

# chapter 19

## Antiadrenergic Drugs

### Objectives

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

1. List characteristics of antiadrenergic drugs in terms of effects on body tissues, indications for use, nursing process implications, principles of therapy, and observation of client response.
2. Discuss alpha<sub>1</sub>-adrenergic blocking agents and alpha<sub>2</sub>-adrenergic agonists in terms of indications for use, adverse effects, and selected other characteristics.
3. Compare and contrast beta-adrenergic blocking agents in terms of cardioselectivity, indications for use, adverse effects, and selected other characteristics.
4. Teach clients about safe, effective use of antiadrenergic drugs.
5. Discuss principles of therapy and nursing process for using antiadrenergic drugs in special populations.

### Critical Thinking Scenario

Joe Moore, 56 years of age, comes to the clinic with complaints of chest pain with exertion. His vital signs are blood pressure (BP) 194/88, pulse 92, respiration 18. His primary provider prescribes a selective beta blocker, atenolol (Tenormin), and schedules a follow-up visit in 2 weeks.

#### Reflect on:

- ▶ Why a beta blocker is ordered for this patient.
- ▶ What are the advantages of using a selective rather than a nonselective beta blocker?
- ▶ What side effects are likely when a patient is started on atenolol?
- ▶ Describe a teaching plan for this patient.

### DESCRIPTION

Antiadrenergic or sympatholytic drugs decrease or block the effects of sympathetic nerve stimulation, endogenous catecholamines (eg, epinephrine), and adrenergic drugs. The drugs are chemically diverse and have a wide spectrum of pharmacologic activity, with specific effects depending mainly on the client's health status when a drug is given and the drug's binding with particular adrenergic receptors. Included here are clonidine and related centrally active antiadrenergic drugs, which are used primarily in the treatment of hypertension, and peripherally active agents (alpha- and beta-adrenergic blocking agents), which are used to treat various cardiovascular and other disorders. A few uncommonly used antiadrenergic drugs for hypertension are included in Chapter 55.

A basal level of sympathetic tone is necessary to maintain normal body functioning, including regulation of blood pressure, blood glucose, and stress response. Therefore, the goal

of antiadrenergic drug therapy is to suppress pathologic stimulation, not the normal, physiologic response to activity, stress, and other stimuli.

### Mechanisms of Action and Effects

Antiadrenergic effects can occur either when alpha<sub>1</sub> or beta receptors are blocked by adrenergic antagonists or when presynaptic alpha<sub>2</sub> receptors are stimulated by agonist drugs (see Chap. 17). Most antiadrenergic drugs have *antagonist (blocking) effects* in which they combine with alpha<sub>1</sub>, beta<sub>1</sub>, beta<sub>2</sub>, or a combination of receptors in peripheral tissues and prevent adrenergic (sympathomimetic) effects. Clonidine and related drugs have *agonist effects* at presynaptic alpha<sub>2</sub> receptors in the brain. This results in a negative feedback type of mechanism that decreases the release of additional norepinephrine. Thus, the overall effect is decreased sympathetic outflow