

used. These agents are commonly used in the treatment of upper and lower respiratory tract infections caused by *S. pneumoniae*, *H. influenzae*, *M. catarrhalis*, and atypical organisms (e.g., *Chlamydophila pneumoniae*, *Legionella pneumophila*, and *Mycoplasma pneumoniae*); group A streptococcal pharyngitis in penicillin-allergic patients; and nontuberculous mycobacterial infections (e.g., caused by *Mycobacterium marinum* and *Mycobacterium chelonae*) as well as in the prophylaxis and treatment of *M. avium complex* infection in patients with HIV/AIDS and in combination therapy for *Helicobacter pylori* infection and bartonellosis. Enterobacterales, *Pseudomonas* species, and *Acinetobacter* species are intrinsically resistant to macrolides as a result of decreased membrane permeability, although azithromycin is active against gram-negative diarrheal pathogens. The major adverse effects of this drug class include nausea, vomiting, diarrhea and abdominal pain, prolongation of QT<sub>c</sub> interval, exacerbation of myasthenia gravis, tinnitus and reversible deafness, especially in the elderly. Azithromycin specifically has been associated with an increased risk of death, especially among patients with underlying heart disease, because of the risk of QT<sub>c</sub> interval prolongation and torsades de pointes arrhythmia. Erythromycin, clarithromycin, and telithromycin inhibit the CYP3A4 hepatic drug-metabolizing enzyme and can result in increased levels of coadministered drugs, including benzodiazepines, statins, warfarin, cyclosporine, and tacrolimus. Azithromycin does not inhibit CYP3A4 and therefore does not interact with these drugs.

## ■ CLINDAMYCIN

Clindamycin is a lincosamide antibiotic and is bacteriostatic against some organisms and bactericidal against others. It is used most often to treat bacterial infections caused by anaerobes (e.g., *B. fragilis*, *Clostridium perfringens*, *Fusobacterium* species, *Prevotella melaninogenicus*, and *Peptostreptococcus* species) and susceptible staphylococci and streptococci. Clindamycin is used for treatment of dental infections, anaerobic lung abscess, and skin and soft tissue infections. It is used together with bactericidal agents (penicillins or