctional Setting.**

7. INFECTION CONTROL - PRIMARY PREVENTION

Containing MRSA infections in a confined setting is difficult, time consuming, and resource-intensive. The vast majority of patients with MRSA infection or colonization have acquired MRSA from an external source rather than acquiring MRSA *de novo*. Primary infection control measures are therefore helpful in reducing the incidence of MRSA infections. The following primary preventive measures should be implemented to reduce the incidence of MRSA infections among the inmate general population:

- **Education**: Inmates and correctional staff should be provided information on the transmission, prevention, treatment, and containment of MRSA infections. Condensed information for inmates is outlined in **Appendix 5, Methicillin-Resistant *Staphylococcus aureus* (MRSA) Fact Sheet**.

- **Correctional standard precautions**: Standard precautions, as previously defined for the hospital setting should be adapted to the correctional setting and incorporated into institution policies and procedures. All inmates should be considered potentially contagious whenever direct contact is anticipated with blood, body fluids (e.g., secretions, excretions, feces, and urine, excluding sweat), nonintact skin, and mucous membranes.

- **Hand hygiene program**: Adequate hand hygiene is the simplest effective infection control measure for preventing and containing MRSA infections. The following hand-hygiene measures should be implemented:

- Correctional staff and inmates should be periodically provided education on the importance of hand hygiene and effective hand hygiene techniques.

- All persons in the correctional setting should wash their hands with soap and running water before and after using the lavatory and whenever hands are visibly dirty. Hands should be washed for at least 15 seconds. The use of hot water should be limited whenever frequent washing is required in order to prevent dermatitis and overly dry, cracked skin. If paper towels are used to dry the hands, the towel should be used to turn off the water source. Liquid soap dispensers at sinks are preferable whenever feasible. If bar soaps are used, they should be placed on a rack that allows adequate drainage.

- Health care providers should perform hand hygiene BEFORE and AFTER every patient contact, whether or not gloves were worn. If hands **are not** visibly soiled, hands should be

cleansed with a small quantity (e.g., 2-3 mL) of an alcohol-based waterrub (containing at least 60% alcohol, if permitted by security) or an antimicrobial soap. If hands **are** visibly soiled, hands should be washed with soap (either antimicrobial or regular soap) and running water using adequate friction. The routine use of antimicrobial soap should be considered for correctional health care providers in all other clinical areas.

- Single use, disposable gloves should be readily available for health care providers and correctional staff and always used when contact with infectious blood or body fluids is anticipated. Employees sensitive to latex should use latex-free gloves. The gloves may be sterile or nonsterile, depending on the task to be performed. Health care providers should always clean their hands before and after the use of sterile or nonsterile gloves.

- Implementation of the institution's hand hygiene program should be monitored by the local infection control committee.

- **Sanitation**: MRSA is susceptible to most routinely used environmental cleaning agents. Sanitation measures are essential for preventing the spread of MRSA infections and include the following:

- **Housing areas**: Inmate housing areas and bathroom facilities should be regularly cleaned with an EPA-registered detergent disinfectant according to the manufacturer's instructions (See www.epa.gov/oppad001/chemreegindex.htm). Equipment and furniture with torn surfaces that cannot be adequately cleaned should be repaired, covered, or discarded. Every effort should be taken to clean all washable (i.e., nonporous) surfaces prior to cell occupancy and during occupancy. Correctional officers should conduct sanitation inspections of living and bathroom areas to identify visibly dirty areas. Specific attention should be focused on the cells of inmates with cognitive impairments or mental illnesses who are more likely to have poor personal hygiene and require assistance with the activities of daily living.

- **Recreation facilities**: Recreational equipment, such as weight benches, should routinely be wiped clean after use with a clean dry towel. Inmates should also be instructed to use readily available barriers to bare skin, such as a towel or clean shirt, while using exercise equipment.

- **Healthcare units:** Countertops and other treatable surfaces in outpatient healthcare facilities should be cleaned routinely per local schedule and after any contamination with blood or body fluids with an appropriate quaternary ammonium disinfectant.

- **Laundry:** All shared laundry, including sheets, blankets, and issued clothing should be collected and bagged at the bedside, washed regularly with a detergent using a hot water cycle for at least 25 minutes), and then thoroughly dried. Air drying of laundry should be avoided. Laundry should be distributed only when thoroughly dry.

If the linen is wet, or saturated with urine or feces, it should be collected in a plastic or impervious bag. The concept of "isolation linen," in which linen is collected and handled separately according to the diagnosis of the resident, is not recommended. Routine standard precautions should be used.

- **Antibiotic prescribing practices:** All Clinical Directors should monitor antibiotic use at their institutions in consultation with BOP pharmacy staff to ensure that antibiotics are being appropriately prescribed. The unnecessary use of broad-spectrum antibiotics should be strictly monitored and curtailed to reduce the development of antibiotic resistance among the inmate population.

- **Screening and surveillance:**

- All inmates undergoing intake medical screening and physical examinations should be carefully evaluated for skin infections.

- Recently hospitalized inmates and those at greater risk of serious MRSA infections such as inmates with diabetes, immunocompromised conditions, open wounds, recent surgery, indwelling catheters, implantable devices, chronic skin conditions, or paraplegia with decubiti, should be evaluated for skin infections during routine medical evaluations. Inmates recently discharged from the hospital should be specifically instructed to self-report any new onset skin infections or fever so that they can be evaluated for MRSA or other hospital acquired infections.

- All bacterial cultures should be routinely monitored to readily detect any new MRSA infections.

- Correctional officers should be advised to refer inmates to health services who have draining sores or wounds or who self-report "boils," "insect or spider bites," or "sores." (NOTE: Inmates with minor skin infections may be reluctant to seek health care.)

- All inmate food handlers should be advised on the necessity of self-reporting all skin infections, no matter how minor. Food handlers should be routinely examined for visible skin infections.

- Inmates with skin and soft tissue infections should ordinarily not be transferred to other institutions until fully evaluated, including the collection of wound cultures where appropriate. Inmates with skin and soft tissue infections requiring transfer for security reasons or medical care should have draining wounds dressed with bandages that adequately contain the drainage. Escort officers should be notified of the inmate's condition and should be educated on infection control measures including instructions for disposal of contaminated dressings.

8. INFECTION CONTROL - SECONDARY PREVENTION

- **Containment:** Inmates diagnosed with MRSA infections should be examined by a clinician to determine their risk of contagion to others. Inmates with potentially contagious infections such as wounds with uncontained drainage, weeping cellulitis, purulent catheter-site infections, non-healing abscesses or draining skin sinuses, infected surgical wounds, multiple furuncles, infected burn sites, and MRSA pneumonia should be assigned to single-cell housing in order to reduce the risk of MRSA transmission to other inmates and staff.

NOTE: Inmates with nondraining MRSA skin infections such as most furuncles (i.e., boils) do not require isolation in single-cell housing, however, these inmates should be counseled on the importance of hand-washing and good personal hygiene, and instructed to report any worsening of their infection or development of draining wounds. Inmates with draining skin lesions that can be easily contained by simple dressings can also be housed with other inmates, if the infected inmate adheres to infection control instructions and the infected inmate's cellmate(s) is not at increased risk of acquiring a MRSA infection.

Contagious inmates with MRSA infections should have a separate toilet and shower whenever possible. If not feasible, the shower

must be appropriately decontaminated prior to use by uninfected inmates. Toilet seats must also be decontaminated when soiling by an infected inmate is likely to occur, i.e., peri-rectal or thigh lesions, etc.

Contagious inmates with MRSA infections should be restricted from all work assignments, and maintained in a single-cell housing assignment until they are clinically improving and are no longer contagious. Additionally, they should be restricted from recreation, and use of common areas. Access to visitations should be determined on a case by case basis.

Inmates with healed wounds may be released from single-cell housing status after wound drainage has ceased for 24 hours, even if they have not completed antibiotic therapy. Inmates with wounds responding to treatment, but still draining, may be released from single-cell housing status after documenting 2 consecutive negative wound cultures, at least 72 hours apart. Inmates with MRSA pneumonia who are clinically responding to treatment may be released from single-cell housing status after documenting 2 consecutive negative sputum cultures, at least 72 hours apart.

Uncooperative inmates with suspected or confirmed MRSA infections should be considered potentially contagious and housed in a single cell until fully evaluated and treated.

Employees with suspected or confirmed MRSA infections should be removed from direct patient care until medically cleared by their health care provider.

- **Infection control measures:** Correctional contact precautions, as previously defined, are indicated for health care providers and correctional officers who come in direct contact with isolated inmates with potentially contagious skin and soft tissue MRSA infections. Regularly used medical equipment, such as stethoscopes and otoscopes, should be dedicated for use with MRSA-infected inmates and must be disinfected prior to reuse for other inmates. Draining wounds must be adequately covered to prevent contamination of environmental surfaces. Sanitation measures used for primary prevention of MRSA infections should be strictly enforced. All rooms of infected inmates should be decontaminated, "terminally cleaned," prior to occupancy by another inmate.

- **Inmate transfers:** Inmates with contagious MRSA infections should not be transferred to other institutions until their infection has been adequately treated and the risk of contagion controlled. Inmates with contagious MRSA infections absolutely requiring transfer for security reasons or medical care should

have draining wounds dressed the day of transfer with bandages that adequately contain the drainage. Escort officers should be notified of the inmate's condition and should be educated on infection control measures including the importance of hand hygiene, protective measures, decontamination of security devices (e.g., handcuffs, leg irons, martin chains and other reusable restraints) and instructions for the safe disposal of contaminated dressings. Disposable restraints should be used when feasible.

The Clinical Director of the sending institution or designee should notify the receiving institution's Clinical Director or Health Services Administrator of pending transfers of inmates with suspected or confirmed MRSA infections.

- **Surveillance:** After the diagnosis of any single MRSA infection, surveillance measures should be heightened to detect any additional cases through the following procedures:

- The index case should be interviewed to identify potential sources of infection and close contacts, including recent hospitalizations, housing and work assignments, sharing of personal hygiene items with other inmates, recent injection drug use, tattooing, or sexual contact with other inmates, participation in close-contact sports, and exposures to other inmates with draining wounds or skin infections.
- Identified contacts at potential risk of acquiring MRSA should be examined for signs and symptoms of infection.
- The inmate's work assignments should be reviewed to determine if he or she has been a food handler.
- Health care providers evaluating inmates during sick call visits and chronic care visits should be on the alert for inmates with skin or soft tissue infections or other evidence of MRSA infections. All bacterial cultures should be carefully monitored to detect any additional MRSA infections among the inmate population.

9. OUTBREAK MANAGEMENT

Detection of two or more cases of epidemiologically-related MRSA infections should prompt an immediate investigation to determine if an outbreak has occurred. Outbreak surveillance measures are not indicated if the MRSA infections are obviously unrelated (e.g., two inmates returning separately from a hospital where nosocomial MRSA infections are endemic; or multiple MRSA infections separated in time without any epidemiologic linkage.)

Once a MRSA outbreak is suspected the following measures should be taken:

- **Outbreak confirmation:** MRSA isolates should be further evaluated for antibiotic susceptibilities. The evaluating laboratory should be instructed to save any cultures that are positive for MRSA for at least 30 days until a determination can be made whether molecular analysis is warranted. The 30-day period may be extended if necessary. The written instructions to the laboratory should be included on the requisition and should state: "Save for at least 30 days if positive for MRSA; notify provider prior to discarding."

A MRSA outbreak is suggested if similar antibiotic susceptibility patterns are identified among two or more MRSA isolates from epidemiologically-linked patients. Further confirmation of a MRSA outbreak through molecular analysis of MRSA isolates (e.g., pulsed-field electrophoresis) should be considered in consultation with Central Office HSD and public health authorities if the outbreak is extensive or when otherwise warranted for specific epidemiologic or correctional reasons. When molecular analysis is indicated, the typing pattern for the isolates should be noted on **Appendix 1, MRSA Infection Line-Listing - (Tracking and Reporting Form)**.

- **Tracking:** Inmates with suspected or confirmed MRSA infections should be systematically tracked using the form in **Appendix 1, MRSA Infection Line-Listing - (Tracking and Reporting Form)** in order to assess clustering of cases and help identify common source transmission.

- **Containment:** Inmates with contagious MRSA infections should be examined by a clinician to determine the risk of contagion. Inmates with potentially contagious infections such as wounds with uncontained drainage, weeping cellulitis, purulent catheter-site infections, non-healing abscesses, draining skin sinuses, infected surgical wounds, multiple furuncles, infected burn sites, and MRSA pneumonia should be assigned single-cell housing in order to reduce the risk of MRSA transmission to other inmates and staff. In the context of a large MRSA outbreak, inmate cohorting of infected skin or soft tissue cases may be considered as long as the cohorted inmates have MRSA infections with similar antibiotic susceptibilities.

NOTE: Inmates with draining skin lesions that can be easily contained by simple dressings can be housed with other inmates, if the infected inmate adheres to infection control instructions and the infected inmate's cellmate(s) is not at increased risk of acquiring a MRSA infection.

Contagious inmates with MRSA infections should have a separate toilet and shower whenever possible. If not feasible, the shower must be appropriately decontaminated prior to use by uninfected inmates. Toilet seats must also be decontaminated when soiling by an infected inmate is likely to occur, i.e., peri-rectal or thigh lesions, etc.

Contagious inmates should be restricted from all work assignments and should be maintained in single-cell or cohorted housing until they are clinically improving and are no longer contagious. Additionally they should be restricted from recreation, and the use of common areas. Access to visitation should be determined on a case by case basis.

Inmates with healed wounds may be released from single-cell or cohorted housing status after wound drainage has ceased for 24 hours, even if they have not completed antibiotic therapy. Inmates with wounds responding to treatment, but still draining, may be released from single-cell or cohorted housing status after 2 consecutive wound cultures, at least 72 hours apart, are negative for MRSA after completion of antibiotic therapy. Inmates with MRSA pneumonia who are clinically responding to treatment may be released from single-cell housing status after documenting 2 consecutive negative sputum cultures at least 72 hours apart.

- **Inmate transfers:** All inmates scheduled for transfer from an institution with a MRSA outbreak should be interviewed by a health care provider and have a targeted examination of the skin to determine if they have a previously undiagnosed skin or soft tissue infection. Inmates with contagious MRSA infections or undiagnosed skin infections should not be transferred to other institutions until their infection has been adequately treated particularly within the context of a MRSA outbreak.

Inmates with contagious MRSA infections absolutely requiring transfer for security reasons or medical care should have draining wounds dressed with bandages that contain the drainage the day of transfer. Escort officers should be notified of the inmate's condition and should be educated on infection control measures including the importance of hand washing, protective measures, decontamination of security devices (e.g., handcuffs, leg irons, martin chains and other reusable restraints), and instructions for the safe disposal of contaminated dressings. Disposable restraints should be used when feasible.

The Clinical Director of the sending institution with a MRSA outbreak, or his or her designee, should notify the receiving institution's Clinical Director or Health Services Administrator of any pending transfers of inmates with MRSA infections or

unevaluated skin lesions.

- **Infection control measures:** Hand hygiene and the use of correctional contact precautions should be strictly enforced for all health care providers and correctional officers during a MRSA outbreak. The broader use of an antimicrobial soap in affected housing units, dormitories, or throughout the entire correctional facility should be considered on a case by case basis in the context of a MRSA outbreak. The use of an antimicrobial wash and shampoo can be considered for inmates if the outbreak is extensive in consultation with Central Office HSD.

Regularly used medical equipment, such as stethoscopes and otoscopes, should be dedicated for use with MRSA-infected inmates and must be disinfected prior to reuse for other inmates. More stringent infection control practices should be considered such as the routine cleaning and disinfection of patient care items, such as stethoscopes, after **all** patient contacts. If the outbreak is confined to a certain housing unit or dormitory, all living, sleeping, and bathroom areas should be carefully inspected, including cell "shakedowns" when necessary, to identify potential sources of infection such as unsanitary conditions or ongoing injection drug use or tattooing.

- **Surveillance:** Once a MRSA outbreak is suspected or confirmed, health care personnel should determine if inmates with MRSA infections have a common source of infection such as shared housing or work assignments, the same religious or recreational practices, the same social or gang affiliations, recent injection drug use activity, sexual contact with other inmates, new tattoos, hospitalization in the past 6 months, or a common primary health care provider.

Surveillance physical examinations for previously undetected MRSA infections should be considered in accordance with the following:

- If a common source of the MRSA outbreak is suspected, all potential inmate contacts should be examined (e.g., dormitory inmates) for unidentified skin or soft tissue infections or other evidence of MRSA infections.

- If the outbreak involves multiple inmates or is sustained over time, targeted examinations should be considered for inmates who may be at higher risk of MRSA infections (e.g., inmates with diabetes, renal failure, surgical wounds, indwelling catheters, chronic skin diseases, or immunocompromised conditions) for both surveillance and diagnostic purposes.

- If a health care worker is the potential common source of

MRSA infections, the health care worker should be interviewed by the Clinical Director or designee to determine if the worker has had any recent skin or soft tissue infections and to review the worker's infection control practices such as hand washing and use of contact precautions. The health care worker should be referred to a physician for medical evaluation and clearance if a MRSA infection is suspected clinically or epidemiologically.

NOTE: Environmental surveillance cultures (i.e., swabbing medical equipment, clinical areas or living areas) to detect MRSA are normally of limited benefit in controlling a MRSA outbreak and should only be considered in consultation with public health authorities with expertise in outbreak control.

- **Decolonization of asymptomatic carriers:** Nasal swab surveillance cultures for MRSA and decolonization with mupirocin are not routinely recommended in the context of a MRSA outbreak for asymptomatic carriers. Mupirocin treatment does not eradicate colonization in all treated persons, does not prevent recolonization following future exposures to MRSA, and when used broadly can result in mupirocin-resistant MRSA strains. MRSA decolonization of health care workers and patients may be of benefit in eradicating MRSA from certain confined settings, such as inpatient units. Decolonization of asymptomatic carriers should only be considered after consultation with public health authorities and Central Office HSD.

- **Education:** Educational efforts should target inmates, correctional officers, and health care personnel in order to contain a MRSA outbreak. The following educational initiatives should be considered:

- Town hall meetings with inmates to reinforce the importance of regular hand washing, good personal hygiene, routine showering, maintenance of a clean cell, regular laundering of bed linens, self-reporting of all skin lesions, and refraining from any injection drug use, tattooing, and sexual contact with other inmates.

- Recalls with correctional staff to reinforce the importance of regular hand washing, standard precautions when interacting with all inmates, the use of contact precautions when interacting with inmates with MRSA infections, the routine inspection of inmate housing units for cleanliness, the examination of foodhandlers for visible skin infections, and the detection of prohibited tattooing practices, injection drug use, and sexual activity among inmates.

- Meetings with health care personnel to reinforce the importance of hand hygiene before and after every patient contact as well as the appropriate use of correctional standard and contact precautions.

10. INPATIENT UNITS

Inpatient units within correctional facilities should develop **site-specific** infection control practices to prevent the spread of resistance organisms. Infection control guidelines used for the hospital setting should be adapted to the correctional inpatient setting.

- **Primary prevention:** The following primary prevention infection control measures should be considered for inpatient units:

- Educational efforts targeting inpatient health care providers on the importance of preventing the spread of antibiotic resistant organisms and the efficacy of control measures;
- Strict enforcement of hand hygiene before and after all patient contacts;
- Avoidance of inappropriate or excessive antibiotic usage for inpatients (monitor through infection control and pharmacy and therapeutics committees);
- Dedication of noncritical patient-care equipment to a single patient when contact or droplet precautions are indicated. If use of common equipment or items is unavoidable, they must be adequately cleaned and disinfected before use with other patients;
- Strict enforcement of environmental disinfection of patient rooms, including terminal cleaning at the time of patient discharge. Environmental surfaces that more frequently involve hand contact, such as bed rails and door knobs, should be targeted for more intensive cleaning efforts;
- Regular monitoring of bacterial cultures of inpatients and recently discharged inpatients to detect clusters of MRSA infections that warrant further investigation;
- Appropriate bed assignments should be made for new admissions who arrive with undiagnosed, potentially infected conditions, including MRSA, to avoid placement in rooms with other inmates at high risk for developing infections.

- **Secondary prevention:** The following secondary prevention infection control measures should be considered for containing MRSA infections in inpatient units:

- Inpatients with suspected or confirmed MRSA infections should be aggressively evaluated, contained, and treated, since these patients are at greater risk of serious disease. Furthermore, the transmission of MRSA infections to others within the inpatient setting can occur easily and can cause serious illness to other medically compromised patients. Contact precautions and other recommended infection control practices should be strictly enforced. Heightened surveillance of other inpatients may be a beneficial infection control measure for certain inpatient units.

- When staffing permits, specific staff should be designated to care for contagious MRSA patients in order to minimize the risk of cross-infection. These staff members should not provide care at the same time for inmates at high risk of developing infection.

- **Outbreak management:** MRSA outbreaks within the inpatient setting can be extremely difficult to control and are affected by multiple factors that vary among inpatient units. The most effective methods to eradicate MRSA infections from the inpatient setting have involved the active surveillance and isolation of patients with MRSA infection and/or MRSA colonization along with the use of strict contact precautions when managing these patients. Public health authorities should ordinarily be consulted to develop a specific infection control strategy due to the difficulties in managing MRSA outbreaks in the inpatient setting and the inherent risks to the patient population. Strategies for controlling a MRSA outbreak in the inpatient setting beyond the full implementation of primary and secondary infection control measures may include the following:

- Careful and repeated examinations of all inpatients for undiagnosed MRSA infections;

- Aggressive culturing of all potential infections and regular review of culture results;

- Nares surveillance cultures for new inpatients and periodically thereafter, particularly for inmates at high risk of MRSA infection. (Persons at high risk of MRSA infection include persons with diabetes, immunocompromised conditions, open wounds, recent surgery, indwelling catheters, implantable devices, chronic skin conditions, and paraplegia with decubiti.);

- Assignment of inpatients with MRSA infections and/or colonization to single-cell housing or cohorted housing with other inmates who are similarly colonized, and manage using contact precautions;
- Targeted decolonization of both inpatients and health care providers in consultation with Central Office HSD (Ongoing or repeated decolonization should NEVER be employed.);
- Treatment of inpatients with an antimicrobial wash and shampoo in conjunction with nares decolonization with topical mupirocin in consultation with Central Office HSD.

ATTACHMENTS

- Appendix 1: MRSA Infection Line-Listing (Tracking and Reporting Form)**
- Appendix 2: Treatment Options for Skin or Soft Tissue MRSA Infections**
- Appendix 3: Treatment Options for Hospital-Acquired and Serious MRSA Infections**
- Appendix 4: Evaluation and Treatment of Skin and Soft Tissue Infections in the Correctional Setting**
- Appendix 5: MRSA Fact Sheet**

MRSA Infection Line-Listing*
(Tracking and Reporting Form)

FACIL: _____ Date: ____/____/____ Contact Name/Phone #: _____

Page No.: _____

Name Reg# Age	Rm#	Hsg. Unit	Date first admitted to this facility	Recent Hospitalizations		Past or recent invasive procedures? (describe)	Site of infection and onset date	Date of first + culture plus strain ID if typed	Nares colonized? yes, no, or not evaluated	Case closure: List date case was resolved clinically, and dates of final cultures from infected site
			Transferring facility (if <30 days)	Admit Date	Discharge Date					
Name: Reg# Age: _____			-----							
Name: Reg# Age: _____			-----							
Name: Reg# Age: _____			-----							
Name: Reg# Age: _____			-----							

* If cultures unobtainable or nondiagnostic, list as suspected MRSA infection based on clinical and epidemiologic factors.

Oral Antibiotic Treatment Options for Skin and Soft Tissue MRSA Infections*

Drug	Oral Dose	Monitoring	Drug Interactions/Effects	Comments
Ciprofloxacin - or Levofloxacin - or Gatifloxacin - or Moxifloxacin + Rifampin	500 mg q 12 hr. 500 mg q day 400 mg q day 400 mg q day 300 mg BID	Routine labs not indicated Monitor theophylline levels carefully when co-administered	Rare risk of Achilles tendon rupture Absorption of quinolones is impaired when taken with antacids - avoid co-administration Review drug interactions with rifampin	Resistance to MRSA may develop rapidly with quinolones; combination with rifampin should be considered.
TMP-SMX + or - Rifampin	1 DS tablet every 8-12 hrs. 300 mg BID	Routine lab tests are not indicated Monitor CBC/plts, renal, and hepatitis parameters with prolonged tx or in complicated pts.	Drug interactions: dapsone, anticoagulants, phenytoin, cyclosporine, diuretics, MTX Adverse effects: rash, erythema multiforme, Stevens-Johnson syndrome hemolysis/G-6-PD deficiency, hepatitis, pancreatitis, bone marrow suppression	Maintain hydration with renal insufficiency to prevent crystalluria Review drug interactions with rifampin Check for sulfa allergy
Clindamycin + or - Rifampin	150 mg-300 mg q 6 hrs.	Routine lab tests are not indicated	Adverse effects: GI upset and relatively high incidence of <i>C. difficile</i> pseudomembranous colitis compared to other antibiotics. Review drug interactions with rifampin	If isolate is erythromycin-resistant, <i>in vitro</i> , clindamycin resistance may develop during tx: consult with microbiology laboratory prior to tx.

* Select antibiotics based on susceptibilities. Another oral tx is minocycline or doxycycline 100 mg q 12 hours. Consider administration of medications by directly observed therapy. Recurrent/persistent skin lesions may indicate nonadherence to treatment, antibiotic resistance, or re-exposure to an infected source. Resistant or serious infections usually require IV vancomycin.

NOTE: Consider decolonization with 2% mupirocin ointment topically to the nares twice daily for 5 days in context of MRSA outbreak or in patients with recurrent infections (e.g., 3 or more documented MRSA infections within 6 months).

Treatment Options for Hospital-Acquired or Serious MRSA Infections

Drug	Dose*	Monitoring	Drug Interactions/Effects	Comments
Vancomycin (Vancocin [®])	500 mg IV q 6 hrs; OR 1,000 mg IV q 12 hrs Infuse over 1 hour Note: ineffective given orally	Monitor trough drug levels within 1 hr of next dose: target is 10-15 mcg/mL Auditory function Renal function/CBC	Adverse effects: ototoxicity, nephrotoxicity, drug fever, hypotension, rash, pruritus, reversible neutropenia. Use with aminoglycosides - ↑ nephrotoxicity Anesthetics Histamine reaction; flushing	Infuse over 1 hour to reduce the onset of “red man syndrome”- flushing, hypotension; Monitor BP Adjust dosage based on trough levels May require 2 nd or 3 rd antibiotic for serious infections
Linezolid** (Zyvox [®])	600 mg BID oral or IV Can take with or without meals	CBC with diff/platelet count weekly Monitor BP - if hypertensive or taking a sympathomimetic	Diarrhea, bone marrow suppression, nausea, headache Avoid consuming foods containing large amounts of tyramine***	Use cautiously if pt is hypertensive Avoid adrenergic and serotonergic agents, including decongestants

* Sepsis requires at least 2 weeks of IV antibiotics. Endovascular infections such as endocarditis, osteomyelitis, and other deep-seated infections require 4-6 weeks of therapy and may require combination antibiotic tx; consult with expert on tx regimen and length of tx.

** Linezolid is a new antibiotic with limited efficacy and toxicity data: prescribe only in consultation with a physician expert.

*** Avoid foods with very high tyramine content such as packaged soups, pickled/smoked fish, orange pulp, fava beans, and aged cheeses.

NOTE: Consider decolonization with 2% mupirocin ointment to the nares twice daily for 5 days in context of MRSA outbreak or in patients with recurrent infections (e.g., 3 or more documented MRSA infections within 6 months).

Evaluation and Treatment of Skin and Soft Tissue Infections in the Correctional Setting

Initial Assessment and Treatment

- Conduct targeted history and physical examination
- Determine if staphylococcal skin or soft tissue infection is probable
- Assess risk factors for MRSA infection, including recent hospitalization
- Assess risk factors for systemic infection, e.g., recent injection drug use, prior endocarditis
- Obtain blood cultures if possibility of systemic infection or presence of fever
- Drain/aspirate infection whenever possible and obtain cultures → infection may resolve
- Remove foreign bodies and foreign devices when possible → infection may resolve
- Consider conservative tx → incision and drainage/hot soaks for limited infections

↓

Empiric Therapy

- If systemic infection/sepsis possible → admit to inpatient unit and consider empiric IV vancomycin
- If infection self-limited & cultures unobtainable or nondiagnostic & I & D unsuccessful →
Then consider empiric antibiotic therapy
- Consider empiric treatment with first generation cephalosporin, or amoxicillin/clavulanate, or erythromycin without MRSA risk factors
- In context of MRSA outbreak or presence of MRSA risk factors →
then tx with TMP-SMX ± rifampin, or clindamycin ± rifampin, or quinolone + rifampin

↓

Targeted Antibiotic Therapy

- If cultures and antibiotic sensitivities are available → target therapy accordingly
- Highly resistant MRSA isolates and serious infections usually require IV vancomycin therapy
- If susceptible → consider tx with trimethoprim-sulfamethoxazole ± rifampin
- Also can consider other antibiotics based on susceptibility results
- Monitor patients closely since *in vitro* sensitivities may not correlate with clinical response
- Persistent or recurrent disease may indicate nonadherence, new infection, or resistance

↓

Decolonization

- In context of MRSA outbreak → can decolonize nares with 2% mupirocin BID for 5 days; but of unproven benefit in the correctional setting

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Treatment Follow-up

- Re-evaluate 1 week after completion of antibiotic tx; examine for recurrent lesions
- For draining lesions → document 2 consecutive negative wound cultures 72 hours apart
- Continue periodic follow-up as clinically warranted

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Fact Sheet

What is MRSA?

Staphylococcus aureus, often referred to as “staph,” is a common type of bacteria that is found on the skin and in the nose of healthy persons. Staph bacteria may cause minor skin infections such as boils or more serious infections such as pneumonia and blood poisoning. Certain staph bacteria that have become resistant to first-line antibiotics are called MRSA. MRSA infections are more difficult to treat, but usually respond to antibiotic therapy. MRSA is NOT the “flesh-eating” bacteria.

How is MRSA spread from person to person?

MRSA is usually spread through direct physical contact with an infected person, but may also be transmitted through contact with contaminated objects or surfaces. MRSA is not spread by coughing unless the infected person has pneumonia.

How can I prevent becoming infected with MRSA?

- Wash your hands thoroughly with soap and water throughout the day, particularly every time you use the toilet and before every meal.
- Never touch another person’s wounds, infected skin, or dirty bandages.
- Maintain excellent personal hygiene through regular showers and by keeping your living space clean, including the regular laundering of your bed linens.
- Don’t ever share personal hygiene items with others, including toiletries and towels.
- Clean off recreational equipment such as weight benches before direct contact with your body or use a clean barrier such as a towel or shirt between your bare skin and exercise equipment.
- Shower after participating in close-contact recreational activities whenever possible.
- Don’t ever get a tattoo while in prison, use injection drugs, or have sexual contact with other inmates.

How does a person know that he or she has a MRSA infection?

Swabbing or aspirating pus from a skin infection is the most common way to detect MRSA.

Can MRSA be treated?

- Strong antibiotics are usually effective in treating MRSA. Serious or highly resistant MRSA infections may require intravenous (IV) antibiotics in the hospital. Always seek medical attention if you develop a boil, red or inflamed skin, or a sore that does not go away that may look like an insect or spider bite.