

chapter 56

Diuretics

Objectives

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

1. List characteristics of diuretics in terms of mechanism of action, indications for use, principles of therapy, and nursing process implications.
2. Discuss major adverse effects of thiazide, loop, and potassium-sparing diuretics.
3. Identify clients at risk for developing adverse reactions to diuretic administration.
4. Recognize commonly used potassium-losing and potassium-sparing diuretics.
5. Discuss the rationale for using combination products containing a potassium-losing and a potassium-sparing diuretic.
6. Discuss the rationale for concomitant use of a loop diuretic and a thiazide or related diuretic.
7. Teach clients to manage diuretic therapy effectively.
8. Discuss important elements of diuretic therapy in special populations.

Critical Thinking Scenario

Jennie Masury, an 82-year-old widow, is started on a thiazide diuretic to control her hypertension. She also has a history of osteoarthritis. She lives alone with her two cats and manages independently with only a little help from her neighbors. Her children live out-of-state, but she talks with them on the phone weekly.

Reflect on:

- ▶ How diuretics work to decrease blood pressure.
- ▶ How a diuretic and its effects may affect activities and normal daily functions.
- ▶ Key factors, particularly diuretic therapy, that may pose safety risks for this widow. How might you minimize these risks?
- ▶ An appropriate teaching plan for this client regarding her diuretic therapy.

OVERVIEW

Diuretics are drugs that increase renal excretion of water, sodium, and other electrolytes, thereby increasing urine formation and output. They are important therapeutic agents widely used in the management of both edematous (eg, heart failure, renal and hepatic disease) and nonedematous (eg, hypertension, ophthalmic surgery) conditions. Diuretics are also useful in preventing renal failure by their ability to sustain urine flow. To aid understanding of diuretic drug therapy, renal physiology related to drug action and characteristics of edema are reviewed. Types of diuretics are then described, and individual drugs are listed in *Drugs at a Glance: Diuretic Agents*.

RENAL PHYSIOLOGY

The primary function of the kidneys is to regulate the volume, composition, and pH of body fluids. The kidneys receive ap-

proximately 25% of the cardiac output. From this large amount of blood flow, the normally functioning kidney is efficient in retaining substances needed by the body and eliminating those not needed.

The Nephron

The nephron is the functional unit of the kidney; each kidney contains approximately 1 million nephrons. Each nephron is composed of a glomerulus and a tubule (Fig. 56–1). The glomerulus is a network of capillaries that receives blood from the renal artery. Bowman's capsule is a thin-walled structure that surrounds the glomerulus, then narrows and continues as the tubule. The tubule is a thin-walled structure of epithelial cells surrounded by peritubular capillaries. The tubule is divided into three main segments, the proximal tubule, loop of Henle, and distal tubule, which differ in structure and function. The tubules