

Methicillin-Resistant *Staphylococcus aureus* (MRSA)

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Rationale for this *Pocket Guide*

This *Pocket Guide* is based on the following documents:

CDC. Community-Associated MRSA (CA-MRSA). Available at: http://www.cdc.gov/ncidod/hip/ARESIST/ca_mrsa.htm. Accessed February 4, 2005.

CDC. Methicillin-Resistant *Staphylococcus aureus* Infections in Correctional Facilities—Georgia, California, and Texas, 2001–2003. *MMWR* 2003;52(41):992-996.

Also see: BOP [Federal Bureau of Prisons]. Clinical Practice Guidelines for the Management of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Infections. Available at: <http://www.nicic.org/Library/019356>. Accessed February 4, 2005.

MRSA Infection

Staphylococcus aureus (S. aureus), also known as staph, is a common bacterium found on the skin or in the noses of up to 30% of healthy people in the United States. These people are called “carriers;” they usually do not know they carry the bacterium and never get sick from it.

The bacteria are harmless unless they penetrate the body’s natural barriers to cause infection. Staph can cause a wide range of infections that affect the body, both internally and externally, and are the most common cause of skin and soft tissue infections in the United States. Staph can occasionally spread rapidly into the bloodstream and, if untreated, can cause death.

Although risk factors for transmission of MRSA are not clear, incarcerated populations may be more susceptible to MRSA infection due to conditions such as:

- Overcrowding
- Higher prevalence of mental illness, hindering efforts to improve hygiene
- Greater prevalence of MRSA colonization in those within facilities
- Injection drug use
- Immune system suppression.

Because of this susceptibility, correctional facilities can serve as amplifiers of MRSA skin disease.

Identification

Recognition

Identification of MRSA infections among inmates can be made by passive or active surveillance. For example, waiting for inmates to access medical care for “spider bites,” rashes, bumps, or boils is passive surveillance. This is appropriate where there are very few cases of staph skin infections. Facilities with multiple cases need more active programs for recognition including:

- Routine screening for infections
- Use of diagnostic tests.

Misconceptions about the nature of MRSA skin infections may hinder early identification. For example, some inmates with MRSA have complained of having spider or insect bites and may not seek or receive timely treatment. These misconceptions may allow the spread of infection.

Why a Pocket Guide?

The purpose of this series of **Pocket Guides** is to provide concise, easily accessible information on correctional health care to policy makers and practitioners.

This *Pocket Guide* will help correctional health care practitioners integrate the identification, treatment, and control of methicillin-resistant *Staphylococcus aureus* (MRSA) into the medical care programs of prisons and jails, and help them coordinate their efforts with state and local public health officials.

Screening

Recognition of infections can be improved by interview and physical examination of all detainees/inmates at the following times:

- At intake from the community or transfer from other facilities
- When detainees/inmates complain of skin lesions
- When there has been exposure to an MRSA-infected detainee/inmate, particularly by persons who may be at high risk for MRSA infection including those
 - recently hospitalized
 - having a suppressed immune system
 - using medical devices, such as a dialysis machine or urinary catheter
 - having a previous colonization with MRSA.

Diagnostic Tests

The reliability of such diagnostic methods as bacterial cultures and susceptibility testing is enhanced by:

- Supplying the healthcare staff with resources to allow adequate specimen collection for culture.
- Using proper technique when obtaining material for culture and susceptibility testing, for example, culture of pus rather than a dry skin swab.

Treatment

Measures to ensure adequate treatment include mechanical drainage (through surgical incision), antibiotic therapy, and wound care.

Mechanical Drainage

Draining abscessed lesions is the highest priority, including incision when medically appropriate.

Antibiotic Therapy

- Reserve antibiotic therapy solely as an adjunct to drainage and wound care for local infections.
- Where antimicrobial use is appropriate, use antimicrobial agents that are recommended as effective against MRSA.
- Adjust treatment after antimicrobial susceptibility results are available; discontinue penicillins or cephalosporins if MRSA is confirmed by culture.
- When skin lesions appear actively infected at the end of treatment, re-evaluate patients to assess the need for continuation of antibiotics, for repeat incision and drainage, or for decolonization of nasal carriers.
- While they are on therapy, monitor patients for side effects or non-adherence to antibiotic therapy.

Wound Care

- Cover each draining lesion completely with a sterile gauze dressing.
- Under the supervision of qualified health care staff, change dressings daily (or whenever saturated with drainage).

During times when there is no access to the healthcare facility, supply extra dressings to patients who have draining skin lesions.

Prevention of Transmission

Jail and prison environments are conducive to the spread of MRSA.

The following conditions contribute to the continued spread of MRSA among inmates:

- Antibiotic pressure (the effect of indiscriminate use of antibiotics)
- Suboptimal personal hygiene
- Suboptimal laundering of underclothing and towels
- Suboptimal environmental cleaning

A number of correctional systems have worked successfully with state and local health departments to address the spread of MRSA in correctional facilities. The following is a compilation of case identification, treatment, and prevention strategies implemented by these institutions. The feasibility of these strategies will vary by facility, the regulations of individual institutions, and the nature of the participation by local health authorities in managing outbreaks.

The most important aspects of preventing transmission of MRSA in correctional facilities include:

- Personal hygiene
- Environmental cleaning
- Use of standard precautions by all facility personnel
- Education

For isolation precautions and more detailed explanations of appropriate infection control safeguards, refer to CDC's *Guideline for Isolation Precautions in Hospitals* available at <http://www.cdc.gov/ncidod/hip/ISOLAT/ISOLAT.HTM>.

Personal Hygiene for Detainees/Inmates

Correctional staff should:

- Encourage daily showering with soap and water
- Allow access to antibacterial soap, sinks, and towels (the latter laundered regularly)
- During an outbreak, consider the use of alcohol-based hand sanitizers.

Detainees and inmates should:

- Avoid touching lesions, drainage, or wound dressings of infected patients
- Practice hand hygiene if contact occurs with lesions, drainage, or dressings
- Avoid the sharing of personal items.

Environmental Cleaning of Cell Housing

- Regularly clean or properly dispose of medical equipment used to care for MRSA-infected patients.
- Dispose of dressings in compliance with state and local regulations.
- Use a hospital-grade disinfectant-detergent registered by the EPA for daily cleaning, according to manufacturer's instructions, of environmental surfaces, including sinks, showers, and toilets. A bleach solution is acceptable for this cleaning. Take care to ensure that bleach solutions are appropriately diluted (1:100 dilution of concentrated bleach) and changed when dirty.

Using hot water (>160° F. for 25 minutes) or bleach, properly launder clothing and linens. Dry clothes

completely before they are removed from the dryer. Ensure at least two changes of linens per week, daily exchanges of underwear, and twice-weekly change of outer clothing.

Standard Precautions for Correctional Facility Personnel

- Practice adequate hand hygiene before and after contact with blood, body fluids, or other possibly contaminated surfaces.
- Wash hands between patient contacts.
- Wear gloves when in contact with blood, body fluids, or other possibly contaminated surfaces.
- Change gloves between different tasks and remove gloves, followed by hand hygiene, promptly after use.
- Mask and protect the eyes whenever splashing of body fluids is likely.
- Gown whenever personal clothing could become soiled with body fluids.
- Mark or “flag” medical records of patients with MRSA infection.
- When possible, notify other facilities and health departments when transferring or releasing patients with MRSA infection.
- Assign single cell housing to an infected patient, or cohort with other MRSA-infected patients; consider changes in work assignments for MRSA-infected patients with poor hygiene or when inadequate hygiene is prevalent; and develop a standard procedure for releasing infected patients from assignment or cohort housing.
- Reserve the practice of decolonizing nasal carriers for relapsing or recurrent infections.

Education

Develop a comprehensive program to:

- Educate detainees/inmates, personnel, and visitors about MRSA
- Emphasize good personal hygiene practices
- Discuss the most important causes of disease transmission, such as manipulation of draining wounds that can result in hand-to-hand spread
- Facilitate rapid recognition of skin lesions consistent with *S. aureus* infection

Focus work-specific infection control education to particular groups of personnel and detainees/inmates, including those that work in laundry service, housekeeping, food service, or health care.

Barriers to Implementation of Prevention Measures

Certain barriers unique to correctional facilities may pose challenges for the prevention and control of MRSA, particularly when rapid intervention is required following a cluster of MRSA cases. Access to health care, infection control, monitoring, and community awareness have been recurrent issues in the investigation of past outbreaks.

Healthcare Access Barriers

- Required co-payment to see a practitioner for skin infections
- Limited hours of physician or mid-level practitioners, or other rules inhibiting access to the facility clinic

- Unavailability of security and transportation when an outside healthcare resource is required.

Infection Control Barriers

- Inadequate inventory of dressings to dispense to patients for use when access to healthcare personnel is limited
- Inmate/detainee difficulty in accessing alcohol gel or soap because it is stored in areas away from sink or shower areas
- Inability to change cell and/or work assignments of infected patients (when indicated) because of limited space or facility rules.

Monitoring Barriers

- Lack of continuity of care after diagnosis of infection because of frequent movement of detainees/inmates inside or outside the facility
- Inadequate surveillance for new infections because of lack of resources and the complexity of the task in the correctional facility system
- Insufficient information from local health departments regarding MRSA outbreaks in the community.

Community Awareness

- Inadequate recognition among lay people that boils and skin infections can be transmitted from person to person

Insufficient knowledge that this transmission can be prevented.

Collaboration with State and Local Prevention Measures

Whenever a cluster of cases is identified, especially if it appears that there may be transmission within the facility, notify your state or local health authority. They can help:

- Guide the investigation
- Develop a plan of action to prevent and control the outbreak
- Treat patients with active infection
- Assist with sanitation and environmental issues (e.g., appropriate laundry procedures)
- Help analyze the relationship of the outbreak to other outbreaks in the community.

Pocket Guide Series

This *Pocket Guide* is one in a series intended to introduce sheriffs, correctional administrators, correctional health care practitioners, public health care leaders, and those who make critical public policy and funding decisions to specific guidelines and recommendations arising out of the interface between public health and corrections.

This *Pocket Guide* will help correctional health care practitioners integrate MRSA prevention and control into the medical care programs of prisons and jails, and help them coordinate their efforts with state and local public health officials.

Rationale for this *Pocket Guide*

Widespread antibiotic use has led to the emergence of new strains of staph that are resistant to some drugs, making these infections very hard to treat. Staph bacteria resistant to the methicillin-type drugs commonly used to treat skin infections are called methicillin-resistant *Staphylococcus aureus* (MRSA). MRSA first appeared in hospitals and healthcare institutions and is now widespread in community settings, including correctional facilities.

Jails and prisons nationally have reported MRSA infections since 2000, but rates of infection in facilities throughout the United States are unknown (due to the lack of a standardized system of surveillance). Although risk factors for transmission of MRSA are not clear, incarcerated populations may be more susceptible to MRSA infection because of conditions such as overcrowding, greater prevalence of mental illness, greater prevalence of MRSA colonization within facilities, injection drug use, and immune system suppression. Because of this susceptibility, correctional facilities can serve as amplifiers of MRSA skin disease.