

**Methicillin
Resistant
Staphylococcus
Aureus**

OBJECTIVES

1. To know how MRSA's are acquired
2. To be aware of the modes of transmission
3. To understand infection control processes that break the chain of transmission
4. To understand the use of exposure control techniques

Methicillin-Resistant
Staphylococcus Aureus
(MRSA)

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graph TD; A[Methicillin-Resistant Staphylococcus Aureus (MRSA)] --- B[Community Associated Methicillin-Resistant Staphylococcus Aureus (CA-MRSA)]; A --- C[Healthcare Associated Methicillin-Resistant Staphylococcus Aureus (HA-MRSA)];
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Community Associated
Methicillin-Resistant
Staphylococcus Aureus
(CA-MRSA)

Healthcare Associated
Methicillin-Resistant
Staphylococcus Aureus
(HA-MRSA)

WHAT IS STAPHYLOCOCCUS AUREUS?

A Gram-positive Bacterium Present in 25-35% of the Population

- Staphylococcus aureus, "staph," are bacteria commonly carried on the skin or in the nose of healthy people.
- Staph bacteria are one of the most common causes of skin infections in the United States.
- Most of these skin infections are minor (such as pimples and boils) and can be treated without antibiotics.
- Staph bacteria can cause serious infections (such as surgical wound infections, bloodstream infections, and pneumonia).

WHAT IS MRSA?

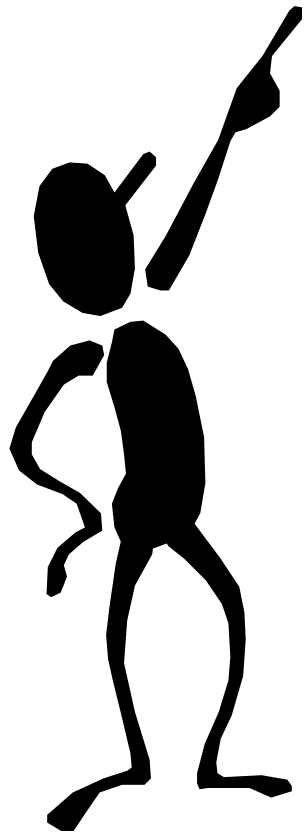
Methicillin-Resistant Staphylococcus Aureus

- Some staph bacteria are resistant to antibiotics.
- MRSA is a type of staph that is resistant to antibiotics called beta-lactams.
- Beta-lactam antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin.
- While 25% to 30% of the population is colonized with staph, approximately 1% is colonized with MRSA.

MRSA IS A PREVALENT NOSOCOMIAL (HEALTHCARE ASSOCIATED) PATHOGEN IN THE US

In Healthcare, the Most Important Reservoirs of MRSA are Infected or Colonized Patients

- While healthcare personnel can serve as reservoirs for MRSA and may harbor the organism for many months, they are more commonly identified as a link for transmission between colonized or infected patients.
- The main mode of transmission of MRSA is via hands which may become contaminated by contact with:
 - colonized or infected patients,
 - colonized or infected body sites of the personnel themselves,
 - devices, items, or environmental surfaces contaminated with body fluids containing MRSA.



**USE OF STANDARD
PRECAUTIONS SHOULD
CONTROL THE SPREAD OF
MRSA IN MOST INSTANCES**

WHAT IS HA-MRSA?

Healthcare-Associated Methicillin-Resistant Staphylococcus Aureus

- Typically Infects Patients With Established Risk Factors
 - Prolonged hospitalization
 - Severe underlying illness
 - Dialysis
 - Illegal IV-drug use
 - Diabetes
 - Burns
 - Dermatitis
 - Previous exposure to antibiotics

WHO GETS STAPH OR MRSA INFECTIONS?

Staph Infections Occur Most Frequently Among Persons in Healthcare Facilities Who Have Weakened Immune Systems

Healthcare-associated staph infections include

- Surgical wound infections
- Urinary tract infections
- Bloodstream infections
- Pneumonia

WHAT IS CA-MRSA?

Community-Associated Methicillin-Resistant Staphylococcus Aureus

- Staph and MRSA can also cause illness in persons outside of healthcare facilities.
- MRSA infections that are acquired by persons who have not been hospitalized within the past year or had a medical procedure are known as CA-MRSA infections.
- Staph or MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people.

CA-MRSA INVESTIGATIONS

CDC Investigated Clusters of CA-MRSA Skin Infections

- Factors associated with the spread of MRSA skin infections include:
 - Close skin-to-skin contact
 - Openings in the skin such as cuts or abrasions
 - Contaminated items and surfaces
 - Crowded living conditions
 - Poor hygiene

HOW COMMON ARE STAPH AND MRSA INFECTIONS?

Staph Bacteria are One of the Most Common Causes of Skin Infection in the US

- Staph bacteria are a common cause of pneumonia, surgical wound infections, and bloodstream infections.
- The majority of MRSA infections occur among patients in hospitals or other healthcare settings; however, it is becoming more common in the community setting.
- Data suggest that 12% of clinical MRSA infections are community-associated, but this varies by geographic region and population.

WHAT DOES A STAPH OR MRSA INFECTION LOOK LIKE?

- Staph bacteria, including MRSA, can cause skin infections that may look like a pimple or boil and can be red, swollen, painful, or have pus or other drainage.
- More serious infections may cause pneumonia, bloodstream infections, or surgical wound infections.



PREVENT STAPH AND MRSA INFECTIONS

Follow Standard and Transmission-based Precautions

- Handwashing
- Gloving
- Masking
- Gowning
- Appropriate Device Handling
- Appropriate Handling of Laundry

HANDWASHING

Wash Hands after Touching Blood, Body Fluids, Secretions, Excretions, and Contaminated Items

- Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments.
- It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different body sites.

GLOVING

Wear Gloves When Touching Blood, Body Fluids, Secretions, Excretions, and Contaminated Items

- Put on clean gloves just before touching mucous membranes and non-intact skin.
- Remove gloves promptly after use before touching non-contaminated items and environmental surfaces.
- Before going to another patient, remove gloves and wash hands immediately to avoid transfer of microorganisms to other patients or environments.

MASKING AND GOWNING

Protect Mucous Membranes

- Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.
- Wear a gown to protect skin and prevent soiling of clothes during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions or cause soiling of clothing.

APPROPRIATE DEVICE HANDLING

Patient Care Equipment and Other Items

- Handle used patient-care equipment soiled with blood, body fluids, secretions, and excretions in a manner that
- Prevents skin and mucous membrane exposures
- Contamination of clothing
- Transfer of microorganisms to other patients and environments
- Ensure that reusable equipment is not used for the care of another patient until it has been appropriately cleaned and reprocessed.
- Ensure that single-use items are properly discarded.

APPROPRIATE HANDLING OF LAUNDRY

Handle, Transport, and Process Used Linen Soiled with Blood, Body Fluids, Secretions, and Excretions in a Manner that Prevents—

- Skin and mucous membrane exposures.
- Contamination of clothing.
- Transfer of microorganisms to other patients and environments.

CONTACT PRECAUTIONS

Follow Contact Precautions if a Patient Has a MRSA or Staph Skin Infection

- When providing care for a patient, change gloves after having contact with infective material that may contain high concentrations of microorganisms (e.g., fecal material and wound drainage).
- Wear a gown if you anticipate that your clothing will have substantial contact with the patient. Remove the gown before leaving the patient.
- If the patient is transported out of the room, ensure that precautions are maintained to minimize the risk of transmission of microorganisms to other patients and contamination.
- Ensure that patient-care items and frequently touched surfaces are thoroughly cleaned.

CONTROL OF MRSA OUTBREAKS

If an Outbreak of MRSA Infection Occurs, Initiate an Epidemiologic Assessment to Identify Risk Factors for MRSA Acquisition

- Save and submit clinical isolates of MRSA for strain typing.
- Identify colonized or infected patients as quickly as possible.
- Institute appropriate barrier precautions.
- Handwashing by medical personnel before and after all patient contacts should be strictly adhered to.
- All personnel should be reinstructed on appropriate precautions for patients colonized or infected with multiresistant microorganisms and on the importance of handwashing and barrier precautions in preventing contact transmission.

If additional help is needed, consultation with the local or state health department or CDC may be necessary.



CULTURING AND MANAGEMENT OF PERSONNEL

Culture Personnel Implicated in MRSA Transmission Based on Epidemiologic Data

- MRSA-carrier personnel who are epidemiologically linked to transmission should be removed from direct patient care until treatment of the MRSA-carrier status is successful.

STAPH AND MRSA INFECTIONS ARE TREATABLE

- Many staph skin infections may be treated by draining the abscess or boil and do not require antibiotics.
- Drainage of skin boils or abscesses should only be done by a healthcare provider.

CAN STAPH OR MRSA SKIN INFECTIONS RECUR?

It Is Possible to Have a Staph or MRSA Skin Infection Recur after It Is Cured

- Follow the healthcare provider's directions during the infection
- Follow the prevention steps after the infection is gone.
- If infected, take precautions to prevent others from getting infected.
- Tell any healthcare providers who treat you that you have or had a staph or MRSA skin infection.