With its various functions and subsystems, the nervous system is highly important. Any homeostatic imbalance in this system can result in pathology or death. Numerous disease states can affect patients of all ages and cultural backgrounds.

**Headaches**

Headaches are common and are the result of vascular changes in the cranium that irritate the cranial and cervical nerves. Most headaches are benign; however, there are secondary causes related to serious conditions. The most common headaches include migraine, tension, and cluster. Migraines are the most common and are characterized by light and sound sensitivity, nausea, vomiting, and a dull ache that progresses into a pulsating pain. Migraines can become so debilitating that patients are not able to work or perform their daily activities. Some patients require daily preventative medications to decrease the frequency of migraines. Headaches that progress into a systemic illness or have an acute or severe onset should be fully investigated.

**Stroke**

Strokes involve sudden impairment of the cerebral circulation in one or more of the cranial blood vessels (Munden, 2006). A thrombosis, embolus, or hemorrhage blocks one or more cerebral arteries, depriving the brain of oxygen and resulting in damage or necrosis of the brain tissues. Patients must be educated about the following signs and symptoms of strokes:

- Sudden severe onset of a headache
- Alterations in vision or speech
- Unsteady gait
- Alteration in consciousness

Early detection and intervention has a huge impact on the survival and long-term outcome of stroke patients. A computed tomography (CT) scan is a diagnostic test that should be done soon after diagnosis of stroke to determine whether the stroke is of a hemorrhagic or ischemic (thrombus or embolus) type. The type of stroke determines the appropriate treatment. Patients should be educated so that they can reduce their risk of stroke by properly managing chronic diseases such as hypertension and diabetes.

**Multiple Sclerosis**

Multiple sclerosis (MS) is a condition in which there is demyelinating of nerves
Pathophysiology of the Nervous System

in the central nervous system. The changes in the nerve sheath affect nerve conduction, resulting in the slowing or interruption of nerve impulses (Copstead & Banasik, 2005). Patients with MS have a variety of body system dysfunctions. For example, dysfunctional cranial nerves can result in blurred or double vision. Dysfunctional motor system nerves result in weakness, fatigue, and even paralysis at times, making it difficult for a person to complete daily activities. Because there is no current cure for MS, treatment is aimed at the symptoms. Because of its effects on multiple body systems, effective management requires a diverse disciplinary team of medical, nursing, physical therapy, mental health, and occupational therapy health care professionals.

Alzheimer's Disease

Alzheimer's disease is a chronic disease that affects the elderly and is the most prevalent type of dementia. It is characterized by a progressive decline in cognitive function to the point of patients not recognizing their friends and family. These patients often suffer from behavioral problems and the inability to care for themselves.

Depression

Depression affects people of all ages and the risks are multifactorial, but adolescents and the elderly are at an increased risk of suffering from depression. Depression is more prevalent in females than in males. Those who suffer from depression may have a history of other chronic illnesses such as headaches, heart disease, or diabetes. Depression can result from lifestyle factors such as stress levels, socioeconomic class, or the occurrence of traumatic or life-changing events such as retirement (Dunphy, Winland-Brown, Porter, & Thomas, 2007).

Screen all patients for depression by asking the following questions:

- Over the past 2 weeks, have you felt down or hopeless?
- Over the past 2 weeks, have you felt little interest in doing things?

A "yes" response to either question is a positive test result for depression (Dunphy, Winland-Brown, Porter, & Thomas, 2007).

Age-Related Nervous System Considerations

Be cognizant of the following possible age-related impairments to the nervous
Pathophysiology of the Nervous System

system:

- The leading cause of death in young children and teens are accidents. Anticipatory guidance should be provided to children and their parents regarding safety precautions.
- Toddlers are at risk for falls and head injuries because of their increased independence, walking, and exploring their environments.
- School-age children, teens, and young adults are at risk for accidents associated with sports, motor vehicle accidents, and failure to wear seat belts.
- The elderly are at risk for age-related changes to the nervous system, including orthostatic hypotension and constipation.

References

