

# chapter 39

## Antiviral Drugs

### Objectives

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

1. Describe characteristics of viruses and common viral infections.
2. Discuss difficulties in developing and using antiviral drugs.
3. Identify clients at risk for development of systemic viral infections.
4. Differentiate types of antiviral drugs used for herpes infections, human immunodeficiency virus (HIV) infections, influenza A, and respiratory syncytial virus infections.
5. Describe commonly used antiviral drugs in terms of indications for use, adverse effects, and nursing process implications.
6. Discuss the rationale for using combinations of drugs in treating HIV infection.
7. Discuss guidelines for using antiviral drugs in special populations.
8. Teach clients techniques to prevent viral infections.

### Critical Thinking Scenario

Mark, a 32-year-old bisexual man, was recently diagnosed with human immunodeficiency virus (HIV) infection with a CD4+ cell count of less than 200. He is started on aggressive drug therapy with Combivir, a reverse transcriptase inhibitor combination, and nelfinavir, a protease inhibitor. Each day he takes 12 pills at a cost of approximately \$450.00/week.

### Reflect on:

- ▶ What is the expected outcome of antiviral therapy in a person infected with HIV?
- ▶ Does this patient have the acquired immunodeficiency syndrome (AIDS)?
- ▶ Is the HIV-infected person still able to spread the infection to others while on antiviral treatment?
- ▶ Who should be responsible for the cost of treatment if private insurance lapses when Mark is no longer able to work?

### OVERVIEW

Viruses produce many diseases, including acquired immunodeficiency syndrome (AIDS), hepatitis, pneumonia, and other disorders that affect almost every body system. Many potentially pathogenic viral strains exist. For example, more than 150 viruses infect the human respiratory tract, including approximately 100 types of rhinovirus that cause the common cold. Viruses can be spread by secretions from infected people, ingestion of contaminated food or water, breaks in skin or mucous membrane, blood transfusions, sexual contact, pregnancy, breast-feeding, and organ transplantation. Viral infections vary from mild, localized disease with few symptoms to severe systemic illness and death. Severe infections are more common when host defense mechanisms are impaired by disease or drugs. Additional

characteristics of viruses and viral infections are described in the following paragraphs; selected infections are described in Box 39–1.

1. Viruses are intracellular parasites that can live and reproduce only while inside other living cells. They gain entry to human host cells by binding to receptors on cell membranes. All human cells do not have receptors for all viruses; cells that lack receptors for a particular virus are resistant to infection by that virus. Thus, the locations and numbers of the receptors determine which host cells can be infected by a virus. For example, the mucous membranes lining the tracheobronchial tree have receptors for the influenza A virus, and certain white blood cells (eg, helper T lymphocytes) have CD4 molecules, which are the receptors for the human immunodeficiency virus (HIV).