

## **Antibacterial Susceptibility Patterns and Cross-Resistance of Methicillin Resistant and Sensitive Staphylococcus aureus**

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### **ABSTRACT**

**Background and objectives:** Nosocomial infections caused by methicillin-resistant staphylococci (MRSA) poses a serious problem in many countries. This study aimed to determine the antibacterial susceptibility patterns of methicillin sensitive and resistant Staphylococcus aureus isolates from the hospitalized patients. Totally 356 isolates of Staphylococcus aureus (S. aureus) including 200, 137 and 19 corresponding to MRSA, MSSA and intermediates strains, respectively were isolated from the hospitalized patients.

**Materials and methods:** Antibacterial susceptibility patterns of the isolates to 14 antibiotics were examined using Kirby-Bauer method. MICs of 15 antibiotics to 156 MRSA isolates were determined by E test method. Cross-resistances of MRSA isolates to the other tested antibiotics were also determined. S.aureus with high frequencies were isolates from the blood, sputum and deep wound samples.

**Results:** All of 200 MSSA isolates were sensitive to oxacillin, vancomycin, tecoplanin, rifampin, linezolid, quinupristin/dalfopristin, mupirocin and fusidic acid. A gradient of reduced susceptibility of MSSA to cephalexin, co-trimoxazole, ciprofloxacin, clindamycin, tetracycline, erythromycin and gentamicin were noticed. MRSA isolates were sensitive to vancomycin, tecoplanin, linezolid, quinupristin/dalfopristin, mupirocin and fusidic acid, while reduced susceptibility of them to rifampin, co-trimoxazole, clindamycin, cephalexin, tetracycline, ciprofloxacin, erythromycin and gentamicin were observed. MRSA isolates exhibited a high range of cross-resistance to the latter eight antibiotics.

**Conclusion:** Overall, co-trimoxazole, ciprofloxacin, clindamycin, tetracycline, erythromycin and gentamicin showed low activity against MSSA and MRSA isolates which may indicate they are not suitable to be used in clinics. To preserve effectiveness of antibiotics, rational prescription and concomitant application of preventive measures against the spread of MRSA are recommended.

**Key words:** MRSA; minimum inhibitory concentration; empirical therapy