

diuretics (eg, furosemide) or potassium-sparing diuretics (eg, spironolactone) may be useful in some circumstances; see Chapter 56 for discussion of diuretic drugs.

### Vasodilators (Direct Acting)

Vasodilator antihypertensive drugs directly relax smooth muscle in blood vessels, resulting in dilation and decreased peripheral vascular resistance. They also reduce afterload and may be used in management of heart failure. Hydralazine and minoxidil act mainly on arterioles; nitroprusside acts on arterioles and venules. These drugs have a limited effect on hypertension when used alone because the vasodilating action that lowers blood pressure also stimulates the SNS and triggers reflexive compensatory mechanisms (vasoconstriction, tachycardia, and increased cardiac output), which raise blood pressure. This effect can be prevented during long-term therapy by also giving a drug that prevents excessive sympathetic stimulation (eg, propranolol, an adrenergic blocker). These drugs also cause sodium and water retention, which may be minimized by concomitant diuretic therapy.

### INDIVIDUAL DRUGS

Diuretics are discussed in Chapter 56 and listed in Table 56–1. Antiadrenergic drugs are discussed in Chapter 19 and listed in Tables 19–1 and 19–2. Antihypertensive agents are shown in the Drugs at a Glance: Antihypertensive Drugs; antihypertensive-diuretic combination products are listed in Drugs at a Glance: Oral Antihypertensive Combination Products.

### Nursing Process

#### Assessment

Assess the client's condition in relation to hypertension.

- Identify conditions and risk factors that may lead to hypertension. These include:
  - Obesity
  - Elevated serum cholesterol (total and low-density lipoprotein) and triglycerides
  - Cigarette smoking
  - Sedentary lifestyle
  - Family history of hypertension or other cardiovascular disease
  - African-American race
  - Renal disease (eg, renal artery stenosis)
  - Adrenal disease (eg, hypersecretion of aldosterone, pheochromocytoma)
  - Other cardiovascular disorders (eg, atherosclerosis, left ventricular hypertrophy)
  - Diabetes mellitus

- Oral contraceptives, corticosteroids, appetite suppressants, nasal decongestants, non-steroidal anti-inflammatory agents
- Neurologic disorders (eg, brain damage)
- Observe for signs and symptoms of hypertension.
  - Check blood pressure accurately and repeatedly. As a rule, multiple measurements in which systolic pressure is above 140 mm Hg and/or diastolic pressure is above 90 mm Hg, are necessary to establish a diagnosis of hypertension.

The importance of accurate blood pressure measurements cannot be overemphasized because there are many possibilities for errors. Some ways to improve accuracy and validity include using correct equipment (eg, proper cuff size), having the client rested and in the same position each time blood pressure is measured (eg, sitting or supine with arm at heart level), and using the same arm for repeated measurements.

- In most cases of early hypertension, elevated blood pressure is the only clinical manifestation. If symptoms do occur, they are usually nonspecific (eg, headache, weakness, fatigue, tachycardia, dizziness, palpitations, epistaxis).
- Eventually, signs and symptoms occur as target organs are damaged. Heart damage is often reflected as angina pectoris, myocardial infarction, or heart failure. Chest pain, tachycardia, dyspnea, fatigue, and edema may occur. Brain damage may be indicated by transient ischemic attacks or strokes of varying severity with symptoms ranging from syncope to hemiparesis. Renal damage may be reflected by proteinuria, increased blood urea nitrogen (BUN), and increased serum creatinine. Ophthalmoscopic examination may reveal hemorrhages, sclerosis of arterioles, and inflammation of the optic nerve (papilledema). Because arterioles can be visualized in the retina of the eye, damage to retinal vessels may indicate damage to arterioles in the heart, brain, and kidneys.

#### Nursing Diagnoses

- Decreased Cardiac Output related to disease process or drug therapy
- Ineffective Coping related to long-term lifestyle changes and drug therapy
- Noncompliance related to lack of knowledge about hypertension and its management, costs and adverse effects of drug therapy, and psychosocial factors
- Disturbed Body Image related to the need for long-term management and medical supervision
- Fatigue related to antihypertensive drug therapy
- Deficient Knowledge related to hypertension, antihypertensive drug therapy, and nondrug lifestyle changes
- Sexual Dysfunction related to adverse drug effects