**Guided Lecture Notes, Chapter 33, The Nervous System**

Learning Objective 1. List and describe the structures that make up the two main divisions of the nervous system. (Refer to **PowerPoint slides 2 to 15**.)

* Explain how the nervous system is used to communicate with and coordinate the functions of other body systems by using the analogy of an air traffic control tower at a busy airport.
* Describe the structure of the nervous system and list its parts. Explain briefly the function of each part.
* Explain that the human nervous system is divided into two parts, the central nervous system (CNS) and the peripheral nervous system (PNS).
* Using the anatomic chart, point out the brain and the spinal cord.
* Obtain a model of the brain and point out its four major parts (cerebrum, diencephalon, brain stem, and cerebellum). As you identify each part, briefly explain its major functions.
* Explain that the peripheral nervous system consists of two types of nerves: sensory and motor.
* Describe the role of each type of nerve .
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 2. Discuss the main functions of the nervous system. (Refer to **PowerPoint slides 16 and 17**.)

* Explain the two main functions of the nervous system (regulating the internal environment and interacting with the external environment).
* Discuss how a special part of the PNS called the *autonomic nervous system* is activated when the CNS detects an imbalance. Describe how the two parts of the autonomic nervous system, the *sympathetic* and the *parasympathetic nervous system*s, help us to cope with stress (“fight-or-flight” reaction).
* Use the example of a dog chasing a person to illustrate how the “fight-or-flight” response works.
* Explain how the senses play a very important role in our interaction with the external environment.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 3. Describe how aging affects the nervous system. (Refer to **PowerPoint slides 18 to 22**., 43 and 44)

* Explain the effects of age on the nervous system (slowed reaction times, small attention deficit, and slight memory changes) and the preventive measures that can be taken to delay or decrease the effects of aging.
* Point out to students the implications of these changes for nursing assistants who are providing care for older patients and residents. For example, slowed reflexes can lead to an increased incidence of falls, which is why it is so important to remember the safety guidelines they learned in Chapter 14.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 4. Discuss various disorders that affect the nervous system. (Refer to **PowerPoint slides 23 to 41** .)

* Identify several major disorders of the nervous system resulting from disease or trauma.
* Break down the term *transient ischemic attack* (TIA) to help students remember its meaning and differentiate it from stroke (transient = temporary, ischemic = loss of blood flow). Explain that any condition that causes decreased blood flow to the brain can lead to a TIA. Discuss signs and symptoms that may be observed in a person who is having or has had a TIA, and stress the need to report these signs or symptoms to the nurse.
* Explain what a stroke is. Clarify that, depending on what part of the brain is affected, the person can die, experience a significant amount of disability, or experience only slight disability.
* Describe symptoms that may indicate that a person is having a stroke, and explain the importance of notifying the nurse immediately.
* Discuss the types of care measures necessary for a person who has recently experienced a stroke. Relate the lasting effects of a stroke (e.g., hemiplegia, aphasia) to injury of the cerebrum, the part of the brain that controls voluntary muscle movement and allows us to speak.
* Discuss new treatment options that may be used for a person who has had a stroke and how early treatment can drastically reduce the severity of permanent disability.
* Describe the cause of Parkinson’s disease and review its effects on the body. Mention treatment methods that are being researched. Depending on the demographics of your classroom, consider mentioning the work actor Michael J. Fox has done as an advocate for Parkinson’s research and awareness. Knowing someone who has the disease may help students to remember it better.
* Describe specific care measures that are needed when caring for a person with Parkinson’s disease.
* Define the term *epilepsy* and list some of its causes.
* Have students recall how to take care of a person experiencing a seizure, as covered in Chapter 16.
* Explain the pathophysiology of multiple sclerosis.
* Explain that amyotrophic lateral sclerosis (ALS) is a terminal disease resulting from progressive destruction of the neurons .
* Explain that eventually, a person with ALS will require complete assistance with all activities of daily living (ADLs).
* Discuss how head injuries can be caused by falls, car and motorcycle accidents, bicycle accidents, and gunshot wounds. Mention that the amount of brain damage depends on the amount of brain tissue that has been affected. Note the various complications that can occur as a result of the injury.
* Explain the potential lasting effects for the patient with a head injury.
* Describe the coma and persistent vegetative state. Discuss the various causes which can result in this condition. Using a whiteboard, note the various differences and conditions which the person may be in.
* Explain the difference between involuntary responses and voluntary responses of a comatose patient.
* Explain the treatment and care of a patient in a coma or persistent vegetative state.
* Discuss the various causes of a spinal cord injury. Discuss how the level of injury to the spinal cord will determine the lasting effect and potential damage to the body.
* Outline the potential rehabilitation and care needs for a person with a spinal cord injury.
* Explain that the lasting effects of the spinal cord injury will vary depending on the type and location of the injury.
* Discuss the various emotional effects of a spinal cord injury versus the physical effects.
* Stress that the road to recovery from a head or spinal cord injury is often long and difficult, and these patients and residents will require compassionate, supportive care and encouragement.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 5. List common diagnostic procedures that are used to help detect nervous system disorders. (Refer to **PowerPoint slide 42**.)

* Briefly explain the methods used to diagnose neurological disorders: imaging studies and electroencephalography.
* Have learners refer to learning activities located at the end of the chapter.