

# MRSA

**MRSA**, (from methicillin-resistant *Staphylococcus aureus*), is the name for the strains of bacteria of *Staphylococcus aureus*, that have acquired resistance to the antibiotic **methicillin**. The ***mecA* gene**, located on the *mec* staphylococcal chromosome cassette (SCC *mec*), which encodes the enzyme PBP2a (abbreviated as *penicillin-binding protein*), is responsible for resistance. This enzyme acts as a transpeptidase (ie it is involved in the synthesis of the bacterial cell wall peptidoglycan), but is not inhibited by methicillin and other penicillin antibiotics. Methicillin is used worldwide for treatment of *S. aureus*, similar to oxacillin used in the Czech Republic. These strains have spread especially in hospitals due to the use of broad-spectrum antibiotics that exert selection pressure on bacteria. MRSA has also become resistant to a number of other antibiotics, and intravenous vancomycin must be used for treatment.

However, in 2002, *vancomycin-resistant S. aureus* (VRSA) strains also appeared to be resistant to vancomycin. Two reported strains in the United States have shown susceptibility to quinupristin-dalfopristin, **linezolid** and TMP-SMX (Trimethoprim-sulfamethoxazole = cotrimoxazole), but were resistant to tetracycline.<sup>[1]</sup>

The patient with MRSA must be isolated in a specially designed room and very strict hygiene rules must be followed to prevent further spread of the dangerous strain.



MRSA

## References

### Related articles

- *Staphylococcus aureus*
- Staphylococcal infection

### References

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1. MAZZULLI, Tony. *Vancomycin Resistant Staphylococcus Aureus (VRSA)* [online]. Canadian Antimicrobial Resistance Alliance (CARA), [cit. 2011-10-14]. <<http://www.can-r.com/mediaResources/VRSA.pdf>>.