(HA-MRSA) – HEALTHCARE-ACQUIRED MRSA

MRSA (pronouced meer-sa) is an acronym for methicil-lin-resistant staph aureus and is a type of bacterium often found on the skin and in the nose of healthy children and adults.

Methicillin is an antibiotic that belongs to a class of penicillin-related antibiotics called beta-lactams. Doctors often prescribe beta-lactams to treat staph infections and over time some strains have become resistant to beta-lactams, which means these antibiotics can't kill them. Doctors refer to these organisms as methicillin-resistant staph bacteria. MRSA infections typically are resistant to a variety of antibiotics from other antibiotic classes as well and this can make treatment very difficult. Healthcare-acquired MRSA infections happen frequently in hospitals, rehab facilities, nursing homes and have been increasing in alarming rates for decades. MRSA is becoming more prevalent in healthcare settings due to lapses in infection control. If a person is colonized, they have an 8-12 fold greater chance of getting an infection.

Approximately 2 – 7% of the U.S. population are now colonized with MRSA. MRSA can cause serious infections such as:

TYPE OF HA-MRSA INFECTIONS

- Surgical site wound infections
- Pneumonia
- Bloodstream infections
- Central line associated bloodstream infections (CLAPSI)

HEALTHCARE FACILITIES PREVENTIVE MEASURES

- Screening – active detection isolation (ADI) all high- risk patients upon admission.
- Strict adherence to hand hygiene (handwashing) before and after administering to a patient.
- Routine and thorough environmental decontamination of equipment and rooms along with frequently touched surfaces.
- Decolonizing patients who test positive for MRSA.
- Isolation in an appropriate manor – gloves and gown used by all who enter the room. Designated equipment such as stethoscope left in the patient's room
- Prudent use of antibiotics (Good Stewardship Program) and educate patients to finishing their full course of antibiotics.

Most infections can be acquired by contact with a healthcare worker, contaminated equipment, the environment or surgical instruments. When IV antibiotics are administered pathogens can enter the bloodstream causing sepsis and other complications. Patients in healthcare facilities (hospitals, long-term care, urgent care, dentist and physician offices, etc.) and patients of all ages can acquire an infection, particularly the elderly.Patients who have been exposed to chronic healthcare environments such as dialysis centers, nursing homes, cancer centers and rehab facilities are high-risk.

SYMPTOMS

MRSA infections can cause a broad range of symptoms depending on the part of the body that is infected. These include: surgical wounds, burns, catheter sites, eye, skin and blood. People who are colonized with MRSA may never develop an infection but have a 8-12 fold greater chance of doing so.

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People who are colonized with MRSA have no symptoms. They can carry MRSA in their nose and on their skin for many years. Staph skin infections often begin with an injury and develop into an infection. The Symptoms are

Redness, warmth, swelling, tenderness of the skin and boils and blisters

Some people may have chills and fever, feel nauseous and acute pain

Staph infections are especially dangerous to those who have had surgery and may have a cast or heavy bandages that are not changed frequently

In serious cases, the patient may feel lethargic (fatigue) and have headaches

TRANSMISSION

MRSA can be acquired by direct contact with an infected or colonized person and contaminated objects. The lack of decontaminating surfaces and environmental cleaning in healthcare facilities has lead to the spread of MRSA and lapses in infection control. Healthcare-acquired MRSA infections happen frequently in hospitals, rehab facilities, cancer centers, nursing homes and have been increasing in alarming rates for decades. Active detection isolation (ADI) is imperative to reducing MRSA infections along with strict adherence to hand hygiene. Most infections are acquired by contact with a healthcare worker with contaminated hands or equipment. Patients of all ages can acquire an infection, particularly the elderly.

HELPFUL FACTS AND TIPS TO PROTECT YOURSELF AGAINST A HA-MRSA INFECTION

- If you are going to have an elective surgery (such as hip or knee replacement) call up your hospital and ask them what their inpatient MRSA infection rate is for the previous year and what the infection rate is for surgical site infections. They may or may not tell you, but it doesn't hurt to ask. Also ask them what their hand hygiene compliance rate is. There needs to be transparency and this information is not being disseminated to the public – we have the right to know.
- If you know you are to have surgery, ask your doctor to test you for MRSA, which is done by a simple nasal swab in the nares. If positive, you can be decolonized by taking a five day regiment of an antibiotic spray in the nares and also wash the skin at least twice with chlorhexidine, which can be purchased at any drug store. If you are colonized with MRSA, you have an 8-12 fold greater chance of acquiring an infection.
- If possible, have family members enter the hospital room and clean frequently touched areas: such as bed rails, tray tables, TV remote, phone, etc with disinfectant wipes. When visiting loves ones, do not sit on their bed and make sure that you wash your hands thoroughly at first opportunity after leaving the hospital.
- Insist that all healthcare workers (this includes doctors) wash their hands and then put on gloves when administering to the patient. Putting on gloves without washing hands first contaminates the gloves. Healthcare workers should also wash their hands again before leaving the room.
- When going to your family physician for a doctor visit, insist that your doctor washes their hands before examination and also insist that the stethoscope be wiped down with an alcohol-based gel before placing it on your skin.
- If you or another loved one does contract an infection while in a healthcare facility, ask the doctor what type of an infection you have. If they tell you staph, ask what type of staph. You need to know what type of organism it is. 70% of all staph infections are MRSA and MRSA is the leading cause of infections. The majority of doctors still do not tell patients or their families this information. Please Insist.
- Upon discharge from a hospital, the patient must receive discharge information on MRSA that will help to explain how transmission can occur, what to expect and how to look for symptoms of change. This is VERY important to receive.

MENTAL AND EMOTIONAL EFFECTS

The healthcare community has not addressed the psychological effects that a traumatic MRSA infection or subsequent chronic disease can have on a patient. The whole patient must be treated, not just the infection. Many MRSA survivors feel very angry about what has happened to them and they know that this was preventable. Many feel betrayed by their doctor and hospital as over half of MRSA patients are not told that they have MRSA and that it is treatable, but not curable. Doctors and healthcare facilities need to be honest with their patients and disclose the truth, otherwise a patients' rights have been violated and more emotional damage is done. And a simple, "I'm so sorry that this has happened to you", would help a MRSA survivor greatly. MRSA patients can suffer from the following, which can impede their healing:

- Depression
- Anger
- Post traumatic stress disorder (PTSD)
- Anxiety
- Feeling isolated and

HIGH RISK PATIENTS

MRSA can cause infections in healthy and ill patients of all ages. Most MRSA infections occur in patients 65 years or older. Patients who are seriously ill and from nursing homes and long-tern care facilities have a high occurrence also. High risk patients are the following and should be screened: screening is done with a simple nasal swab to the nares. Patient's skin should also be decolonized with chlorhexidine.

- Patients coming from a nursing home or another healthcare facility
- Dialysis patients
- Those previously colonized or with MRSA infections
- The homeless
- Inmates
- ICU patients
- Those who have been in a hospital in the last few years
- Surgical patients receiving

MRSA OSTEOMYELITIS

Osteomyelitis is an infection of the bone and bone marrow that can destroy the bone and cause deformity or result in amputation if not treated. MRSA osteomyelitis is when the pathogen causing the infection to the bone is identified as MRSA. Osteomyelitis is mostly caused by staph.

Osteomyelitis was a major cause of disability and even death, but it now can be treated more effectively with antibiotics and surgery. Osteomyelitis presents most frequently in adults after surgery with an implant, but can also suddenly appear for no apparent reason, which is more common in children.

SYMPTOMS

Swelling in the affected area

Fever, nausea or a feeling of unwellness

Unable to move the affected limb or area with severe pain

Severe pain in the area where you have redness, swelling or an infection

COMPLICATIONS

First development of osteomyelitis is called acute osteomyelitis and typically over very quickly when treated promptly. If not treated in a timely fashion or the affected area is not responding to treatment, then this can be categorized as chronic osteomyelitis and part of the bone may die. The infection may go on for several months or even years. Flare-ups of symptoms including fever and pain may occur for many years. Septic arthritis can develop if the pus from the infection discharges into the joint rather than exiting through the skin. If not treated immediately, this can infect and damage the joint, which limits movement.

CAUSES

Osteomyelitis can be caused by staph or other pathogens or the combination of organisms. At risk persons are:

- Patient with broken bones or have had surgery
- Joint replacement
- Patients with an infection and the infection spreads to the bone a bloodstream, most often with children and elderly
- Diabetic patients who are prone to infections in the feet
- Patient with a weakened immune system from chemotherapy, etc.

DIAGNOSIS

Most patients are in the hospital and feel acute symptoms which can be osteomyelitis and blood tests, culture or a bone biopsy can be performed. Appropriate antibiotics will be prescribed which most often is by IV and then possibly by oral, depending on the severity. Surgery as well as antibiotics may be needed and the surgeon will confirm with imaging tests.

MRSA PNEUMONIA

Pneumonia is an inflammation of the lungs, usually caused by an infection, which can be mild to life-threatening. Viruses, fungi, parasites and bacteria can cause pneumonia. If the bacteria are identified as MRSA, then you will have MRSA pneumonia. MRSA pneumonia is highly antibiotic resistant and most common in patients 65 years or older.

SYMPTOMS

Fever & sweating

Cough, chest pain, shortness of breath

Muscle pain, fatigue, headaches and chills

HOSPITAL-ACQUIRED PNEUMONIA

A patient is at a higher risk for pneumonia if hospitalized, on a ventilator, in the intensive care unit (ICU) or have a weakened immune system. Pneumonia can be difficult to determine at times. MRSA can enter a patient from a catheter, wound and possibly in the air in the case of MRSA pneumonia. Patients can have been previously colonized with MRSA.

COMMUNITY-ACQUIRED PNEUMONIA

Pneumonia that is acquired in daily life is most commonly bacterium Streptococcus pneumonia and the lesser common cause Mycoplasma pneumonia. Walking pneumonia, a term used for a type of pneumonia that does not require bed rest may be Mycoplasma pneumonia.

HIGH- RISK PATIENTS

High risk patient that are at risk for contracting pneumonia are: 65 years and older, possess immune deficiency diseases such as HIV/AIDS, emphysema, diabetes or on an immunosuppressant medication, smoke, abuse alcohol, in an ICU, experienced a surgery or injury, chemical or pollutant exposure, COPD patient, a native Alaskan or an American Indian tribe member.

COMPLICATIONS

State of health, age and lifestyle can be a determining factor in the outcome for pneumonia. MRSA can enter a patients' bloodstream and cause life-threatening inflammation. Breathing becomes difficult and the infection can spread quickly to other organs. Fluid can accumulate and spread to the lungs causing pleurisy. Pus can form in the cavity and cause a lung abscess. Pneumonia can involve a majority of the lungs and breathing becomes difficult.

MRSA DATA

According to the Centers for Disease Control and Prevention, in 2017, there were 120,000 Staph aureus bloodstream infection and 20,000 associated deaths. Over 90% of HA-MRSA infections are surgical site and no clear data is being reported.

MRSA can lead to complications which have a higher mortality rate:

- Pneumonia caused by all strains of Staph aureus leads to a mortality rate of 30-40%
- Bloodstream infections caused by Staph aureus have a mortality rate of 15-60%
- MRSA-related bacterial endocarditis, an inflammation of the heart's inner lining, leads to death in about a 30% of patients

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

- Surgical site infections caused by MRSA have a mortality rate of 12.9%. It's estimated that 85% of all HA-MRSA infections are SSI's.
- An extreme reaction to an infection can leading to organ failure and in some cases, death and called sepsis MRSA sepsis leads to death in 30-50% of patients.

(CA MRSA)-COMMUNITY-ACQUIRED MRSA

MRSA can cause infections and illness in people outside of healthcare facilities. Over 90% percent of people colonized with MRSA will never acquire an infection (asymptomatic) but are carriers and can transmit it to others by sneezing, coughing, etc. as droplets fall on surfaces contaminating them. MRSA can also be transmitted by a person who is colonized or infected by having direct contact with them.

Colonization versus Infection:
Colonization means that MRSA is on your skin or found in your nares 2-7% (depending upon region or city) of the population have been found to be colonized with MRSA. 33% of the population carry Staph on their skin without any problems. Staph infections are the most common skin infection seen by primary care physicians.

COMMUNITY-ACQUIRED MRSA (CA-MRSA) PREVENTION

- Keep all wounds and cuts clean and covered till healed so germs can not enter.
- Do not share personal items with others, such as towels, clothing, razors, etc.
- When at a gym, refrain from touching your face or wiping your face with a towel that has touched surfaces. Wash your hands thoroughly with warm soapy water and do not touch surfaces on the way out of the gym.
- Carry alcohol-based hand gel to wash hands when you have been in the public.
- Wash clothes, towels and bedding with a small amount of bleach in hot water and use a dryer, which can help to kill germs.
- When traveling and staying in hotels, carry disinfectant wipes or a disinfectant spray in which to clean frequently touched surfaces such as; light switches, TV remote, telephone, night stand, etc.

Infection means there are symptoms present such as: redness, drainage, burning sensation, fever, pain or nausea. Red pumps, a rash, boil, lesions or an abscessed wound should be cause for concern and if fluid present, it should be cultured by a doctor. Insist that it be cultured.

Do not delay in seeing a doctor when symptoms are present – it's always best to seek treatment early for an infection.

PREVENTION OF CA-MRSA IN ATHLETES

- Again, do not share personal items such as towels, soap and razors, etc.
- Shower immediately after practice or your workout.
- Wash workout clothes or uniform after each use in hot water using bleach and a dryer.
- Avoid touching your face while working out.
- Wash hands before and after practice or a workout, wipe down equipment before and after use with an antiseptic spray cleaner.
- Do not place your towel, water bottle or cell phone on equipment.
- Wash hands before leaving the gym or practice area and do not touch any surfaces on the way out.
- Keep your gym shoes in a designated area at home and do not walk around the house with them. Clean your gym shoes frequently with disinfecting wipes or a spray cleaner with bleach.

MRSA IN PETS

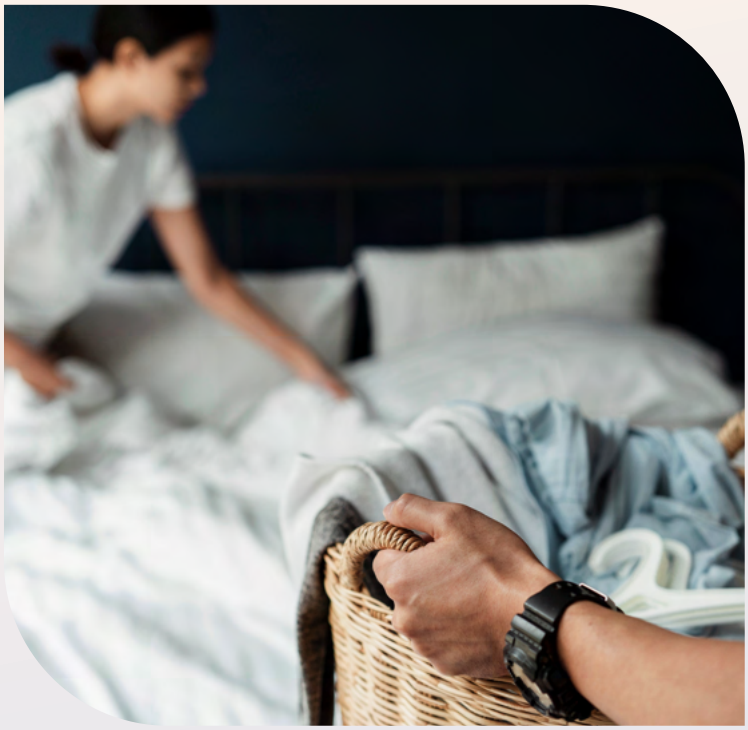
- Cats and dogs can transmit CA-MRSA to humans, it is important to keep their feeding area clean and wash bowls with a bleach product.
- Your pet can pick up CA-MRSA from a vet visit or stay.
- If you pet is diagnosed with a CA-MRSA infection, use gloves when caring for your pet's sores or wounds and try and keep area covered if possible.
- Frequently wash pet bedding and towels used separately with bleach.
- Bathe your pet in chlorhexidine when infection is clear to decolonize it from MRSA.
- Do not let your pet sleep in your bed and refrain from allowing the pet to lick you or be near your face till infection is cleared up.

MRSA AT THE WORKPLACE, SCHOOL, DAYCARE CENTER, ETC.

- Frequent cleaning and decontamination of high- touched surfaces with disinfecting solutions is paramount to controlling bacteria and viruses.
- If a worker or student has a MRSA infection and cleared to be back at work, they should keep it bandaged and covered with clothing.
- Alcohol based sanitizers should be available for workers to use and encouraged to use frequently. Students can bring them from home.
- Sports equipment should be wiped down after every use.
- Computers, keyboards, phones, copy machines, printers, water fountains, etc. need to be cleaned frequently with antiseptic wipes or spray cleaner containing bleach.
- Special attention is needed in cleaning communal kitchens and bathrooms with bleach products and done frequently.
- MRSA cells like warm, moist areas so showers and locker rooms should be cleaned frequently.

LIVING WITH MRSA

- If you have a CA-MRSA or HA-MRSA infection it can be difficult to eradicate and can become a chronic disease and spread to other family members living in the same household.
- All family members living in the household should be screened for MRSA if a family member has a MRSA infection.
- If a family member tests positive for MRSA, they can decolonize themselves with a five-day antibiotic ointment in the nares and wash their skin several times with chlorhexidine.
- It's very important to wash all bedding, towels and clothing using bleach when possible to disinfect.
- If only one person in the household has MRSA, wash their bedding, towels and clothes separately. Do not share personal items such as combs, razors, etc.
- Wipe frequently touched surfaces with disinfecting wipes and thoroughly clean the kitchen and bathrooms using a product with bleach.



- MRSA cells can remain dormant, so it is important to keep cleaning and disinfecting routinely even after a MRSA infection clears up.
- It is normal to have depression, anxiety, PTSD, anger, etc. due to having an infection.
- Counseling can help to alleviate the stress through this difficult time and therapy is encouraged.
- It's very important to get a lot of sleep, eat healthy and try and keep your stress level down. Stress can adversely affect your immune system.
- If a MRSA patient has had prolonged use of antibiotics to fight infections, this can permanently compromise the immune system. Its recommended to take probiotics to help restore your flora.
- A compromised immune system makes a person susceptible not only to other bacteria, but viruses as well.

NATURAL PRODUCTS

Natural products can be possibly beneficial in helping you heal from a HA-MRSA or CA-MRSA infection along with your doctor's prescribed medication or treatment. Integrative medicine with plant based medicine can be very beneficial in the healing process for infections and balancing your gut flora.

Items you might try:

Oil of Oregano – taken orally

Manuka Honey – commercial grade – used topically for skin infections

Probiotics = taken orally to help balance the flora in your intestines

Colloidal Silver – antibacterial agent can be taken orally or used topically

Apple cider vinegar -taken orally or topically

Remember – what works for one person may not work for another.

RESEARCH

There are ways that can possibly help you to improve your microbiome in your gastrointestinal tract when taking antibiotics or after your course of antibiotics. Antibiotics can strip (unbalance) the good flora in your tract and dietary measures can help to improve your microbiome.

Eating more vegetables, cutting out sugar and processed foods, consuming fermented foods and taking probiotics can assist in helping you to obtain a healthy microbiome.

There are currently companies researching microbiome therapy and developing products that can be beneficial to patients.

PHAGE THERAPY

WHAT IS PHAGE THERAPY?

Phage therapy is the use of viruses (bacteriophages) to kill bacteria. With the overuse of antibiotics fueling antimicrobial resistance (antibiotic-resistance) companies are looking for alternative therapies to treat MRSA and other multidrug-resistant organisms (MDRO's), especially invasive MRSA and staph. Phage therapy has been around for decades and used in Georgia (Russia) for treatment with success. Northern European and U.S. researchers are researching phage therapy as a potential therapy that kills the pathogen without disrupting the host microbiota.

(AMR) - ANTIMICROBIAL RESISTANCE

Antimicrobial resistance – also known as antibiotic resistance is a major global health crisis according to the World Health Organization (WHO). High levels of resistance in bacteria are causing life-threatening bloodstream infections and infections in the community. The continued overuse of antibiotics and lapses in infection control in healthcare facilities are a contributing factor and it is preventative approaches that are vital in the fight against AMR globally. Pathogens will continue to mutate and now some antibiotics are not as effective.

FOR MORE INFORMATION ON MRSA THE FOLLOWING WEBSITES CAN BE USED AS A SOURCE:

NATIONAL INSTITUTE OF HEALTH & THE CENTERS FOR DISEASE CONTROL AND PREVENTION