

## Patient Care Information

### What is Parkinson's Disease?

Parkinson's disease is a progressive neurological disorder which produces degeneration of cells in deep structures of the brain that control involuntary movement and muscle tone. Primary symptoms include resting tremor (shaking), bradykinesia (slowness), rigidity (stiffness), and postural instability (imbalance). Muscle power is not affected. Diagnosis is based on clinical examination, for there are no definite x-ray or laboratory abnormalities. If a patient has two of the four primary symptoms, and no other explanation is found, a positive diagnosis is made.

Parkinson's disease is associated with depletion of a chemical transmitter in the brain called "dopamine." This produces a relative excess of a competing transmitter called "acetylcholine." Therapy includes medications which attempt to restore this balance by increasing dopamine or decreasing acetylcholine.

Parkinson's disease is estimated to affect over 1 million Americans, with 50,000 new cases occurring each year. A definite cause has not been found. Infectious, toxic and genetic factors have been investigated, but no definite relationship has been detected. "Parkinsonism" may follow stroke, encephalitis, carbon monoxide poisoning or medication exposure; but "Parkinson's disease" has no known etiology.

### Treatment

The most effective treatment for Parkinson's disease is Sinemet. Sinemet consists of two chemicals: "L-Dopa," which is converted in the brain into dopamine; and "Carbidopa," which prevents metabolism of L-Dopa in the body before it reaches the brain. Five strengths of Sinemet are available: 10/100, 25/100, 25/250, 50/200 (CR), and 25/100 (CR). The top number refers to the mg. amount of Carbidopa, and the bottom number refers to the mg. amount of L-Dopa in each pill. The 50/20 (CR) and 25/100 (CR) are the newest Sinemet products, and are longer lasting (Controlled Release) than the other forms. When to begin Sinemet for each patient is controversial because problems occur with prolonged use.

**Dopamine agonists** stimulate the same receptors in the brain as dopamine. They do not require nerve transmission to work and therefore are helpful when Sinemet is losing its effectiveness. They may also be the drug of first choice for some Parkinson patients, particularly young-onset patients. Currently available agonists include "Parlodel," "Permax," "Mirapex," and "Requip."

**Eldepryl** slows the metabolism of dopamine by inhibiting an enzyme called "MAO." It thereby prolongs the duration of Sinemet effect.

**Tasmar** also prolongs the benefit of Sinemet by inhibiting an enzyme called "COMT." Both Eldepryl and Tasmar may increase Sinemet side effects. Three cases of death from liver failure in patients taking Tasmar have been documented. Liver function blood tests every two weeks are mandatory.

**Anticholinergics** are older medications developed before the discovery of Sinemet. They work by blocking the effects of relatively excessive acetylcholine. Examples include "Artane," "Cogentin," and "Kemadrin." They may be useful for tremor in some patients, but are less popular now because of frequent side effects.

**Symmetrel** has value in some patients, but is considered only a mild supplemental drug at this time.

**Other important treatment modalities** include frequent exercise, good nutrition, and, in severely affected patients, rehabilitation efforts (physical, occupational, and speech therapy).

**Neurosurgery** was a common treatment for Parkinson's disease until the introduction of levodopa in the late 1960's. With the loss of efficacy and complications of medical therapies, there has been a recent renewed interest in surgical treatments. The most common procedures involve a destructive lesion or stimulation of basal ganglia structures deep in the brain. Thalamotomy and thalamic stimulation are used for intractable tremor. Pallidotomy, pallidal stimulation, and subthalamic stimulation have been used in patients with motor fluctuations or dyskinesias. Embryonic tissue transplants are available on an experimental basis.

### **Are There Drugs To Avoid in Parkinson's Patients? YES!!**

**Demerol** has been associated with sudden death in patients taking Eldepryl. **Major tranquilizers** such as Thorazine, Haldol, Mellaril, Stelazine, Navane, Loxitane, and Prolixin, are relatively contraindicated. In fact, by blocking dopamine, they can produce a picture identical to Parkinson's disease. The **antidepressants** Triavil, Nardil, and Parnate and the **antiemetics** Compazine, Reglan, and Torecan have similar side effects. Blood pressure medications that contain **Reserpine** may produce parkinsonism by preventing release of dopamine.

### **Problems**

**Unfortunately, Parkinson patients have many problems despite advances in medical care.**

**On/Off Effect (Phenomenon)** occurs in advanced states and produces dramatic, often sudden, fluctuations in Parkinson symptoms. It, in part, represents erratic absorption and shortened duration of action of Sinemet medication. Patients may require their medication at very frequent intervals. **It is crucial that the hospitalized patient receive his medication in the same dosage and schedule as at home.** Stopping Sinemet may induce "Neuroleptic malignant syndrome," a potentially fatal disorder.

**Dyskinesias** or **Dystonia** are involuntary abnormal movements and muscle spasms that tend to begin in patients who have been on Sinemet for a long time. These symptoms occur, however, when the dopamine level is high in the brain. More frequent dosage schedules with smaller total dosage may be helpful in lessening these problems.

**Depression** is a common feature of this illness which needs to be treated specifically.

**Confusion** occurs frequently in later stages of this disorder. It may occur because of frequently associated **dementia**, because of medication effect, or a combination of both. The anticholinergics, dopamine agonists, and Eldepryl are the most likely medication offenders. Lowering dosage to lessen confusion, unfortunately, often sacrifices mobility.

**Falling**, also, is usually late manifestation of the disease process, but a very severe one. **Low blood pressure**, associated with advanced disease and medication effect, contributes to the problem. Fractures and other injuries can necessitate hospitalization and shorten life expectancy. Walkers, canes, and gait training may lessen this risk, but wheelchairs may be necessary for some patients.

**Constipation** occurs in most patients because of decreased bowel motility and medication effect. Adequate water consumption, stool softeners, bulking agents and foods, and routine bowel habits may help. Laxatives and enemas are useful in crisis situations, but chronic usage may aggravate the problem. **Urinary retention** is a particular problem in male patients using anticholinergic medication.

**Sleep disturbance** is another significant problem in Parkinson patients. Insomnia is not only intolerable to the caregiver at night, but also affects the patient's wellbeing during daytime. Abnormalities in neurotransmitters, depression, and medications are contributing factors, as well as stiffness and general discomfort. Daytime exercise, good sleep habits, nocturnal massage for stiffness may help. The use of antihistamines, antidepressants or minor tranquilizers may be necessary, as well as adjustment of Parkinson medication.

**Nutritional deficiency** is another serious common problem in the Parkinson patient. Difficulty swallowing, increased metabolic rate, and depression are contributing factors. Vitamin and caloric supplements may be necessary, as well as advice from a speech and swallowing expert.

Finally, the hospitalized Parkinson patient, because of slowness and stiffness, is at increased risk for **hospital-acquired complications**. Pneumonia, aspiration, urinary tract infection, deep vein thrombophlebitis, and decubitus ulcers are particular concerns. Mobilization, careful feeding, DVT prophylaxis, and attention to skin may be life saving. The nurse who meets the challenges of the Parkinson patient will learn skills for all others as well.