COMBINATION THERAPY

Treatment with antimicrobial combinations may be necessary in certain cases. The administration of 2 or more agents may be 1) to treat mixed bacterial infections in which the organisms are not susceptible to a common agent, 2) to achieve synergistic a resistant strains (eg, *Pseudomonas aeruginosa*), 3) to overcome bacterial tolerance, 4) to prevent the emergence of drug resis prevent inactivation of an antibiotic by enzymes produced by other bacteria that are present.

Additive or synergistic effects are seen when antibacterial agents are used in combination, but antagonism may also emerge, consequences. Generally, bacteriostatic agents act in an additive fashion with one another, whereas bactericidal agents are of However, the effects of several bactericidal antibiotics are substantially impaired by simultaneous use of drugs that impair mic (eg, most ribosomal inhibitors). This is a general guideline only; many exceptions are known, and confounding factors also pla antimicrobials as bactericidal or bacteriostatic can also be misleading because “bactericidal” drugs can be rendered bacterios are not achieved at the site of infection. However, in general, the following common antimicrobials at MIC concentrations are lik cephalosporins, aminoglycosides, trimethoprim/sulfonamides, nitrofurans, metronidazole, and quinolones. The following anti generally bacteriostatic: tetracyclines, chloramphenicol, macrolides, lincosamides, spectinomycin, and the sulfonamides.

Ideally, antimicrobial selection should be based on mechanisms of action that are different and on spectra of activity that are co selected because their action is unique and not only complements other drugs but also facilitates movement of other drugs thr microbe. Examples of combination therapy for mixed infections include the use of clindamycin, metronidazole, or the semisyntl coverage in combination with aminoglycosides for their gram-negative efficacy. Synergism against certain bacterial pathogens combinations of penicillins or cephalosporins and aminoglycosides. The combined use of trimethoprim with selected sulfona lactams are other examples of synergistic effects.

Preventing the development of resistance with combination antimicrobial therapy is best exemplified by the use of carbenicillin or tobramycin for the treatment of *Pseudomonas* infections.

Bacterial enzymatic inactivation of β-lactam antibiotics, such as the penicillins and cephalosporins, can be decreased by concu inhibitor, such as clavulanic acid or sulbactam.