



STAPHYLOCOCCUS AUREUS INFECTIONS (community acquired)

(See also **FOODBORNE ILLNESS** and **TOXIC SHOCK SYNDROME** for primarily toxin-mediated staphylococcal diseases)

1. **Agent:** *Staphylococcus aureus* a Gram positive bacterium. Most *S. aureus* is divided into 2 groups: methicillin-resistant (MRSA) and methicillin-sensitive (MSSA).

2. **Identification:**

a. The most common staphylococcal infections include impetigo, boils, carbuncles, abscesses, and infected wounds. Methicillin-resistant *Staphylococcus aureus* (MRSA) is the most common cause of community acquired bacterial skin infections in the United States.

In rare cases, community acquired *S. aureus* may result in bacteremia, meningitis, pneumonia, or necrotizing fasciitis.

Outbreaks of *S. aureus* skin infections are often found in close crowded living conditions such as correctional facilities, homeless shelters or in the military.

b. **Differential Diagnosis:** Miliaria (heat rash), diaper dermatitis, chemical conjunctivitis, and cellulitis or abscesses due to other pyogenic organisms (primarily group A streptococcus).

c. **Diagnosis:** Culture of organism from involved site. PCR may be used in some circumstances to identify MRSA (not MSSA)

3. **Incubation:** Variable and indefinite; commonly 2 to 10 days. However, people may be colonized for months-years before an infection occurs.

4. **Reservoir:** Human; some farm and domestic animals.

5. **Source:** Nares, perineum, and any purulent lesion. Thirty to forty percent of the general population carries MSSA in their anterior

nares and moist body areas; 1-3% carries MRSA in these same areas.

6. **Transmission:** Usually by contaminated hands, contact with infected or colonized site, or fomites; airborne droplet spread is rare. *S. aureus* is not commonly found in water, especially water that is adequately chlorinated.

7. **Communicability:** As long as viable organisms exist in lesion or the carrier state persists, the person may continue to autoinfect themselves or others. *S. aureus* may survive in dry environments for weeks.

8. **Specific Treatment:**

Case: Therapy should consider the drug sensitivity pattern of the organism. Resistance to methicillin is a marker for resistance to all β -lactam antibiotics such as penicillin or the cephalosporins. Many skin infections due to *S. aureus* will clear-up with good skin care and drainage of pus (if necessary) and may not need antibiotics for treatment.

Carriers: There is no reason to treat carriers in community settings unless there are repeated autoinfections. Consider decolonization of patients who will undergo cardiac, orthopedic or neurosurgery procedures with implants. Decolonization treatment consists of topical antibiotics to the nares and anti-staphylococcal soap to the body for at least 5 days. Consult with ACDC if considering recommending decolonization.

9. **Immunity:** None.

REPORTING PROCEDURES

1. **Outbreaks:** all outbreaks of *Staphylococcus aureus* (MRSA or MSSA) in the community are reportable within one working day of identification. *California Code of Regulations, Section 2500*



2. Report Form

For outbreaks in non-healthcare facilities:
OUTBREAK/UNUSUAL DISEASE CASE REPORT (CDPH 8554)

For outbreaks in acute care facilities:
CD OUTBREAK INVESTIGATION-ACUTE HEALTH CARE FACILITY (H-1165AHCF)
(ACDC use only)

For sub-acute health care facility outbreaks:
CD OUTBREAK INVESTIGATION-SUB-ACUTE HEALTH CARE FACILITY (H-1164-SubAcute)

3. Epidemiologic Data:

- a. Demographics of patient(s) including age, race/ethnicity, gender
- b. Onset date
- c. Location and description of lesions or symptoms
- d. Culture and antibiotic sensitivity reports
- e. Occupation, school, recreational activities (sports), and drug use.
- f. Close contacts (household, sexual, teammates) with active skin infections
- g. Treatment received, outcome (hospitalized, surgery needed, etc)
- h. History in past 12 months of surgery, dialysis, hospitalization or stay in licensed healthcare facility.
- i. History in past 3 months of antibiotic use

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate outbreaks; evaluate within 24 hours.
Investigate individual cases within 3 days.

CASE:

Precautions:

1. **Person:** Appropriate hand hygiene should be emphasized. Skin lesions should be covered with a clean dry bandage and patients should be taught how to dispose of soiled bandages appropriately. Patients may return to work, school, or usual activities if they can maintain a clean, dry bandage over any open skin lesion. Hand hygiene should be performed before and after changing bandages. Soap and water or an alcohol based hand rub (at least 62% alcohol) will effectively disinfect hands.

According to the California Food Code, if the patient is a food handler and has a rash, skin lesion or open/draining wound on their hand(s) or the exposed part(s) of their arm(s), they are required to wear an impermeable cover over the condition. If the lesion is on another part of their body, they must wear a dry, durable, tight-fitting bandage. Otherwise they must report their condition to their employer. All employees with any cuts, sores, or rashes must wear gloves when contacting food and food contact surfaces.

Patients do not need to be on antibiotics or complete an antibiotic course before returning to their usual activities.

2. **Environment:** Use an EPA registered disinfectant to clean the environment. Ensure that the label specifies that the product is active against *S. aureus* and ensure adequate contact time (usually 30 seconds-1 minute) for disinfection. Note that while the environment may be a reservoir for *S. aureus*, most transmission is thought to be from direct person to person contact. For water reservoirs, such as pools or hot-tubs, assure that the chlorine concentration meets the State standards. Consult with Environmental Health as needed.

CONTACTS:

Contacts are persons in close contact with patient with any staphylococcal disease.

1. Emphasize hand hygiene, especially before and after handling any soiled bandages.
2. Encourage contacts to check skin for any new lesions or infections. Contacts with new infections should be encouraged to see their



healthcare provider for diagnosis and treatment.

CARRIERS:

It is rarely worthwhile to search for nasal carriers or perform environmental sampling.

PREVENTION-EDUCATION

1. Stress importance of personal hygiene. Emphasize hand hygiene, regular bathing or showers, and changing clothes.
2. Stress importance that cases/carriers or contacts do not share personal skin care articles such as soap, razors, towels, etc.
3. Emphasize proper disposal of bandages and disinfection of fomites.
4. For more information, please see <http://lapublichealth.org/acd/MRSA.htm>

DIAGNOSTIC PROCEDURES

1. Culture

Container: Culturette; follow package instructions.

Laboratory Form:
PUBLIC HEALTH LABORATORY TEST REQUISITION FORM

Examination Requested:
Other: Staphylococcus.

Material: Exudate or discharge from infected site, nares, pharynx.

Storage: Room temperature.

2. Molecular typing of outbreak strains by pulsed-field gel electrophoresis is available in consultation with Acute Communicable Disease Control. However, most community strains of *S. aureus* have the same pulsed-field type and PFGE is not very helpful in identifying the source of infection(s).