headache should be identified and, if possible, eliminated. For example, avoiding physical and emotional stress, having regular and consistent sleep patterns, eating meals regularly, and avoiding specific foods or alcohol can be incorporated into daily life and are helpful.

Assessment
Collect the following data through the health history and physical examination.

• Health history: history of intracerebral trauma, tumor, or infection; detailed history and description of headache characteristics; family history; triggering factors; effects of recurring headaches on lifestyle, ADLs, and role performance
• Physical assessment: skin (diaphoresis, pallor, flushing), eyes (sensitivity to light, tearing), muscle strength and movement

Nursing Diagnoses and Interventions
The primary response of the client requiring nursing interventions is acute pain. Develop nursing interventions to help the client identify strategies for controlling the pain and discomfort of the headache.

Acute Pain
Headaches originate from both intracranial and extracranial sources and range in severity from benign, transient discomfort to severe, incapacitating pain. Interventions focus on teaching the client self-care measures to control or relieve the pain, and reducing any associated problems, such as nausea and vomiting or anxiety.

• Teach to maintain a diary of headaches, including duration, onset, location, relation to menstruation or food intake, and related manifestations such as factors that relieve or intensify the pain. A thorough assessment of the headache is essential for both the client and the health care provider to identify the circumstances and patterns of headache occurrence.
• Ask the client to rate the pain or discomfort on a scale of 0 to 10 (with 10 being the worst pain). Using a scale to rate the pain provides an objective measure of the client’s subjective experience of the pain or discomfort. The scale can also be used to evaluate the effectiveness of pain relief measures.
• Teach to minimize light, noise, and activity and rest in a quiet, nonstimulating environment when experiencing a headache. Manipulating the environment helps reduce noxious stimuli that may increase pain.
• Teach to use noninvasive and nonpharmacologic pain relief measures such as deep breathing or relaxation to facilitate self-management of pain (see Chapter 4). Alternative strategies to control pain can help reduce tension and may help to increase the client’s sense of control over the pain.
• If appropriate, teach to apply cold compresses or dry heat to the head and neck. The application of cold can cause vasoconstriction, which helps reduce pain in vascular headaches. Application of heat can reduce muscle tension and improve circulation.
• Teach to follow good nutrition guidelines, get regular exercise and sleep, and minimize stress. Headaches are more likely to occur when ill, tired, or under stress.

Home Care
In addition to implementing comfort measures, client education has a high priority. Develop a teaching plan to help the client learn how to limit attacks (e.g., by avoiding precipitating factors) and reduce the effects of the headache. Provide specific information about prescribed medications. Referrals for methods of stress reduction may be necessary for clients with long-term or migraine headaches.

Nursing Care Plan
A Client with a Migraine Headache

Betty Friedman is a 25-year-old grade-school teacher. Her friends and the other teachers regard Ms. Friedman as an enthusiastic person who sets high standards for herself and strives for perfection. During the spring semester, Ms. Friedman begins to miss work and sometimes appears very nervous. One day, another teacher notices Ms. Friedman running down the hall and into the restroom; the teacher finds Ms. Friedman vomiting. As she washes up, Ms. Friedman tells the other teacher that she has been having headaches since she began menstruating, but that they have never been as intense and frequent as during this past year. They even wake her from her sleep. Ms. Friedman agrees to see the nurse practitioner, Jane Schickadanz, at the school clinic for evaluation.

Assessment
During her health history, Ms. Friedman relates that each month before her menstrual cycle she becomes nervous and sees flashing lights. She also has difficulty expressing herself and thinking clearly. The next day she develops a “sick headache.” She states that the headache can last 1 to 2 days and that afterwards she cannot brush her hair because her scalp hurts. Ms. Friedman attributes these symptoms to PMS and adds that she thinks she is allergic to cheese and nuts because she gets very sick after eating them. After assessment, and in consultation with the physician, Ms. Schickadanz diagnoses Ms. Friedman’s problem as a migraine with aura headache. Sumatriptan succinate (Imitrex) injections are prescribed.

Diagnoses
• Acute pain, related to vasodilation of cerebral vessels and a decreased serotonin level
• Deficient knowledge, pain management
• Altered role performance, related to pain

Expected Outcomes
• Experience reduced frequency and duration of pain.
• Identify the available resources for helping with self-management of pain.

(continued)
Seizures are “paroxysmal motor, sensory, or cognitive manifestations of spontaneous, abnormally synchronous discharges of collections of neurons in the cerebral cortex” (Porth, 2002, p. 1189). This abnormal neuronal activity, which may involve all or part of the brain, disturbs skeletal motor function, sensation, autonomic function of the viscera, behavior, or consciousness. The term epilepsy is used to denote any disorder characterized by recurrent seizures. Epilepsy is categorized as a paroxysmal disorder because its manifestations are discontinuous; that is, minutes, days, weeks, or even years may elapse between seizures.

INCIDENCE AND PREVALENCE

Epilepsy and seizures affect approximately 2.3 million Americans, costing an estimated $12.5 billion in medical expenses and lost or reduced earnings. About 10% of Americans will experience a seizure. People of all ages are affected, but particularly children and the elderly. The incidence of epilepsy is increasing. Researchers have suggested that the increase may be due to technologic advances in obstetric and pediatric care that allow extremely high-risk neonates to survive and to other technologic advances that have improved survival rates after craniocerebral trauma.

Isolated seizure episodes may occur in otherwise healthy people for a variety of reasons, including an acute febrile state, infection, metabolic or endocrine disorder (such as hypoglycemia), or exposure to toxins. Epilepsy may be idiopathic (that is, it may have no identifiable cause), or it may be secondary to birth injury, infection, vascular abnormalities, trauma, or tumors. Older adults may experience seizures as a result of degenerative diseases (the most common cause in adults over 60) and degenerative disorders such as Alzheimer’s disease.

PATHOPHYSIOLOGY AND MANIFESTATIONS

Normally, when the mind is actively working, electrical activity in the brain is unsynchronized; when the mind is at rest, electrical activity is mildly synchronized. It is believed that most seizures arise from a few unstable, hypersensitive, and hyperreactive neurons in the brain. During a seizure, these neurons produce a rhythmic and repetitive hypersynchronous discharge. Although the exact initiating factor for seizure activity has not been identified, several theories have been proposed (Porth, 2002):

• Alterations in the permeability of or ion distribution across cell membranes
• Alterations in the excitability of neurons resulting from glial scarring or decreased inhibition of activity in the cerebral cortex or thalamic region
• Imbalances of excitatory and inhibitory neurotransmitters such as acetylcholine (ACh) or gamma-aminobutyric acid (GABA)

All people have a seizure threshold; when this threshold is exceeded, a seizure may result. In some people, the seizure threshold may be abnormally low, increasing their risk for seizure activity; in other people pathologic processes may alter the seizure threshold (Porth, 2002). The neurons that initiate seizure activity are called the epileptogenic focus. Abnormal neuronal activity may remain localized, causing a partial or focal seizure, or it may spread to involve the entire brain, causing generalized seizure activity. Seizures may also be provoked or unprovoked. Unprovoked (primary or idiopathic) seizures have no identifiable cause, with multiple episodes diagnosed as a seizure disorder or epilepsy. Provoked (second-