

## **Parkinson's Disease**

### **Fast Facts**

Parkinson's disease (PD) is a degenerative disorder of the central nervous system that often impairs the sufferer's motor skills and speech. PD belongs to a group of conditions called movement disorders. It is characterized by muscle rigidity, tremor, a slowing of physical movement (bradykinesia) and, in extreme cases, a loss of physical movement (akinesia). As a consequence, PD patients have increasing difficulty with controlling their body movements. Parkinson's disease is both a chronic and progressive illness, which results in a marked decrease in the health-related quality of life of patients and their caregivers and places a tremendous economic burden on society.

### **The facts**

- There are approximately 1.45 million PD sufferers across the seven major markets (US, France, Japan, France, Germany, Italy, Spain and the UK) in 2007.<sup>1</sup>
- PD is the second most common neurodegenerative disorder, after Alzheimer's disease.<sup>2</sup>
- Depression, a prominent feature of PD, occurs in 40-50% of patients, and may predate the motor manifestations of PD.<sup>3</sup>
- Patients experience an initial period of good response (also known as the 'honeymoon period') to the traditional PD medication, Levodopa (L-dopa), lasting approximately 2-5 years.<sup>4</sup>
- After this initial response, motor complications (dyskinesia and motor fluctuations) appear in 50%-90% of PD patients after 5 to 10 years of treatment with L-dopa.<sup>4,5</sup>
- In order to delay the use of L-dopa and its side effects, newer types of medication with better safety profiles, such as Azilect<sup>®</sup>, are increasingly preferred when initiating PD treatment.
- Overall cost estimates for PD vary from country to country, but the largest component of direct cost is typically inpatient care and nursing home



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costs, while prescription drugs are the smallest contributor. Indirect costs arising from lost productivity and carer burden tend to be high. The total cost in the UK has been estimated to be between £449million and £3.3billion annually, depending on the cost model and prevalence rate used.<sup>6</sup>

### **Epidemiology, genetics and mortality**

- The mean age of onset of PD is 55–60 years and the risk of developing PD increases significantly with age.<sup>7</sup>
- 1 in 20 people diagnosed with PD is younger than 40 years.<sup>8</sup>
- The prevalence (the total number of cases in a given population at one time) is estimated to be between 740 and 920 per 100,000 people worldwide.<sup>9</sup> Community-based studies show the incidence rate (the number of new cases occurring in a specified frame) is around 10 new cases per 100,000 people at age 50, rising to at least 200 per 100,000 people at age 80.<sup>10</sup>
- PD shows a clear age-relationship, with the prevalence rising from around 0.5–1.0% of the population aged 60–70 years, up to 4.0% among the 80–90 year-old age group.<sup>11,12</sup>
- Both prevalence and incidence will increase as the elderly population is growing. Expected prevalence in 2011 and 2015 compared to 2005.<sup>9</sup>

	<b>Prevalent cases of PD 2005-2015</b>		
	<b>2005</b>	<b>2011</b>	<b>2015</b>
<b>Europe</b>	1,350,800	1,474,300	1,587,500
<b>United States</b>	978,500	1,055,700	1,151,800
<b>Japan</b>	629,200	742,900	837,900

- Disease prevalence estimates vary from country to country around the world: both genetic predisposition and environmental factors may play a role. Caucasians in Europe and North America appear to have the highest prevalence.<sup>13</sup>



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## Diagnosis

PD (sometimes referred to as primary parkinsonism or idiopathic PD) corresponds to parkinsonism where no cause is found – this accounts for about 75% of parkinsonism cases<sup>9</sup>. Other forms of parkinsonism can be classified according to whether the cause is known or suspected, e.g. exposure to drugs, a head/brain injury (secondary parkinsonism), or whether the disorder occurs as part of another primary neurological disorder.

Due to this range of symptoms and wide differential diagnosis, PD can be difficult to diagnose. Indeed, at least one third of PD patients are said to receive an incorrect initial diagnosis; similarly, one third of patients experience a 3-year delay between initial symptoms and diagnosis.<sup>14</sup>

## Symptoms

- PD progresses slowly. A loss of 50-60% of dopaminergic neurones or a reduction in dopamine concentration of approximately 80% occurs before clinical symptoms are observed.<sup>15</sup> muscle rigidity, tremor, a slowing of physical movement (bradykinesia) and, in extreme cases, a loss of physical movement (akinesia).
- Parkinsonian tremor is worse at rest (4-7Hz (times/second)). It is often unilateral, affects about 70% of patients and is the presenting feature in most cases.<sup>16,17</sup>
- Up to 25% of patients experience very slight tremor or none at all.<sup>17</sup>
- Motor fluctuations are more likely to occur sooner in those whose symptoms start at an earlier age.<sup>17</sup>
- Over 50% of patients will develop dyskinesias after 5 years of standard therapy.<sup>18</sup>

## Non-motor symptoms and co-morbidities

- Although considered a classical motor disorder, PD is also increasingly associated with a number of non-motor symptoms that may be as disabling as the cardinal PD symptoms.



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- Depression, a prominent feature of PD, occurs in 40-50% of patients during the illness. It is unclear whether the depression is a result of PD-related pathology or a psychological reaction to a progressively disabling disease.<sup>4,19</sup>
- Anxiety is common in PD, occurring in 23-38% of patients.<sup>19</sup>
- Pain is a common problem in PD, affecting as many as 46% of patients, and can be either primary or secondary to motor dysfunction.<sup>19</sup>
- Dementia occurs in 20-25% of patients with PD and is usually a late feature.<sup>19</sup>
- Emotional and psychosocial well-being are also negatively affected by the disease: patients report feelings of isolation and being a burden to others.<sup>20,21</sup>
- In a study, over 80% of PD patients described their health as fair to poor, versus 46% of control patients (who were matched for age and co-morbidity).<sup>22</sup>
- The cause of death in PD is most commonly a secondary, co-morbid disorder, for example, pneumonia.<sup>7</sup>

### **Socioeconomic impact of PD**

- Overall cost estimates for PD vary from country to country. The total cost in the UK has been estimated to be between £449million and £3.3billion annually, depending on the cost model and prevalence rate used.<sup>6</sup>
- The UK study examined NHS costs, social service costs and private PD-related expenditure. NHS costs accounted for the largest proportion (38% of the total), followed by social service costs (35%) and private expenditure (27%).<sup>6</sup>
- Inpatient care and nursing home costs make up the greater proportion of NHS and social service costs, while prescription drugs are the smallest contributor.<sup>6</sup>
- The economic burden of the disease increases dramatically as the disease progress and patients use more healthcare resources as symptoms



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become more severe. Disease severity is the most important factor driving the cost of care.<sup>6</sup>

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