



# Healthcare Happenings: IPC Highlight

## Methicillin-Resistant *Staphylococcus aureus* (MRSA)

### WHAT IS IT?

MRSA is a *Staphylococcus aureus* bacteria that is difficult to treat because of antibiotic resistance. MRSA can cause severe infections including bloodstream infections (BSI), pneumonia, surgical site infections, and sepsis. MRSA is resistant to several commonly used antibiotics, making it a major antibiotic-resistance pathogen in the U.S.

Anyone can get MRSA, although MRSA infections occur most frequently in healthcare settings. In the community, risk increases with activities or places that involve crowding, skin-to-skin contact, and shared equipment or supplies. In healthcare settings, patients with longer medical stays, surgical patients, or those with invasive medical devices are at higher risk of a MRSA infection. Strains of MRSA causing HAIs are often resistant to other commonly used antimicrobial agents, including erythromycin, clindamycin and trimethoprim/sulfa. MRSA is also resistant to antibiotics called beta-lactams. Examples of beta-lactams include oxacillin, nafcillin, penicillin, and cefazolin.

Asymptomatic individuals who are colonized with MRSA can transmit to others. Approximately 5% of patients in U.S. hospitals are colonized with MRSA in their nose or on their skin. Although people may carry MRSA bacteria in their nose, most do not develop serious MRSA infections. In 2020, MRSA had a threat estimate of 279,300 cases and 9,800 associated deaths in the U.S. More severe or potentially life-threatening MRSA infections occur most frequently among patients in healthcare settings.

### What you need to know

- MRSA can cause severe infections including BSI, pneumonia, surgical site infections, and sepsis.
- In 2020, MRSA had a threat estimate of 279,300 cases and 9,800 associated deaths in the U.S.
- MRSA has become resistant to several antibiotics, making it a major antibiotic-resistant pathogen.

### TRANSMISSION

In healthcare settings, MRSA is usually spread by direct contact with an infected wound or from contaminated hands, usually those of healthcare providers.

In the community, MRSA is usually spread by contact with infected or colonized people or items that are contaminated with the bacteria. This includes contact with a contaminated wound or by sharing personal items, such as towels, razors or shared needles, that have touched infected or colonized skin. Non-intact skin, such as when there are abrasions or incisions, is often the site of an MRSA infection. MRSA in the community setting leads to further antibiotic resistance that can impact the healthcare setting.

## DIAGNOSIS AND TREATMENT

A diagnosis can be established by culture and susceptibility testing. There are culture based and non-culture based diagnostic tests for MRSA. When used correctly, broth-based and agar-based tests usually can detect MRSA. Commercially available chromogenic agars can be used for MRSA detection. The ceftioxin disk diffusion method can be used in addition to routine susceptibility test methods or as a back-up method. An alternative method for detection of MRSA is the use of anti-penicillin-binding protein 2a (PBP2a) monoclonal antibodies available as latex agglutination or immunochromatographic membrane assays. MRSA infections cannot be reliably diagnosed based on appearance or clinical symptoms.

MRSA infections can be treated. Some types of MRSA infections need surgery to drain infected areas and may also need antibiotic therapy to which the bacteria are susceptible. If left untreated, MRSA can quickly spread and cause life-threatening infections including sepsis.

The test for MRSA colonization involves rubbing a cotton-tipped swab in the patient's nostrils or on the skin. If colonized, topical medicines and antiseptics can be tried to decrease or eradicate MRSA colonization.

## IPC RECOMMENDATIONS

### TRANSMISSION-BASED PRECAUTIONS:

- MRSA patients should be placed on **contact precautions** or **enhanced barrier precautions** (nursing homes/SNFs only) and in a **private room** for the duration of all current and future healthcare stays. Patients can be cohorted if they have the same organism and same resistance mechanism (if known).
- Patients may remain colonized for more than one year - **do not discontinue precautions when the infection has been treated.**
- Inter-facility transfer: Prior to patient transfer, the transferring facility should notify the receiving facility of MRSA colonization or infection using the [PDPH inter-facility transfer form](#) or another established method that captures the same information.

### DISINFECTION GUIDANCE:

- Reusable equipment should be dedicated to the colonized or infected patient whenever possible
- Shared reusable medical equipment should be disinfected **immediately** after use
- Disinfect with products that are effective against MRSA
- Disinfect areas in close proximity to the patient, high-touch surfaces in the room, and surfaces around sinks and toilets daily
- Immediately clean and disinfect equipment or surfaces contaminated with blood, urine, feces, and other bodily fluids or infectious materials
- Terminal cleaning should consist of thorough wet cleaning and disinfection

### References:

Methicillin-resistant Staphylococcus aureus (MRSA). Centers for Disease Control and Prevention. <https://www.cdc.gov/mrsa/index.html>

Vital Signs: Epidemiology and Recent Trends in Methicillin-Resistant and in Methicillin-Susceptible Staphylococcus aureus Bloodstream Infections — United States. Centers for Disease Control and Prevention. [https://www.cdc.gov/mmwr/volumes/68/wr/mm6809e1.htm?s\\_cid=mm6809e1\\_w](https://www.cdc.gov/mmwr/volumes/68/wr/mm6809e1.htm?s_cid=mm6809e1_w)