PARKINSON’S DISEASE

INTRODUCTION

Parkinson’s disease is a disorder of the brain and the nervous system. It is one of the more common neurological diseases in people over the age of 60, and it is more common in men than in women. Parkinson’s disease is caused by slow and progressive damage to parts of the brain and nervous system that we use to control movement. Parkinson’s disease cannot be detected in its very early stages, and no one knows why it happens. Initially, the signs and symptoms of Parkinson disease can be treated with medications, but there is no cure for the disease. Eventually, the disease progresses and a patient with Parkinson’s disease will develop permanent complications and disabilities.

Parkinson’s disease is defined as a disease of the nervous system that affects voluntary movement.

OBJECTIVES

When the student has finished this module, he/she will be able to:

1. Identify a basic definition of Parkinson’s disease.
2. Correctly identify the basic cause of Parkinson’s disease.
3. Identify the two specific causes of Parkinson’s disease.
4. Identify the four most common signs and symptoms of Parkinson’s disease.
5. Explain how Parkinson’s disease is diagnosed.
6. Identify three common treatments for Parkinson’s disease.
7. Identify the name of a drug that is commonly used to treat Parkinson’s disease.
8. Identify a serious side effect caused by medication used to treat Parkinson’s disease.
9. Name three daily activities you will be responsible for when caring for patients with Parkinson’s disease.
10. Identify an eating disorder associated with Parkinson’s disease and a serious consequence associated with this disorder.

THE NERVOUS SYSTEM AND PARKINSON’S DISEASE

The nervous system is responsible for controlling basic body functions such as breathing, heart rate, digestion, sight, smell, taste, etc., and more complex body functions such as speech, memory, complex thinking, and voluntary movement, etc.

The brain is the center of control of all these functions. It sends out messages to the different organs and various parts of the body by way of nerve fibers. There are also nerve fibers within the brain itself. Some of the messages we do not control: when your heart rate speeds up or slows down, this happens automatically. Some of these messages are conscious and voluntary: if you decide to reach up and scratch you head, this happens because you consciously made it happen.

The nerve fibers are very similar to electrical wires with one important difference. An electrical wire is continuous, but nerve fibers have small gaps in them. The
signals/messages from the brain to the body cross over these small gaps using substances called neurotransmitters. The nerve fibers that go from the brain to the muscles that are under our conscious control are the ones that are affected in Parkinson’s disease. These nerve fibers use a neurotransmitter called dopamine.

WHAT CAUSES PARKINSON’S DISEASE?

The basic cause of Parkinson’s disease is damage to the parts of the brain and the nerve fibers that use the neurotransmitter dopamine. Because these areas of the brain and these nerve fibers do not function normally, there are low levels of dopamine, the signals we send to our muscles do not get through or they get through in an incomplete and disorganized way. For example, someone with Parkinson’s disease may decide to lift up his/her arm to shake your hand. But because the nerve fibers that are carrying this signal are damaged, that person may not be able to do it, or may only be able to do this movement in a way that is awkward, uncontrolled, and uncoordinated.

No one knows exactly what cause Parkinson’s disease, but most authorities believe it is a combination of two factors:

- Environmental factors: People who have used or had a lot of exposure to pesticides have a higher risk of developing Parkinson’s disease. Drinking well water on a consistent basis may contribute to Parkinson’s disease. People who live in rural areas or who are exposed to a lot of industrial pollution are also at a higher risk level.
- Genetic factors: The tendency to develop Parkinson’s may be inherited. However, only a very small percentage of all cases of Parkinson’s disease are clearly related to genetics.

THE SIGNS AND SYMPTOMS OF PARKINSON’S DISEASE

Parkinson’s disease develops slowly. People with Parkinson’s disease may notice that their sleep is disturbed, that they have a slight tremor in their hands, or their coordination is not as good as it once was. They might be a little depressed or lack energy. However, these signs and symptoms can be mild and subtle. People can easily ignore them or decide that these changes are just part of the normal aging process.

Learning Break: There is evidence that by the time someone with Parkinson’s disease begins to develop the characteristic signs and symptoms, there has already been extensive and irreversible damage to the dopamine-dependent nerve fibers.

However, the true signs and symptoms of Parkinson’s can’t be ignored. The four signs that are the most prominent and most commonly seen in patient’s with Parkinson’s disease are tremor, slow voluntary movement, posture and gait problems, and rigidity.

- Tremor: The tremor in a patient with Parkinson’s disease usually starts out as a mild, fine shaking, and it usually starts on one side of the body. It often will
happen even when the patient is resting; the arm or the hand will shake or quiver. The tremor can also progress to the point where the limb will shake very badly, and it can happen to the hand, the whole arm, or the foot or leg. The face and the tongue can also have tremors. The tremors may spread to both sides.

**Learning Break:** In some patients who have Parkinson’s disease, the tremors stop when the person moves the affected body part.

- **Slow, voluntary movement:** The technical term for this is *bradykinesia*. People with Parkinson’s disease move very, very slowly. As the disease gets worse, they not only move very slowly, but they cannot make wide-ranging, extensive movements.
- **Rigidity:** The muscles and the limbs become very rigid, especially if someone tries to move the affected arm or leg. The rigidity can become very obvious in the patient’s face: he/she will not be able smile, frown, etc. This is familiarly known as the Parkinson’s “mask.”
- **Posture and gait problems:** Difficulty walking and maintaining good posture usually happen late in the course of the disease. The patient cannot maintain his/her balance when standing up. They may be able to walk, but they walk very slowly, take very small steps, and need to shuffle.

Other signs and symptoms of Parkinson’s disease vary from patient to patient. Common things that may be seen include constipation, sweating, and sexual dysfunction. The patient’s speech is often slow and he/she may mumble. Some patients with Parkinson’s disease (approximately 15% to 30%) develop dementia. Unfortunately, the changes of Parkinson’s disease progress and are irreversible.

**HOW IS PARKINSON’S DISEASE DIAGNOSED?**

There is no screening test for Parkinson’s disease that can help physicians find people who have the disease (but don’t yet have the signs or symptoms) or who may develop Parkinson’s. There are no laboratory tests for Parkinson’s. CT scans, x-ray, and MRI cannot detect Parkinson’s disease. A PET scan can be used, but this test is very expensive, not widely available, and may not be covered by insurance.

**Parkinson's disease is diagnosed by a physical exam: the patient will have the characteristic signs of tremor, rigidity, posture/gait problems, and rigidity.**

**TREATMENT FOR PARKINSON’S DISEASE**

There is no cure for Parkinson’s disease. The disease progresses over the years and the patient becomes more and more limited in what he/she can do. Medications are available that can control these disease – to a point – but these only seem to be effective for about 4 to 6 years. After that, the sign and symptoms and disabilities get worse.

There are treatment options for Parkinson’s. Some are unproven and only work for a small subset of patients. Others may work for a while, but can eventually actually worsen
the signs and symptoms of the disease. Regardless of which therapies are chosen, they must be carefully tailored for each individual, and the patient carefully monitored for side effects.

Treatment for Parkinson’s disease includes surgery, deep brain stimulation, experimental therapies such as transplant therapy, gene therapy, and stem cell therapy, and medication. Medication will be covered in a separate section.

- Surgery: There are three types of traditional surgery that can be performed for patients with Parkinson’s disease, and they all basically accomplish the same goal. They all involve surgical removal of the parts of the brain that have been affected. These procedures are not commonly used for several reasons. First, there are serious complications. Also, they can only be used for a small number of patients with Parkinson’s disease. Because of these issues, surgical removal is an option for treating Parkinson’s disease has been essentially replaced by deep brain stimulation.

- Deep brain stimulation: Deep brain stimulation (DBS) first used in the 1970s. However, performing the procedure with the unsophisticated technology available at the time was very difficult. There were also serious complications, and DBS was essentially abandoned. Today, however, DBS is considered to be one of the most effective treatments for patients with advanced Parkinson’s disease. DBS involves placing a wire with an electrode into the affected area of the brain. The wire is attached to an electrical pulse generator. This acts in the same way as a pacemaker for the heart. It sends out a regular, intermittent electrical signal that stimulates that particular part of the brain. No one knows exactly how DBS works. However, for some patients it can be very effective. DBS is also used because the pulse can be easily adjusted for the patient’s needs, and the wire can be removed if DBS doesn’t work. DBS is very expensive, and because it involves surgery, infection is a possibility.

- Experimental therapy: Transplant therapy has been tried as a treatment for Parkinson’s disease, but at this point it hasn’t been very successful. Some researchers have tried to manipulate the genes that may be involved in Parkinson’s disease, and stem cell therapy is being investigated, but these approaches are still experimental.

Learning Break: The surgical procedures are used for patients who have not responded well to medication therapy.

MEDICATION THERAPY FOR PARKINSON’S DISEASE

Treating patients with medication is still the cornerstone of therapy for Parkinson’s disease. These drugs are very helpful, but they do not change the course of the disease or slow down its progression. There are several different classes of drugs that are used. These are the most common:

- Dopamine prodrugs: These drugs are converted to dopamine after they have been absorbed. Sinemet® is a very popular dopamine prodrug. The dopamine prodrugs
are the most effective for controlling the signs and symptoms of Parkinson’s disease and they have the fewest side effects.

- **Anticholinergic drugs**: Anticholinergic drugs such as Artane® and Cogentin® can help reduce tremor.
- **MAO-B inhibitors**: These drugs increase the amount of dopamine available and they are used as an addition to Sinemet® and other drugs of that class.
- **Dopamine agonists**: Dopamine agonists directly stimulate the parts of the brain and the nerve fibers that use dopamine. One of the more commonly used dopamine agonists is Requip®.

**Learning Break**: As a CNA you will not be responsible for administering medications to patients who have Parkinson’s disease. However, it is important that you recognize the drugs that these patients are prescribed. You also need to be aware of one of the most common and serious side effects of the medication that is most commonly prescribed for Parkinson’s disease.

Patients are usually started on a dopamine prodrug and other medications are added as needed. The dopamine prodrugs such as Sinemet® can be very helpful. But like all medications, they have side effects. **Dyskinesia** is the most common and the most serious of these side effects. Dyskinesia is defined as abnormal, involuntary movements. Because people with Parkinson’s have tremors, bradykinesia, and posture/gait abnormalities, it can be difficult to know if a patient is experiencing dyskinesia from his/her medications or if he/she is having a sign of Parkinson’s. Certainly, the patient may able to tell the difference, and if you have been working with this person on a regular basis, you may know, as well.

**Learning Break**: Do not try and determine if a movement pattern you are seeing is a dykinesia or simply a “normal” sign of Parkinson’s. Notify your supervisor.

**CARING FOR THE PATIENT WHO HAS PARKINSON'S DISEASE**

Medications and surgery are used to treat people with Parkinson’s disease, but these people need much more. Because of their disabilities, they need various degrees of help with their activities of daily living (ADL) such as eating, bathing, dressing, walking, etc. Physical therapy, occupational therapy, and speech therapy are useful, and you may be asked to accompany the patient to these therapy sessions and to help and encourage them during the sessions. But the day to day responsibility of assisting these people will be you responsibility. You will need to focus on the following areas.

- **Nutrition**: **Dysphagia** (difficulty swallowing) can be a sign of Parkinson’s disease. Because of this, the patient may have excessive drooling and be unable to swallow. The patient with dysphagia is at risk for malnutrition and can also aspirate food or liquid into the lungs – a very serious problem. The patient’s diet will be ordered by the physician. Following these orders is important; do not deviate from the ordered consistency (e.g., some patients can only eat soft or pureed food) or the size of each bite (some patients can only tolerate very small
pieces). *Never* rush the patient through a meal; this increases the chance of aspiration.

- **Skin care:** People with advanced Parkinson’s are less mobile and may be incontinent of urine and/or feces. Because of this, they can develop bed sores. The patient should be encouraged to move, the skin should be kept clean and dry, and if the patient is immobile, he/she needs frequent position changes.

- **Ambulation:** The patient with Parkinson’s disease cannot maintain a normal posture; simply standing upright without assistance can be impossible. These people also cannot walk normally; they can only take small steps and they need to shuffle. This limits their independence and puts them at risk for falls. You will need to determine how much assistance these patient need when ambulating. The physical therapy department will usually provide some direction in terms of how often and for how long the patient should walk, and how to help them. Many patients find it helpful to do some slow, gentle stretching before they walk. Also, many patients with Parkinson’s experience a “lag time” with physical activity. The patient may decide to move, but it takes them far longer after the decision to actually move. Help them by letting them know when it is time to ambulate, and then giving them extra time to get ready. When they do ambulate, tell them to focus and to look at each at their feet and legs and “visualize” the activity.