



## GEORGIA DEPARTMENT OF CORRECTIONS

Floyd Veterans Memorial Building  
Room 952 - East Tower  
Atlanta, Georgia 30334

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Sonny Perdue  
Governor

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### MEMORANDUM

**TO:** Medical Directors, Medical Administrators, & Health Care Personnel  
State & Private Prisons, Boot Camps, Transitional and Detention Centers

**FROM:** Jerry Buttelwerth, MSN, CFNP, CCHP  
Clinical Services Consultant

**DATE:** April 3, 2003

**RE:** Clinical Update 03.02: Practice Guidelines for Managing Skin Infections  
Caused by Methicillin Resistant *Staphylococcus aureus* (MRSA)

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#### Attachments

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SONNY PERDUE  
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April 3, 2003

### **CLINICAL UPDATE 03:02**

**TO:** Medical and Nursing Directors, Health Administrators  
State and Private Prisons, Boot Camps, Transitional & Detention Centers

**THRU:** Joseph E. Paris, PhD, MD  
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**RE:** Practice Guidelines for Managing Skin Infections Caused by Methicillin  
Resistant *Staphylococcus aureus* (MRSA)

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#### **I. Background**

*Staphylococcus aureus*, a type of bacterium often simply referred to as "staph," is commonly found on the skin and in the nose of healthy persons. Occasionally, staph also can cause minor infections such as pimples, boils (furuncles), or hair bumps (folliculitis), or serious infections such as blood infections (bacteremia). Some staph are resistant to antibiotics in both the penicillin class (e.g., Methicillin) and the cephalosporins class (e.g., Keflex). These staph are known as Methicillin-resistant *Staphylococcus aureus* (MRSA). MRSA may be resistant to other types of antibiotics as well, especially macrolides such as erythromycin.

MRSA has been common in hospitals for approximately 20 years, but only recently has become an increasingly common cause of community-onset infections. In addition, outbreaks of skin boils caused by MRSA in correctional settings have been reported in several states, including Georgia. Based on Statewide reports of MRSA skin infections, carriage of MRSA without symptoms may be widespread among inmates in Georgia jails and prisons, and guidelines are needed to slow its spread and minimize MRSA infections.

These guidelines are divided into four (4) parts: prevention, recognition, diagnosis and treatment (including recurrent lesions in an individual), and outbreak control. All facilities should ensure that prevention measures are in place and diagnostic testing is available. Facilities affected by MRSA will need to implement treatment and outbreak control measures.

## II. Prevention

Four basic measures are critical to minimize the spread of MRSA in correctional facilities. These include:

1. Minimizing unnecessary antibiotic use
2. Establishing surveillance for MRSA
3. Optimizing hygiene, especially hand washing among inmates
4. Controlling drainage from infected lesions

### Appropriate Antibiotic Use

Use of antibiotics for any reason may kill susceptible staph on the skin and in the nose, but MRSA may survive. Selective survival of MRSA increases the risk of MRSA transmission and MRSA infections in the population and the individual. **For this reason, it is important to always use antibiotics responsibly and to consider carefully whether antibiotics are necessary before prescribing them.** Published guidelines exist for appropriate antibiotic use for common respiratory tract infections in adults, including sore throat, sinus symptoms, and cough illness. A one-page summary of these guidelines is attached (see Attachment A). Taken from, "Guidelines for Appropriate Antibiotic Use for Treatment of Acute Respiratory Tract Infections in Adults," ***Annals of Internal Medicine***, 2001, 134:479-529.

### Surveillance for MRSA

Surveillance permits early recognition of MRSA in the facility and improves treatment. The following guidelines should be implemented:

1. Establish and maintain a skin infection log (see Attachment B) of skin infections, including the following information:
  - inmate's name
  - inmate I.D. number
  - dorm/room assignment
  - date of lesion onset

- type/location of lesion
- date of culture (or visit date if not cultured)
- culture results (microorganism detected)
- antibiotics prescribed
- if MRSA, antibiotic susceptibility to (erythromycin, TMP/SMX, clindamycin, tetracycline, or ciprofloxacin)

Evaluate antibiotic-resistance patterns of all isolates to identify common patterns and to guide empiric therapy.

2. Encourage inmates with skin lesions to come to medical (through the sick call or urgent/emergent care access) before spread to other inmates or personnel occurs. When inmates are transferred to another facility, they should be interviewed about the presence of skin lesions, and examined if lesions are reported. In many outbreaks, inmates have mistaken early lesions for spider bites, so encouraging inmates with spider bites to be evaluated may improve early recognition of a potential MRSA skin infection.
3. Obtain a culture from **all** draining skin lesions. If a lesion contains pus but is not draining, drainage should be established through sterile incision and drainage (I&D) or warm soaks, and lesion exudates should be cultured.

#### Personal Hygiene

All staph skin infections, including MRSA, spread easily between people, most commonly by direct skin contact. Transmission is particularly common under crowded conditions and in warm weather. **Good hygiene, with use of soap and water, is very important in reducing the risk of spread by removing bacteria on the skin.** Waterless hand sanitizers also work well, if hands are not visibly soiled. All facilities should ensure convenient access to soap and water for inmates, and encourage daily showers and regular hand washing (e.g., before meals and after using restroom facilities). Installation of liquid soap dispensers near sinks may improve access to soap and compliance with hand hygiene.

Any break in the skin could lead to a staph infection. Minor wounds and chronic skin diseases need to be treated appropriately and in a timely manner. Activities that lead to breaks in the skin such as tattooing should be discouraged.

#### Environmental Cleaning

1. Environmental surfaces should be cleaned regularly with a dilute bleach solution (i.e., 1 tbsp. household bleach per gallon of water) or other disinfectant-based solution. Special attention should be given to surfaces frequently touched by hands.
2. Laundry should be washed and thoroughly dried, using hot settings when possible.
3. Bed sheets, towels and clothing should be laundered regularly.

### Control of Infectious Body Fluids

Draining skin lesions may contain millions of infectious bacteria, and may be an important source of transmission and environmental contamination. **If a lesion contains pus, drainage is essential for rapid improvement, but draining lesions must be covered with absorptive dressings. Dressings must be changed frequently and disposed of carefully to prevent spread.**

### III. Recognition

Efforts to improve diagnosis of MRSA skin infections in correctional facilities include active programs for disease recognition, including inmate screening during diagnostic intake, intrasystem transfer and during periodic physical exams.

#### Screening Inmates

Improved recognition of MRSA can be done through interviewing and examining inmates during intakes, transfers, and physical exams done for other purposes.

- Intakes

Health care staff should obtain medical history information related to the presence of current or previous skin infections. Particular attention should be given to patients with a history of prior MRSA, HIV, diabetes, or known recent contact with a MRSA case, or recent hospitalization.

**The clinician should document culture positive MRSA skin infection information on the Problem List.**

- Transfers

Sending Facility – In addition to the standard measures taken for preparing a patient for transfer out of the facility (chart preparation, medications, etc.), health care staff should document the MRSA skin infection information where appropriate and communicate with receiving facility.

Health care staff at the receiving facility should review the health record and interview the patient. If the patient has new skin lesions, the nurse should either telephone the clinician or refer the patient to the clinician for skin lesion management orders/instructions.

- Other Physical Exams

At the time of the physical exam, the clinician should review the Problem List and health record to determine if the patient has a current or past history of skin infections. Particular attention should be given to patients with a history of prior MRSA, HIV, diabetes, or known recent contact with a MRSA case, or recent hospitalization.

#### IV. Diagnosis and Treatment of MRSA Skin Infections

The type and severity of skin infection should be defined. The following is a list of common skin lesions accompanied by their definition:

- **Folliculitis** (hair bumps): a skin infection involving the hair follicle and its immediate surroundings. It presents as a series of raised, painful reddish lesions with a swollen base, each of them being centered on a hair follicle.
- **Furuncle** (boil): aggressive, deeper form of folliculitis that extends into the skin. It appears as an acute, localized abscess of the skin and subcutaneous tissue around a hair follicle, resulting in a tender, inflammatory nodule containing pus.
- **Carbuncle**: aggregate of multiple, connected furuncles with spread of infection under the skin, resulting in deep abscess, often accompanied by extensive local sloughing, slow healing, and a large scar.
- **Cellulitis**: diffuse, spreading, acute inflammation of the skin and of subcutaneous tissue, characterized by redness, inflammation, and swelling without necrosis, pus or drainage.

Treatment of skin and soft tissue infections differs according to the type of infection, and the host. **In general, minor skin infections, such as folliculitis or furuncles usually require only local care once drainage is assured by warm soaks or incision and drainage.** However, a furuncle with surrounding cellulitis, or fever, or one located about the midface should be treated with antibiotics. Diffuse or recurrent furuncles may require antibiotics. In immunocompromised patients, such as those with HIV infection, diabetes or steroid use, many practitioners prefer to use antibiotics even for minor infections, but data do not support this.

More serious infections, such as carbuncles and cellulitis generally require antibiotics, and if progressive, may require intravenous therapy. If serious or systemic infection is suspected or underlying disease complicates treatment, infectious disease (ID) consultation is warranted.

#### Managing Furuncles or Other Draining Lesions

- Clinicians should educate patients with draining lesions regarding frequent hand washing, particularly if a lesion is touched.
- Patients should be cautioned NOT to squeeze or touch their own or others' lesions.
- Patients with draining lesions must keep a dry dressing over the area. Dressings should be changed often enough to prevent seepage, in a supervised setting, and disposed of carefully in biohazard bags.
- Warm soaks, when used, should be performed in a supervised setting to ensure proper disposal of materials. To ensure proper technique and evaluate condition of wounds, medical staff should perform or supervise all dressing changes when possible. Inmates

should be given extra dressings and proper means to dispose of soiled ones (in biohazard bags) for emergencies.

- Inmates with infections, who continue to practice poor hygiene, should be isolated or cohorted with other infected patients. Isolation may involve placing the inmate in a regional infirmary. If infirmary placement is medically indicated, the medical staff should contact Utilization Management for a bed/infirmary assignment. Cohorting would involve placing infected inmates together in a separate housing unit.
- **For uncomplicated furuncles in the normal host, adequate drainage (i.e., through warm soaks or surgical incision) and wound care are considered primary therapy and also provide the mechanism to diagnose MRSA through culture.** All facilities should identify a mechanism to provide incision and drainage when needed, and to culture all draining lesions; swabbing of skin is not adequate. **While clinical judgment is important, many experts feel that once drainage is assured, antibiotics are unnecessary and do not speed resolution of uncomplicated furuncles.** To ensure resolution, medical follow up is important. If incision and drainage is planned, the American Heart Association (AHA) recommends prophylactic antibiotics before the procedure in persons with certain cardiac conditions. (Dajani, A.S. et al. Circulation 1997;96:358-366.)
- In the correctional setting, clinicians may choose to treat with antibiotics to reduce the likelihood of transmission, but data to support this practice are unavailable. When antibiotics are prescribed, directly observed therapy (DOT) should be considered to ensure compliance and prevent the diversion of drugs with possible street value. **Prolonged therapy is not necessary if lesions are responding, and does not eradicate colonization. Treatment duration depends on clinical response, but seven days is usually sufficient.** If wounds are not resolving within this period, evaluate for complicating factors (undrained pus, noncompliance) and consider consulting with an infectious disease specialist.
- **When the clinician determines that antibiotics are necessary for treatment of skin infections (i.e., carbuncles, cellulitis or furuncles in an immunocompromised patient), treating empirically requires knowing if MRSA is the likely pathogen.** This requires surveillance and monitoring of the skin log.
- In facilities where MRSA is not suspected, empiric therapy with a first-generation cephalosporin such as Keflex, or a macrolide such as erythromycin is appropriate, when antibiotics are deemed necessary. If MRSA is likely, appropriate oral antibiotics should be prescribed (see Table 1).

#### Managing Recurrent Furuncles in a Patient

Patients with recurrent skin lesions may have nasal colonization, or another source of relapse. The following process should be used to evaluate recurrent skin infections:

1. The clinician should check for an unresolved source of recurrent disease, (e.g., open wound, undrained abscess or infected medical prosthesis).
2. The clinician should check for colonization by rubbing the cotton surface of a culturette firmly over the mucosa of both anterior nares, and send the specimen for culture and susceptibility testing. The results should then be recorded on the skin log.
3. If a nasal culture is positive, attempt decolonization\* of the patient by conducting the following steps concurrently:
  - a. Provide chlorhexidine for thorough daily showers for 5 days. Advise the patient to avoid getting chlorhexidine in the eyes.
  - b. Apply mupirocin (bactoban) nasal ointment in both nares twice a day for five (5) days. Ointment should be massaged well into nares, and should be done by DOT when possible.

\* The goal of decolonization is to eradicate staph from the anterior nares. Although widespread use of chlorhexidine may be considered during outbreaks, use of mupirocin in the wider population is not advised because it is only useful in nasal carriers and resistance evolves rapidly.

## **V. Outbreak Control**

In addition to the recommendations in this document, suspected outbreaks should be reported to the county, district, or state health departments (number for the Georgia Division of Public Health: 404-657-2588).

### Surveillance

- Health care staff should encourage inmates to be seen in medical for “spider bites”, or painful or purulent bumps.
- If feasible, waive co-pay charges to enhance complete patient identification.
- If an outbreak is extensive or prolonged, investigate undiagnosed reservoirs of infection in the general population by actively screening inmates for lesions.



### Prevention

- Nursing staff should provide and emphasize facility-wide education for inmates and staff about skin infections and hygiene.
- Inmates should have access to soap and water, preferably by providing liquid soap dispensers at bathroom sinks and shower facilities. Waterless hand sanitizers are also effective if hands are not visibly soiled, but may be expensive. Hand sanitizers have residual antibacterial effects.
- Inmates should be encouraged to shower using soap, with extra attention to body parts that contain many hair follicles and oil glands; the scalp, underarms, chest, groin and buttocks.
- Frequent hand washing must be emphasized. Most staph infections are transmitted by contamination of the hands.
- Inmates should avoid sharing personal items (e.g., comb, razor, clothing, towels, etc.).
- With assistance from public health, consider an investigation of risk factors for disease to target interventions.

### Environmental Cleaning

- Environmental surfaces should be cleaned regularly with a dilute bleach solution (1 tbsp. household bleach per gallon of water) or other disinfectant-based solutions. Special attention should be given to surfaces frequently touched by hands.
- Laundry should be washed and thoroughly dried, using the hot setting.
- Fresh washcloths and towels should be provided frequently (preferably daily). Disposable materials may be substituted, if preferable.
- Fresh undergarments should be worn daily.
- Bed sheets and clothing should be laundered regularly (e.g., daily or twice weekly).

### Infection Control

- Health care staff should educate patients with draining lesions about frequent hand washing, particularly if a lesion is touched.
- Patients must NOT squeeze or touch their own or others' lesions.
- Patients with draining lesions must keep a dry dressing over the lesion. Dressings should be changed in a supervised setting, often enough to prevent seepage, and disposed of carefully. Warm soaks, when used, should be provided in a supervised

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setting to ensure proper disposal of materials. Inmates should be given extra dressings and proper means to dispose of soiled ones (biohazard bags) for emergencies.

- For prolonged or extensive outbreaks, chlorhexidine soap for daily showers for five days in the affected dorm or population should be considered, but caution is required to keep it out of the eyes. Chlorhexidine and waterless hand sanitizers have a residual antibacterial effect.
- Isolate (in a regional infirmary if necessary) patients with poor hygiene and MRSA. Inmates with poor hygiene are those who are likely to spread MRSA either due to poor control of wound drainage, or inadequate hand hygiene.
- Inmates with food handling work duties should not work if they have any lesions on their hands. Assuming good hygiene, and limited skin contact with others, limitation of work and other activities for other inmates is not indicated.

#### **What NOT to do in an outbreak**

- Widespread or generalized nasal swabbing is usually not indicated.
- Environmental swabbing is usually not indicated.
- Prolonged antibiotic therapy is not indicated and not helpful.
- Widespread use of mupirocin for the population at risk is not advisable due to likely rapid evolution of resistance.

**Table 1: Oral Antibiotics for Empiric Treatment of suspected MRSA Skin Infections, When Antibiotics Are Deemed Necessary\***

Antibiotic	Useful for MRSA Infection	Comments
Trimethoprim/Sulfamethoxazole	YES	Preferred drug. Significant side effects (allergic rash) may occur. Side effects more common in HIV-infected persons.
<b>Tetracyclines:</b> Doxycycline, Minocycline	YES	Bacteriostatic. Photosensitivity, GI side effects. Avoid in pregnancy.
Clindamycin	Sometimes	Bacteriostatic. Erythromycin-resistant strains of MRSA may appear to be clindamycin-susceptible, but have an inducible form of clindamycin-resistance. This problem varies geographically.
<b>Fluoroquinolones:</b> Ciprofloxacin**	Usually Not	Resistance can develop on monotherapy. Do not use alone. Avoid in pregnancy. <b>**May combine with Rifampin.</b>
Rifampin***	Sometimes	Resistance develops quickly on monotherapy. Do not use alone. <b>***May combine with Ciprofloxacin.</b>
<b>Penicillins:</b> Cloxacillin Dicloxacillin Augmentin	NO	MRSA are resistant to all beta-lactam antibiotics.
<b>Cephalosporins:</b> Keflex	NO	MRSA are resistant to all beta-lactam antibiotics.
<b>Macrolides:</b> Erythromycin Clarithromycin Azithromycin	Usually Not	Bacteriostatic. Many community strains and most hospital strains of MRSA are macrolide-resistant.

\* When antibiotic susceptibility results are known, they should be used to guide choice of antibiotic therapy. Knowing the predominant strains of staph in an institution and studying the resistance patterns by keeping a skin log and culturing all lesions can assist in the empiric choice of antibiotics while susceptibility results are pending.

## VI. References

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12. Texas Department of Criminal Justice, Health Service Division. *Infection Control Manual*, Number B-14-16. January 15, 1999.

## VII. Appendices

1. Appendix A: Adult Appropriate Antibiotic Use Summary
2. Appendix B: Georgia Department of Corrections Skin Infection Log

## Appendix A. Adult Appropriate Antibiotic Use Summary

Diagnosis	CDC Principles of Appropriate Antibiotic Use for Upper Respiratory Infections in Adults
Upper Respiratory Infections, NOS	<ul style="list-style-type: none"> <li>▪ The diagnosis of nonspecific upper respiratory tract infections or acute rhinopharyngitis should be used to denote acute infection that is typically viral in origin, and in which sinus, pharyngeal, and lower airway symptoms, although frequently present, are not prominent.</li> <li>▪ Antibiotic treatment of nonspecific upper respiratory infections in adults does not enhance illness resolution or prevent complications, and is therefore not recommended.</li> <li>▪ Purulent secretions in the nares and throat (commonly reported and seen in patients with uncomplicated, upper respiratory tract infection) neither predict bacterial infection nor benefit from antibiotic treatment.</li> </ul>
Acute Pharyngitis	<ul style="list-style-type: none"> <li>▪ Group A beta hemolytic streptococcus (GABHS) is the etiologic agent in approximately 10% of adult cases of pharyngitis. The large majority of adults with acute pharyngitis have a self-limiting illness, which would do well with supportive care only.</li> <li>▪ The benefits of antibiotic treatment of adult pharyngitis are limited to those patients with GABHS infection. All patients with pharyngitis should be offered appropriate doses of analgesics, antipyretics and other supportive care.</li> <li>▪ Limit antibiotic prescriptions to those patients with the highest likelihood of GABHS.</li> <li>▪ Clinically screen all adult patients with pharyngitis for the presence of the 4 Cantor criteria: (1) history of fever, (2) tonsillar exudates, (3) no cough, and (4) tender anterior cervical lymphadenopathy (lymphadenitis).               <ol style="list-style-type: none"> <li>1. Do not test and do not treat patients with none or only one of these criteria. These patients are unlikely to have GABHS infection.</li> <li>2. For patients with 2 or more criteria, the following strategies are appropriate:                   <ul style="list-style-type: none"> <li>➢ Test patients with 2, 3, or 4 criteria using a rapid antigen test. Limit antibiotic therapy to patients with a positive test.</li> <li>➢ Test patients with 2 or 3 criteria using a rapid antigen test. Limit antibiotic therapy to patients with a positive test or patients with 4 criteria.</li> <li>➢ Do not use any diagnostic tests. Limit antibiotic therapy to patients with 3 or 4 criteria.</li> </ul> </li> </ol> </li> <li>▪ Throat cultures are neither recommended for the routine primary evaluation of adults with pharyngitis, nor for the confirmation of negative rapid antigen tests. Throat cultures may be indicated as a part of investigations of outbreaks of GABHS disease, for monitoring the development and spread of antibiotic resistance, or when pathogens such as gonococcus are being considered.</li> <li>▪ The preferred antibiotic for treatment of acute GABHS pharyngitis is penicillin, or erythromycin for a penicillin-allergic patient.</li> </ul>
Rhin sinusitis	<ul style="list-style-type: none"> <li>▪ Most cases of acute rhinosinusitis diagnosed in ambulatory care are due to uncomplicated viral, upper respiratory tract infections.</li> <li>▪ Bacterial and viral rhinosinusitis are difficult to differentiate on clinical grounds. The clinical diagnosis of acute bacterial rhinosinusitis should be reserved for patients with rhinosinusitis symptoms lasting 7 days or more and who have maxillary facial/tooth pain or tenderness (especially when unilateral) and purulent nasal secretions. Patients who have rhinosinusitis symptoms for less than 7 days are unlikely to have a bacterial infection.</li> <li>▪ Sinus radiographs are not recommended for diagnosis in routine cases.</li> <li>▪ Acute bacterial rhinosinusitis resolves without antibiotic treatment in the majority of cases. Symptomatic treatment and reassurance is the preferred, initial management strategy for patients with mild symptoms. Antibiotic therapy should be reserved for patients meeting the criteria for the clinical diagnosis of acute bacterial rhinosinusitis who have moderately severe symptoms, and for those with severe rhinosinusitis symptoms – especially those with unilateral face pain – regardless of duration of illness. Initial treatment should be with the most narrow-spectrum agent that is active against likely pathogens <i>Streptococcus pneumoniae</i> and <i>Haemophilus influenzae</i>.</li> </ul>
Bronchitis	<ul style="list-style-type: none"> <li>▪ The evaluation of adults with an acute cough illness, or with presumptive diagnosis of uncomplicated acute bronchitis, should focus on ruling out pneumonia. In the healthy, non-elderly adult, pneumonia is uncommon in the absence of vital sign abnormalities or asymmetrical lung sounds, and chest radiography is warranted in the absence of other known causes.</li> <li>▪ Routine antibiotic treatment of uncomplicated bronchitis is not recommended, regardless of duration of cough. In the unusual circumstances when pertussis infection is suspected, a diagnostic test should be performed and antimicrobial therapy initiated.</li> <li>▪ Patient satisfaction with care for bronchitis is most dependent on the doctor-patient communication rather than on whether or not an antibiotic is prescribed.</li> </ul>

Name	ID Number	Dorm	Type/Location of Lesion	Date of Onset	Date of Culture (visit date if not cultured)	Culture Results	Antibiotics Prescribed	If MRSA, Antibiotic Susceptibility				
								Erythro mycin	TMP/ SMX	Clinda mycin	TCN	Cipro

