



# Methicillin-resistant *Staphylococcus aureus* (MRSA)

## General Information

*Staphylococcus aureus* is a Gram-positive bacterium that is non-motile, round-shaped, and often found in irregular clusters. Methicillin-resistant *S. aureus* (MRSA) is a type of staph that is resistant to beta-lactam antibiotics. While *S. aureus* is a part of human flora and rarely cause disease, MRSA can cause serious infections and is difficult to treat with conventional antibiotics.

## Host Range

Primarily humans, wide range of animals

## Incubation Period

1-10 days for wound exposure

## Survival Outside Host

MRSA can survive well on skin and other body surfaces (up to 42 days); more variable on inanimate surfaces (days to months).

## Laboratory Hazards

Open wound, parenteral inoculation, mucous membrane, ingestion, aerosol exposure

## Symptoms of Exposure

Skin infections: swollen, painful bumps that are warm to the touch. Bumps may resemble pimples or spider bites. Non-skin infections: fever, chills, headaches, muscle aches; untreated or skin infections that go deeper can cause life threatening illnesses including pneumonia, septicemia, and bone infections.

## Lab Acquired Infections (LAIs)

At least 7 LAIs since 2000; mucous membrane exposure, wound exposure.

## Personal Protective Equipment



## Disinfection & Inactivation

Susceptible to many disinfectants including 10-20% bleach, 70% ethanol, chlorohexidine, 2% glutaraldehyde. Sensitive to dry heat treatment of 160-170°C for at least an hour, but not to moist heat treatment.

## Waste Management

Refer to [USC's Biological and Infectious Waste Management Plan](#).

## Lab Containment

[Biosafety Level 2 \(BSL-2\)](#) for activities with materials and cultures known or reasonably expected to contain MRSA.

## Animal Containment

[Animal Biosafety Level 2 \(ABSL-2\)](#) for activities with experimentally infected animals.

## Medical Surveillance/Treatment

Surveillance: Bacterial culture after isolation from source  
Prophylaxis: Antibiotic prophylaxis generally not recommended

Vaccines: None available

Treatment: Antibiotics are not necessary in some cases of MRSA but is required for more serious infections.

## Spill Procedures

See [USC Biological Spill Procedures](#)

## Exposure Procedures

See [USC Protocol for Post Exposure Evaluation and Follow-up](#) Use of sharps should be strictly limited. A biosafety cabinet should be used when there is a potential to create aerosols or droplets.

## References

Public Health Agency of Canada (2011) Pathogen Safety Data Sheets: Infectious Substances – *Staphylococcus aureus*. Pathogen Regulation Directorate, Public Health Agency of Canada

ABSA Laboratory-Acquired Infection (LAI) Database. [my.absa.org/LAI](http://my.absa.org/LAI)

CDC. Methicillin-resistant *Staphylococcus aureus* (MRSA). [www.cdc.gov/mrsa/index.html](http://www.cdc.gov/mrsa/index.html)

Gemmell, C.G. et al. (2006) Guidelines for the Prophylaxis and treatment of methicillin-resistant *Staphylococcus aureus* (MRSA) infections in the UK.