

chapter 37

Macrolides and Miscellaneous Antibacterials

Objectives

AFTER STUDYING THIS CHAPTER, THE STUDENT WILL BE ABLE TO:

1. Discuss characteristics and specific uses of macrolide antibacterials.
2. Compare and contrast macrolides with other commonly used antibacterial drugs.
3. Apply principles of using macrolides in selected client situations.
4. Discuss characteristics and clinical indications for using chloramphenicol, clindamycin, linezolid, metronidazole, quinupristin/dalfopristin, and vancomycin.
5. Discuss the roles of metronidazole and oral vancomycin in the treatment of pseudomembranous colitis.

Critical Thinking Scenario

You are an infection control nurse who will be providing long-term care nurses with an update on methicillin-resistant *Staphylococcus aureus* (MRSA). Because MRSA has been a significant problem over the last decade, especially in long-term care facilities, your goal is to increase knowledge about the development of drug resistance and appropriate measures to prevent spread of this organism.

Reflect on:

- ▶ Factors that promote resistance to antibiotics.
- ▶ Why vancomycin may be the drug of choice for MRSA.
- ▶ What risks are involved when vancomycin is used consistently to treat MRSA.
- ▶ What infection control practices are necessary to limit the spread of MRSA and other resistant organisms.

OVERVIEW

The drugs described in this chapter are heterogeneous in their antimicrobial spectra, characteristics, and clinical uses. Some are used often; some are used only in specific circumstances. The macrolides and selected miscellaneous drugs are described in the following sections; names, routes, and dosage ranges of individual drugs are listed in the Drugs at a Glance tables.

MACROLIDES

The macrolides, which include erythromycin, azithromycin (Zithromax), clarithromycin (Biaxin), and dirithromycin (Dynabac), have similar antibacterial spectra and mechanisms of action. They are widely distributed into body tis-

sues and fluids and may be bacteriostatic or bactericidal, depending on drug concentration in infected tissues. They are effective against gram-positive cocci, including group A streptococci, pneumococci, and most staphylococci. They are also effective against species of *Corynebacterium*, *Treponema*, *Neisseria*, and *Mycoplasma* and against some anaerobic organisms such as *Bacteroides* and *Clostridia*. Azithromycin and clarithromycin also are active against the atypical mycobacteria that cause *Mycobacterium avium* complex (MAC) disease. MAC disease is an opportunistic infection that occurs mainly in people with advanced human immunodeficiency virus infection.

Erythromycin, the prototype, is now used less often because of microbial resistance, numerous drug interactions, and the development of newer macrolides. Erythromycin is metabolized in the liver and excreted mainly in bile; approximately 20% is excreted in urine. Depending on the specific salt