

A. Methicillin-Resistant *Staphylococcus Aureus* (MRSA)

What is MRSA?

MRSA stands for methicillin-resistant *Staphylococcus aureus*.

Staphylococcus aureus, often referred to as “staph,” is a common bacterium that can be found on the skin, in the nose and in moist body areas. About one person in five usually is carrying the bacteria at any given time and it usually doesn’t make them ill. It is not recommended to routinely test or treat people who may “carry” the “staph” bacteria.

MRSA is a strain of *Staphylococcus aureus* that is resistant to treatment with a common class of antibiotics. This class of antibiotics includes the penicillins and cephalosporins that are the most widely used antibiotics to treat both clinic and hospital patients.

What is the difference between colonization and infection?

Colonization is when the organism lives on or in one or more body sites with no signs and symptoms of illness. The most common site of colonization is the nose.

Infection is when the organism gets past the person’s normal defenses and causes disease.

Who is most likely to get MRSA?

People most likely to get MRSA include those who:

- Have open wounds.
- Receive long-term treatment and/or improper use of antibiotics.
- Have invasive devices such as catheters or surgical drains.
- Have had prolonged or repeated hospital stays.
- Have lowered resistance to infection.

How is MRSA spread?

MRSA is spread from one person to another by direct contact, usually by their hands.

What is the best way to prevent the spread of MRSA?

Proper hand hygiene by washing your hands with an antimicrobial soap or using an alcohol-based hand rub! Always use soap or hand rub:

- Before eating.
- Before food preparation.
- Before providing any medical care.
- After using the bathroom.

How should I wash my hands?

- Wet hands first.
- Lather with soap for at least 10 to 15 seconds.

- Scrub between your fingers and under your nails.
- Rinse well.
- Dry your hands well using a clean towel, paper towel or hot air drier.

Waterless alcohol-based antiseptic may be used in the absence of visible soiling.

- Apply product to palm of one hand.
- Rub hands together, covering all surfaces of hands and fingers, until hands are dry.

Should people with MRSA restrict their activities?

In the hospital setting:

- People with MRSA may be placed in special isolation rooms. Their activities may be restricted.

In the long-term care setting:

- People with MRSA may be placed in a private room. Usually activities are not restricted.

In the ambulatory care setting:

- People with MRSA may be scheduled towards the end of the day so the room can be thoroughly cleaned before another patient is seen.

In the home setting:

- Generally restrictions are not necessary. Remember to follow good handwashing and routine cleaning. The doctor or nurse can discuss the individual situation with the person who has MRSA.

Remember...

**Proper hand hygiene is the key
to preventing the spread of MRSA.**

*Always tell your health-care providers that you once had an
MRSA infection.*

B. Methicillin-Resistant *Staphylococcus Aureus* (MRSA) and Long-Term Care

What precautions are taken for long-term care residents with MRSA?

- Staff should decontaminate hands with an alcohol-based hand rub or antimicrobial soap before and after caring for the resident with MRSA.
- The resident with MRSA can room with a resident who also has MRSA if a private room is not available. Unusual circumstances, such as the behavior of a particular infected resident, would need to be evaluated on an individual basis.
- Without disclosing the medical condition of the resident with MRSA, the roommate or roommate's family should be taught proper hand hygiene technique (alcohol-based handrub or handwashing with antimicrobial soap) and how to follow precautions when they have direct contact with the patient or their equipment.
- Gowns and gloves are used when caring for a resident with MRSA. Hands should be washed after removing gloves. Waterless alcohol-based antiseptic may be used in the absence of visible soiling.
- Standard precautions are used when handling dishes, linen and trash.
- All bathing equipment and shower areas should be cleaned and disinfected with a commercial disinfectant after use.
- Residents may attend activities such as card playing and bingo as long as the residents wash their hands before the activity.
- Residents with open sores or lesions should have the area adequately covered when interacting with other residents.
- Healthy people are generally not at risk for infection with MRSA. However, remember to wash hands with an antimicrobial soap or use an alcohol-based hand rub thoroughly at the end of your work shift. Lack of adequate hand hygiene can result in infection or colonization of yourself or others. It is also important to change your clothing before going home if it is heavily soiled.

Remember...

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C. Methicillin-Resistant *Staphylococcus Aureus* (MRSA) and Home Care

People with MRSA do not usually pose a health risk to members of their households. Healthy people rarely get MRSA infection. In general, the following precautions are recommended for the care of a person with MRSA at home:

- **Wash your hands** before and after caring for the person with MRSA.
- **Waterless alcohol-based antiseptic** may be used in the absence of visible soiling.
- Bathe regularly. Each person should have his or her own bath towel.
- Periodically clean the person's room, personal items and bathroom with a commercial disinfectant or a fresh solution of one tablespoon of bleach in one quart of water. Remember to allow the disinfectant to air dry on the cleaned surface.
- Dishes and silverware should be washed with normal household dishwashing liquid. Gloves are not needed when handling food, dishes or eating utensils.
- Clothes may be cleaned using the regular wash and dry cycles. These cycles are very effective at killing bacteria. Wear gloves if you handle body substances (blood, urine, wound drainage) and wash your hands after removing the gloves. Dispose of feces on bed linens or clothing in the toilet before washing. Heavily soiled or wet linen should be placed in a waterproof bag to prevent leakage. Wash these items separately from other household laundry. Linen that is not soiled can be washed with other household laundry.
- Disposable gloves should not be washed and reused. Hands should be washed after removing gloves.
- Consider the use of a waterproof cover for mattresses and pillows to minimize soiling of these items if the person has poor bowel and bladder control.
- Garbage may be disposed of with regular household garbage.

Remember...

**Proper hand hygiene is the key
to preventing the spread of MRSA.**

*Always tell your health-care providers that you once had an
MRSA infection.*

D. Methicillin-Resistant *Staphylococcus Aureus* (MRSA) and Day Care

What is MRSA?

MRSA stands for methicillin-resistant *Staphylococcus aureus*.

Staphylococcus aureus, often referred to as “staph,” is a **common** bacterium that can be found on the skin, in the nose and in moist body areas. About **one person in five** is usually carrying the bacteria at any given time, and **usually it doesn’t make them ill**. It is generally **not** recommended to test or treat people who may “carry” the “staph” bacteria.

MRSA is a strain of *Staphylococcus aureus* that is resistant to treatment with a common class of antibiotics. This class of antibiotics includes the penicillins and cephalosporins that are the most widely used antibiotics to treat both clinic and hospital patients.

What type of infections can Staphylococcus bacteria cause?

Staphylococcus aureus can cause minor infections such as pimples, boils or other skin infections.

However, rarely, serious infections such as pneumonia, meningitis, bone infections and bloodstream infections (septicemia) can occur.

Are MRSA infections serious?

Most infections caused by MRSA are not severe, and most people who carry MRSA will not develop an actual infection from it.

MRSA bacteria are not any more likely to cause serious infections than antibiotic-susceptible “staph” bacteria.

How common are infections caused by MRSA?

More study is needed to determine the frequency of these infections. However, some studies have indicated that there may be an increase in the number of people who carry MRSA.

How is MRSA transmitted?

MRSA is spread from person to person by direct contact, primarily by the hands.

What causes antibiotic resistance?

Over time, the rise of resistant organisms in a population is caused by the misuse and overuse of antibiotics.

How can MRSA infections be controlled?

The best preventive measure for all infections is simply **handwashing** with soap and water. **Waterless alcohol-based antiseptics** may be used in the absence of visible soiling.

More study is needed to determine what, if any, control measures are necessary and feasible for MRSA infections in the general population. Until more specific recommendations are made, efforts should continue to ensure that antibiotics are used appropriately.

What can parents do to prevent this type of infection in their children?

Parents should continue to use good judgment and common sense. If their child is ill or has an infection and the condition becomes worse, they should seek medical care.

MRSA infections can be treated effectively. Handwashing and thorough cleaning of cuts can help prevent many types of infections, including those caused by MRSA.

Should children with infections caused by Staphylococcus or MRSA be restricted from day care or other activities?

It is important to remember that *Staphylococcus* is commonly carried in humans and usually causes no symptoms.

The risk to any **individual** in the general population of getting an actual **infection** from *Staphylococcus aureus* -- including MRSA -- is low.

Therefore, it is **not recommended to impose daycare restrictions for children simply because they may have an infection caused by MRSA.**

Restrictions should be based on the type of infection and the child's condition, rather than simply on the presence of an identified MRSA infection.

If a child has an open sore or lesion that cannot be covered and the provider is concerned about possible person-to-person transmission, a physician should be consulted to determine an appropriate course of action.

If a child has been diagnosed with impetigo (which may be caused by "staph"), it is recommended that they be excluded from day care until treatment has been initiated for 24 hours.

Remember...

**Proper hand hygiene is the key
to preventing the spread of MRSA.**

***Always tell your health-care providers that you once had an
MRSA infection.***

E. Methicillin-Resistant *Staphylococcus Aureus* (MRSA) and Schools

What is MRSA?

MRSA stands for methicillin-resistant *Staphylococcus aureus*.

Staphylococcus aureus, often referred to as “staph,” is a **common** bacterium that can be found on the skin, in the nose and in moist body areas. About **one person in five** “carries” the bacteria at any given time, and **usually it doesn’t make them ill**. It is generally **not** recommended to test or treat people who may “carry” the “staph” bacteria.

MRSA is a strain of *Staphylococcus aureus* that is resistant to treatment with a common class of antibiotics. This class of antibiotics includes the penicillins and cephalosporins that are the most widely used antibiotics to treat both clinic and hospital patients.

What type of infections can Staphylococcus bacteria cause?

Staphylococcus aureus can cause minor infections such as pimples, boils or other skin infections.

However, rarely, serious infections such as pneumonia, meningitis, bone infections and bloodstream infections (septicemia) can occur.

Are MRSA infections serious?

Most infections caused by MRSA are not severe, and most people who carry MRSA will never develop an actual infection from it.

MRSA bacteria are not any more likely to cause serious infections than antibiotic-susceptible “staph” bacteria.

How common are infections caused by MRSA?

More study is needed to determine the frequency of these infections. However, some studies have indicated that there may be an increase in the number of people who carry MRSA.

How is MRSA transmitted?

MRSA is spread from person to person by direct contact, primarily by the hands.

What causes antibiotic resistance?

Over time, the rise of resistant organisms in a population is caused by the misuse and overuse of antibiotics. When many antibiotics are in use, the antibiotic-resistant organisms survive and then may cause infections.

How can MRSA infections be controlled?

The best preventive measure for all infections is simply **handwashing** with soap and water. **Waterless alcohol-based antiseptics** may be used in the absence of visible soiling.

More study is needed to determine what, if any, control measures are necessary and feasible for MRSA infections in the general population. Until more specific recommendations are made, efforts should continue to ensure that antibiotics are used appropriately.

What can parents do to prevent this type of infection in their children?

Parents should continue to use good judgment and common sense. If their child is ill or has an infection and the condition appears to be becoming worse, they should seek medical care.

MRSA infections can be treated effectively. Handwashing and thorough cleaning of cuts can help prevent many types of infections, including those caused by MRSA.

Should students with infections caused by *Staphylococcus* or MRSA be restricted from school or other activities?

It is important to remember that *Staphylococcus* is commonly carried in humans and usually causes no symptoms.

The risk to any **individual** in the general population of getting an actual **infection** from *Staphylococcus aureus* -- including MRSA -- is low.

Therefore, it is **not recommended to impose restrictions on students simply because they may have an infection caused by MRSA.**

Restrictions should be based on the type of infection and the student's condition, rather than simply on the presence of an identified MRSA infection.

If a student has an open sore or lesion that cannot be covered and there is concern about possible person-to-person transmission, a physician should be consulted to determine an appropriate course of action.

If a student has been diagnosed with impetigo (which may be caused by "staph"), it is recommended that they be excluded from school until treatment has been initiated for 24 hours.

Remember...

**Proper hand hygiene is the key
to preventing the spread of MRSA.**

***Always tell your health-care providers that you once had an
MRSA infection.***

F. Vancomycin-Resistant Enterococcus (VRE)

What is VRE?

VRE is a type of enterococcus (a bacteria) that has become resistant to many of the antibiotics normally used to kill it.

Why is VRE important?

Enterococcus can cause either minor or very serious infections. It is difficult to find combinations of antibiotics to control the infection.

What is the difference between colonization and infection?

Colonization is when the organism lives on or in one or more body sites with no signs and symptoms of illness. The most common site of colonization is the intestinal tract.

Infection is when the organism gets past the person's normal defenses and causes illness.

Who is most likely to get VRE?

People most likely to get VRE include those who:

- Are severely ill.
- Have lowered resistance to infection.
- Receive long-term treatment and/or improper use of antibiotics, especially Vancomycin.
- Are elderly and have had prolonged or repeated hospital stays.
- Receive organ transplants.

How is VRE spread?

VRE is spread from one person to another by direct contact, usually by their hands. It may also be spread through contact with contaminated objects or surfaces.

What is the best way to prevent the spread of VRE?

Proper hand hygiene by washing your hands with an antimicrobial soap or using an alcohol-based handrub! Always decontaminate hands:

- Before eating.
- Before food preparation.
- Before providing any medical care.
- After using the bathroom.

How should I wash my hands?

- Wet hands first.
- Lather with soap for at least 10 to 15 seconds.
- Scrub between your fingers and under your nails.
- Rinse well.

- Dry your hands well with a clean towel, paper towel or hot air dryer.

Waterless alcohol-based antiseptics may be used in the absence of visible soiling.

- Apply product to palm of one hand.
- Rub hands together, covering all surfaces of hands and fingers, until hands are dry.

Should people with VRE restrict their activities?

In the hospital setting:

- People with VRE are placed in special isolation rooms. Their activities are restricted.

In the long-term care setting:

- People with VRE may be placed in a private room. Usually activities are not restricted unless the people have poor bowel and bladder control.

In the ambulatory care setting:

- People with VRE may be scheduled towards the end of the day so the room may be thoroughly cleaned before another patient is seen.

In the home setting:

- Generally, restrictions are not necessary. Remember to follow good handwashing and routine cleaning.

Remember...

**Proper hand hygiene and routine cleaning are keys
to preventing the spread of VRE.**

G. Vancomycin-Resistant Enterococcus (VRE) and Long-Term Care

What precautions are taken for long-term care residents with VRE?

- **Wash your hands with an antimicrobial soap** before and after caring for the resident with VRE. **Waterless alcohol-based antiseptic** may be used in the absence of visible soiling.
- The resident with VRE can room with a resident who also has VRE if a private room is not available. Unusual circumstances, such as the behavior of a particular infected resident, need to be evaluated on an individual basis.
- Without disclosing the medical condition of the resident with VRE, the roommate or roommate's family should be taught proper hand hygiene technique and how to follow precautions when they have direct contact with the patient or their equipment.
- Gowns and gloves are used when caring for a resident with VRE. Hands should be washed or disinfected with an alcohol-based hand rub after removing gloves.
- Standard precautions are used when handling dishes, linen and trash.
- All bathing equipment and shower areas should be cleaned and disinfected with a commercial disinfectant after use.
- It is better to use a single glass thermometer and a dedicated stethoscope and blood pressure cuff on the resident with VRE. The equipment should stay in the resident's room. These items need to be adequately disinfected with a commercial disinfectant before using them with another resident.
- A resident who is colonized with VRE and has poor bowel control should be provided with products for incontinence. Frequent hand hygiene with an antimicrobial soap or an alcohol-based hand rub needs to be accomplished by both the resident and the health-care worker.
- Residents may attend activities such as card playing and bingo as long as the residents wash their hands before the activity.
- Residents with open sores or lesions should have the area adequately covered when interacting with other residents.
- Healthy people are generally not at risk for infection with VRE. However, remember to wash your hands thoroughly or utilize an alcohol-based hand-rub at the end of your work shift. Lack of adequate hand hygiene can result in infection or colonization of yourself or others. It is also important to change your clothing before

going home if it is heavily soiled. Wash these items separately from other household laundry. Linen that is not soiled can be washed with other household laundry.

Remember...

**Proper hand hygiene and routine cleaning are keys
to preventing the spread of VRE.**

H. Vancomycin-Resistant Enterococcus (VRE) and Home Care

The following precautions are recommended when caring for a person with VRE at home:

- **Wash your hands with an antimicrobial soap** before and after caring for the person with VRE. Teach everyone in the household good handwashing techniques. **Waterless alcohol-based antiseptics** may be used in the absence of visible soiling.
- Bathe regularly. Each person should have his or her own bath towel.
- Periodically clean the person's room, personal items and bathroom with a commercial disinfectant or a fresh solution of one tablespoon bleach in one quart of water. Remember to allow the disinfectant to air dry on the cleaned surface.
- Dishes and silverware should be washed with normal household dishwashing liquid. Gloves are not needed when handling food, dishes or eating utensils.
- Clothes may be cleaned using the regular wash and dry cycles. These cycles are very effective at killing bacteria. Wear gloves if you handle body substances (blood, urine, wound drainage) and wash your hands after removing the gloves. Dispose of feces on bed linens or clothing in the toilet before washing. Heavily soiled or wet linen should be placed in a waterproof bag to prevent leakage. Wash these items separately from other household laundry. Linen that is not soiled can be washed with other household laundry.
- Disposable gloves should not be washed and reused. Hands should be washed after removing gloves.
- Consider the use of a waterproof cover for mattresses and pillows to minimize soiling of these items if the person has poor bowel or bladder control.
- Garbage may be disposed of with regular household garbage.

Remember...

**Proper hand hygiene and routine cleaning are keys
to preventing the spread of VRE.**

I. Vancomycin-Resistant Enterococcus (VRE) and Day Care

What is VRE?

VRE stands for vancomycin-resistant enterococcus. Enterococci are bacteria that are naturally found in the intestinal tract of all people and in the female genital tract.

VRE is a strain of the enterococcus bacteria that is resistant to vancomycin, an antibiotic that is commonly used to treat infections caused by enterococcus.

What type of infections can the enterococcus bacteria cause?

The enterococcus bacteria can cause infections of the blood, urinary tract, wounds, pelvic area and the heart for people who are hospitalized, who have other illnesses or who may have immune systems that are not functioning properly.

Because the enterococcus bacteria causing these infections are resistant to the vancomycin, they are difficult to treat.

Are VRE infections serious?

VRE bacteria are not any more likely to cause serious infections than enterococcus that are susceptible to vancomycin or other antibiotics.

When VRE causes infections in persons who already have other health problems, they may be serious and life threatening, especially since they are more difficult to treat.

Who is at risk for VRE infections?

The enterococcus bacteria do not cause infections in “healthy” people.

Enterococcus bacteria can cause infections in people who have other illnesses or who are not in good health. These infections cause the most concern for people who are hospitalized or in long-term care.

People may, however, be “colonized” by the resistant enterococcus (VRE), which means they may have the bacteria without having any signs or symptoms. People who are colonized can transmit the VRE bacteria to other people.

How common are infections caused by VRE?

Although transmission of this organism can occur in this setting, infections are more likely to occur in hospitalized or chronically ill individuals.

How is VRE transmitted?

VRE can be transmitted directly by person-to-person contact or indirectly by the hands. Contaminated environmental surfaces and other objects can also transmit VRE.

How can VRE infections be controlled?

The best preventive measure for all infections is simply **handwashing** with soap and water. **Waterless alcohol-based antiseptics** may be used in the absence of visible soiling.

Because the enterococcus bacteria are present in the intestinal tract, it is important that appropriate hygienic procedures be used when changing diapers in day care centers. These procedures include:

- Having a separate diaper changing area.
- Use of disposable gloves.
- Cleaning and disinfecting the area after diaper changes.
- Proper diaper disposal.
- And most importantly, **washing hands with soap and water** after changing diapers.

What can parents do to prevent infection in their children?

Although VRE is not a problem in day care centers, prevention of all infections is important. Parents should continue to use good judgment and common sense. If their child is ill, has a fever or has diarrhea, he or she should not be present in a day care.

Since antibiotic resistance may be related to improper antibiotic use, it is important that antibiotics are appropriately prescribed and that people follow their doctor's orders when taking antibiotics.

Should children with infections caused by enterococcus or VRE be restricted from day care or other activities?

It is important to remember that enterococcus bacteria are naturally present in people and usually cause no symptoms.

The risk to any person of getting an actual infection from enterococcus is low. Healthy children are not likely to be affected by the enterococcus bacteria.

It is not recommended to place restrictions on children simply because they may have had an infection caused by VRE.

Remember...

**Proper hand hygiene and routine cleaning are keys
to preventing the spread of VRE.**

J. Vancomycin-Resistant Enterococcus (VRE) and Schools

What is VRE?

VRE stands for vancomycin-resistant enterococcus.

Enterococci are bacteria that are naturally found in the intestinal tract of all people and in the female genital tract.

VRE is a strain of the enterococcus bacteria that is resistant to vancomycin, an antibiotic that is commonly used to treat infections caused by enterococcus.

What type of infections can the enterococcus bacteria cause?

The enterococcus bacteria can cause infections of the blood, urinary tract, wounds, pelvic area and the heart for people who are hospitalized, who have other illnesses or who may have immune systems that are not functioning properly.

Because the enterococcus bacteria causing these infections are resistant to vancomycin, they are difficult to treat.

Are VRE infections serious?

VRE bacteria are not any more likely to cause serious infections than enterococcus that are susceptible to vancomycin or other antibiotics.

When VRE causes infections in persons who already have other health problems, they may be serious and life threatening, especially since they are more difficult to treat.

Who is at risk for VRE infections?

The enterococcus bacteria do not cause infections in “healthy” people.

Enterococcus bacteria can cause infections in people who have other illnesses or who are not in good health. These infections cause the most concern for people who are hospitalized or in long-term care.

People may, however, be “colonized” by the resistant enterococcus (VRE), which means they may have the bacteria without having any signs or symptoms. People who are colonized can transmit the VRE bacteria to other people.

The enterococcus bacteria are not likely to cause infections in the school setting.

How common are infections caused by VRE?

Although transmission of this organism can occur in this setting, infections are more likely to occur in hospitalized or chronically ill individuals.

How is VRE transmitted?

VRE can be transmitted directly by person-to-person contact or indirectly by the hands.

Contaminated environmental surfaces and other objects also can transmit VRE.

How can VRE infections be controlled?

The best preventive measure for all infections is simply **handwashing** with soap and water. **Waterless alcohol-based antiseptic** may be used in the absence of visible soiling.

What can parents do to prevent infection in their children?

Although VRE is not a problem in schools, prevention of all infections is important. Parents should continue to use good judgment and common sense. If their child is ill, has a fever or has diarrhea, he or she should not be present in school.

Since antibiotic resistance may be related to improper antibiotic use, it is important that antibiotics are appropriately prescribed and that people follow their doctor's orders when taking antibiotics.

Should students with infections caused by enterococcus or VRE be restricted from school or other activities?

It is important to remember that enterococcus bacteria are naturally present in people and usually cause no symptoms.

The risk to any person of getting an actual infection from enterococcus is low. Healthy students are not likely to be affected by the enterococcus bacteria.

It is **not recommended to place restrictions on students simply because they may have had an infection caused by VRE.**

Remember...

**Proper hand hygiene and routine cleaning are keys
to preventing the spread of VRE.**