MSSA: - Penicillin, in high doses, is the drug of choice for penicillin-sensitive S. aureus, although these strains are rare.

MRSA: - Methicillin-resistant isolates are frequently cross-resistant to many antimicrobials including aminoglycosides, macrolides, lincosamides, tetracyclines, co-trimoxazole, cephalosporins, carbapenems and beta-lactam/beta-lactamase combinations. - Fluoroquinolone resistance is now widespread, particularly in MRSA isolates. Although newer agents (e.g. levofloxacin, gatifloxacine, sparfloxacin and moxifloxacin) have improved Gram-positive activity, the mechanism of cross-resistance amongst fluoroquinolones is such that susceptibility cannot be assumed - Antibiotics with potential or proven activity against MRSA include vancomycin, teicoplanin, quinupristin-dalfopristin, linezolid, rifampin and fusidic acid.

VISA: - vancomycin-intermediate strains have all been sensitive to chloramphenicol, gentamicin, rifampin, co-trimoxazole and tetracyline. - The role of the recently approved antibiotics quinupristin / dalfopristin and linezolid in the treatment of vancomycin-intermediate S. aureus infections is still unclear.

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General: - Vancomycin remains the drug of choice for MRSA, although it is intrinsically less active against Staphylococcus than beta-lactams.

Activity: - It has good activity in vitro against a range of Gram-positive bacteria, including methicillin-resistant and vancomycin-intermediate S. aureus. - Decreased in vivo susceptibility to quinupristin / dalfopristin has been noted with some erythromycin-resistant MRSA.

Trials: - Controlled trials indicate that quinupristin / dalfopristin and vancomycin are of comparable efficacy for a range of MRSA infections, including skin infections, pneumonia and bacteraemia.

Activity: - Linezolid belongs to a new class of drugs called the oxazolidinones. - It acts by inhibiting protein synthesis at an early stage of bacterial replication.

Trials: - Clinical trials comparing vancomycin and linezolid in the treatment of infections caused by MRSA have shown equivalent clinical and bacteriological success rates.

Activity: - Rifampicin is a potent bactericidal agent which penetrates well into tissues and abscesses. - High levels of resistance develop early if it is used alone; hence, it must only be used with another antistaphylococcal agent to which the isolate is susceptible.

Trials: - The role of rifampin as an adjunctive drug in patients with S. aureus infections remains controversial. Nonetheless, it is recommended in combination with gentamicin and either vancomycin or a semisynthetic penicillin for prosthetic valve endocarditis.

Activity: - Fusidic acid inhibits protein synthesis and is active in vitro against MSSA and MRSA. However, resistance develops if it is used alone and, like rifampin, it must be administered with another antistaphylococcal agent to which the strain is susceptible.