# The Impact of Methicillin-Resistant *Staphylococcus aureus* (MRSA)

## MRSA is one of the most invasive and deadly multi-drug resistant organisms (MDROs).

* + Over 2.8 million infections and over 35,000 people die in the U.S. every year.1
  + MRSA infections are associated with the following:
    - Prolonged length of stay in hospital.2-3
    - Excessive healthcare costs.2-4
    - Increased morbidity and mortality.4
  + MRSA is a leading cause of central line-associated bloodstream infections, ventilator-associated pneumonia, and surgical site infections (SSIs).5

## Treatment of MRSA adds to the emergence and proliferation of antimicrobial-resistant organisms.5-6

* Treating patients with courses of antibiotics against *S. aureus* can cause antibiotic pressure, leading to selective advantage for antibiotic-resistant strains.
* The majority of *S. aureus* infections among hospitalized patients are methicillin-resistant: about 75 percent in the intensive care unit (ICU) and upwards of 60 percent in the non-ICU.5,7

# Four Main Sources and Pathways of MRSA Transmission and Infection

## A person’s own MRSA colonization can lead to invasive disease.

* + MRSA can colonize the skin, nares, or other parts of the body without signs or symptoms.
    - MRSA carriage is common in healthcare settings, affecting 7 percent of inpatients upon admission.8
  + Infection occurs when colonization progresses to invasive disease. Hospitalization raises the likelihood of this happening.
    - Up to 11 percent of hospital inpatients who are colonized with MRSA will develop invasive infection during their stay, and this risk increases to 30 percent among the critically ill.9
  + People colonized with MRSA can spread it to others or the environment, even if they are asymptomatic.

## Environmental reservoirs of MRSA can lead to colonization or infection.10

* + High-touch surfaces (HTS) and fomites can harbor MRSA and other pathogens.
    - This can then be transmitted between patients or from surfaces to a vulnerable patient.
  + Examples of HTS include but are not limited to intravenous poles, bedrails, and over-bed tables.

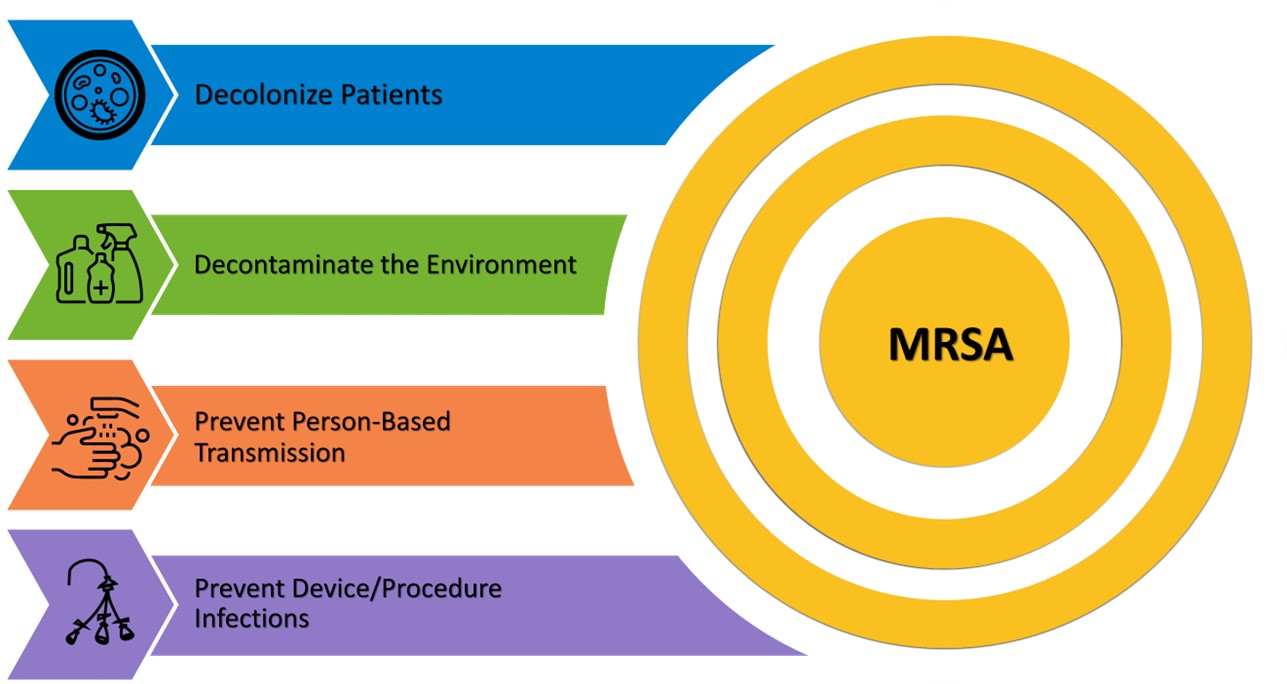
## Healthcare personnel can transfer organisms to patients or surfaces, leading to colonization or infection.

* + Healthcare personnel can inadvertently transmit MRSA between patients or from the environment to patient(s).9,11-14
  + Improving hand hygiene practices can lead to a reduction of healthcare-associated infections (HAIs) and/or transmission and colonization by MDROs.9,11-15
  + However, hand hygiene compliance rates vary widely in healthcare settings, ranging from 5 percent to 81 percent, with an average compliance of 40 percent.16

## Medical devices and procedures can decrease or bypass patients’ natural defenses.

* + Medical devices or procedures can be life-saving but poses increased risk for HAIs by creating portals of entry.
  + MRSA caused 48.4 percent of device-associated HAIs and 41.9 percent of SSIs in acute care facilities from 2015 to 2017.5

**To take aim and target MRSA, it is necessary to understand and address the four main sources or reservoirs of MRSA.**

1. **Decolonizing patients** targets individuals colonized with MRSA, who represent the primary reservoir of MRSA.
2. **Decontaminating the healthcare environment** removes MRSA from HTS and fomites.
3. **Preventing person-based transmission** reduces the likelihood of healthcare workers spreading MRSA.
4. **Preventing device- and procedure-related infections** addresses the elevated infection risks that devices and procedures pose.

More info can be found on [**The 4 Key Strategies of MRSA Prevention**](https://www.ahrq.gov/hai/tools/mrsa-prevention/toolkit/key-strategies.html) and [**The Importance of MRSA Prevention**](https://www.ahrq.gov/hai/tools/mrsa-prevention/toolkit/importance.html) pages of the Toolkit website.

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AHRQ Pub. No. 25-0007

October 2024