

## Medicine for Managers

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### Parkinson's Disease

**Parkinson's disease is a progressive degenerative neurological condition affecting the central nervous system. It has an incidence of about 0.2% and affects about 120,000 people in the United Kingdom. It generally affects adults in the sixth decade and beyond but younger people may acquire it and one in twenty is under the age of forty.**

It is characterised by deterioration in a sufferer's motor skills, speech and also other functions. The key features of the condition are muscle rigidity, tremor and bradykinesia (a general slowing of movement). Affected people may also develop disorders of posture, walking and in extreme cases, loss of the ability to move.

The transmission of nerve impulses in the nervous system is extraordinarily complex and requires a combination of electrical transmission along nerves and chemical transmission between nerves. In Parkinson's disease the production of a chemical transmitter in particular nerve cells (dopaminergic neurons in the substantia nigra [black substance] of the mid brain) results in decreased manufacture of dopamine. This in turn leads to insufficient nerve impulses to the motor cortex by the basal ganglia, where the stimuli for the body's muscles to work are produced. The result is the generalised reduction in muscle performance which produces the principal symptoms. Initially patients may feel tired and weak and things take longer to do. They may notice poor co-

*Parkinsons UK has an excellent website at [parkinsons.org.uk](http://parkinsons.org.uk) or a free helpline on 0808 800 0303*

ordination and problems such as deterioration of handwriting may become apparent. They may also notice a tremor in the arms which is usually apparent and is present at rest. Rigidity may also develop and occurs because of increased muscle tone (the muscles become stiffer) combined with increased joint stiffness and, with the tremor patients may display 'cogwheel rigidity' in which the arm movements become jerky when it is

moved passively. The bradykinesia is the most disabling feature of the disease, particularly in its early stages and it results in difficulty in movement, both in its initiation and commission. Patients develop a shuffling gait and appear almost to fall forwards as they walk. In the later stages of the disease patients do lose balance and fall. Other features include speech and swallowing disturbances and the development of a mask-like facial expression, cognitive impairment with difficulty in problem solving and retaining attention on activities.

The cause of Parkinson's disease is not known in the majority of cases but for some it may have a

genetic basis as 15% of sufferers have a first-degree relative with the disease.

The diagnosis of the disorder is based on medical history and neurological examination. There is no specific test although the positive response of the patient to treatment with levodopa is a clear indication. The identification of Lewy bodies in post mortem specimens is the only definite way of confirming that the patient had the disease. CT and MRI scans usually appear normal in Parkinson's sufferers although they do rule out other causes of similar symptoms such as brain tumours, stroke and other vascular diseases.

Most doctors agree that patients do not die of Parkinson's disease itself but of intercurrent medical diseases and mental deterioration usually provides the final cause of death.

Treatment of Parkinson's disease is usually with medication. Levodopa has been widely used for thirty years and works by being converted into dopamine within the body. There are a wide range of preparations such as *Sinemet* and *Madopar*. Eventually these drugs become ineffective. Other drugs block the dopamine receptor sites in the brain and reduce the rate of metabolism of the naturally occurring dopamine. Treatment with drugs should be augmented with rehabilitation which can include speech therapy, physical exercise and occupational therapy. Diet may be important because sufferers frequently experience constipation. A variety of alternative therapies have also been tried but there is not sufficient evidence to show whether they are effective.

Prognosis in the disorder is variable. Untreated patients tend to become bedridden about ten years after onset. With treatment the maintenance of independent activity lasts

longer but it is hard to predict. Age is an important factor in determining outcome. Decline of muscle function is slower in those with early diagnosis and treatment and mental deterioration is quicker in patients aged over seventy at diagnosis. Average life expectancy is reduced in Parkinson's patients but depends on severity, rate of progression and age of onset. However, with the modern treatments available, in general it is believed that life expectancy is not reduced by more than five years.

**Note** Famous sufferers of Parkinson's disease include actors Michael J Fox, Anna Neagle, Deborah Kerr, Vincent Price, Kenneth More, Terry Thomas and James Doohan (*Star Trek*), sportsmen such as Muhammad Ali and the dictators Adolf Hitler and Francisco Franco.

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