

chapter 18

Adrenergic Drugs

Objectives

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

1. Identify effects produced by stimulation of alpha- and beta-adrenergic receptors.
2. List characteristics of adrenergic drugs in terms of effects on body tissues, indications for use, adverse effects, nursing process implications, principles of therapy, and observation of client responses.
3. Discuss use of epinephrine to treat anaphylactic shock, acute bronchospasm, and cardiac arrest.
4. Identify clients at risk of experiencing adverse effects with adrenergic drugs.
5. List commonly used over-the-counter preparations and herbal preparations that contain adrenergic drugs.
6. Discuss principles of therapy and nursing process for using adrenergic drugs in special populations.
7. Describe signs and symptoms of toxicity due to noncatecholamine adrenergic drugs.
8. Discuss treatment of overdose with noncatecholamine adrenergic drugs.
9. Teach the client about safe, effective use of adrenergic drugs.

Critical Thinking Scenario

Jill, 8 years old, is brought to the clinic for allergy desensitization. She is starting on a new concentration of allergy extract today. After her injection, as usual, you ask her to remain in the waiting room for 30 minutes. After 20 minutes, her mother comes to get you. Jill is restless, her voice is high-pitched, she feels odd, and her respiration rate has increased to 30 breaths per minute.

Reflect on:

- ▶ What data would you collect next?
- ▶ How could you differentiate anaphylaxis from anxiety?
- ▶ If Jill were experiencing an anaphylactic reaction, what would be the treatment of choice?

DESCRIPTION

Adrenergic (sympathomimetic) drugs produce effects similar to those produced by stimulation of the sympathetic nervous system (see Chap. 17) and therefore have widespread effects on body tissues. Some of the drugs are exogenous formulations of naturally occurring neurotransmitters and hormones such as norepinephrine (Levophed), epinephrine (Adrenalin), and dopamine (Intropin). Other adrenergic medications such as phenylephrine (Neo-Synephrine), pseudoephedrine (Sudafed), and isoproterenol (Isuprel) are synthetic chemical relatives of naturally occurring neurotransmitters and hormones.

Specific effects of adrenergic medications depend mainly on the client's health status when a drug is given and the type of adrenergic receptor activated by the drug. Major thera-

peutic uses and adverse effects stem from drug effects on the heart, blood vessels, and lungs. The drugs discussed in this chapter (epinephrine, ephedrine, pseudoephedrine, isoproterenol, and phenylephrine) are those with multiple effects and clinical uses (Drugs at a Glance: Selected Adrenergic Drugs). Because epinephrine, ephedrine, and pseudoephedrine stimulate both alpha- and beta-adrenergic receptors, these drugs have widespread effects on body tissues and multiple clinical uses. Isoproterenol stimulates beta-adrenergic receptors (both beta₁ and beta₂) and may be used in the treatment of several clinical conditions. Phenylephrine stimulates alpha-adrenergic receptors and is used to induce vasoconstriction in several conditions.

Other adrenergic drugs are selective for specific adrenergic receptors, or are given topically to produce more localized therapeutic effects and fewer systemic adverse effects.