

MRSA (Methicillin -Resistant Staphylococcus Aureus)

Methicillin-resistant Staphylococcus aureus (MRSA) is a bacterium that causes infections in the body. MRSA infection is an infection with a strain of Staphylococcus aureus bacteria that is resistant to antibiotics known as beta-lactams.¹ These commonly used antibiotics include methicillin, amoxicillin, and penicillin.

Most MRSA infections occur in people with weak immune systems, usually patients in hospitals and long- term care facilities. MRSA infections in hospitalized patients are known as healthcare-associated (HA-MRSA).¹ MRSA infections in people not considered high-risk in the community are known as community-associated MRSA (CA-MRSA).¹ Poor hygiene, crowded living conditions, athletes who share equipment, prisoners, and children in daycare facilities are considered risk factors for MRSA.

Unfortunately, there has been a recent increase of both community and hospital acquired MRSA. Some have speculated that the increase may be due to the inappropriate use of third-generation cephalosporins,² while others suggested widespread use of quinolones is responsible.³

The standard laboratory gram-positive susceptibility testing panels list vancomycin and linezolid as antibiotics to which MRSA is sensitive.⁴ Vancomycin has long been considered the gold standard for treating MRSA infections because vancomycin-resistant staphylococci are rare.⁴ Unfortunately, when vancomycin is used as single drug therapy to treat MRSA infections, cure rates in serious infections has been very disappointing (avg.40% failure).⁴ In treating nonserious MRSA infections, such as wound, skin and urinary tract infections (UTIs), in addition to slow cure rates and failure vancomycin is practically and economically burdensome. Because there is no oral form, a patient for whom vancomycin is prescribed must be infused (IV or infusaport). Additionally, to avoid toxicity, blood levels must be monitored regularly. Linezolid, an oral drug that most MRSA isolates test sensitive carries a risk of hematological abnormalities, including myelosuppression and thrombocytopenia.⁴ Linezolid, like vancomycin, is extremely economically burdensome. So in response to alternatives to vancomycin and linezolid new approaches are being investigated.

One option for clinicians to consider is **rifampin combination therapy**; if the patient has a serious staphylococcal infection.⁴ Although rifampin is ineffective as a single-drug therapy for treating staph infections, numerous studies have shown that when rifampin is combined with vancomycin, trimethoprim-sulfamethoxazole, minocycline, or ciprofloxacin the clinical outcomes are markedly improved.⁴

Unfortunately, no treatment guarantees clinical success. This article in no way is recommending a specific treatment , rather it is hoped this material will prompt discussions and awareness among the medical community that will in some small way improve patient care and lessen resistant staphylococci.

1. "MRSA infection" ,www.nlm.nih.gov/medlineplus/ency/article/007261 , updated by Kenneth Wener M.D.
2. Fukatsu K, Saito H, Matsuda T, Ikeda S, Furukawa S, Muto T, influences of type & duration of antimicrobial Prophylaxis on an outbreak of methicillin-resistant Staphylococcus aureus and on the incidence of wound infection. Arch Surg Dec.1997, 132-11320-1325
3. Weber SG, Gold HS, Hooper DC, Karchmer AW, Carmel Y, Fluoroquinolones and the risk for MRSA is hospitalized patients, Emerg Infect Dis. November 2003,9:1415-1422
4. " No mercy for MRSA" Medical Laboratory Observer by Dennis L. Wegner PhD Jan 2005 pg 26-29