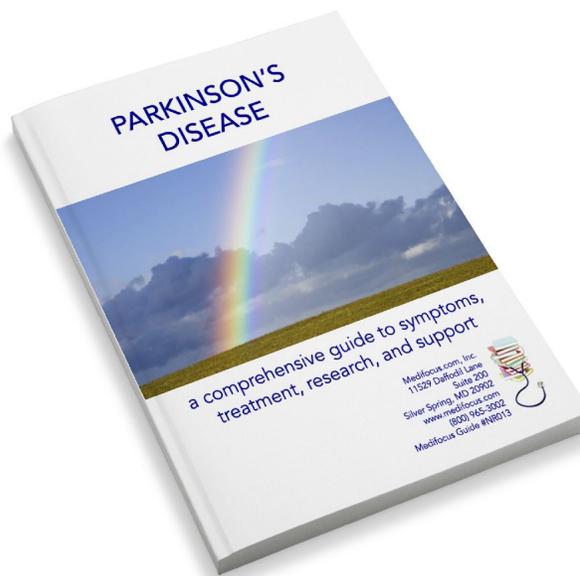


## Preview of the Medifocus Guidebook on: Parkinson's Disease

Updated January 11, 2024



This document is only a SHORT PREVIEW of the **Medifocus Guidebook on Parkinson's Disease**. It is intended primarily to give you a general overview of the **format and structure** of the Guidebook as well as select pages from each major Guidebook section listed in the Table of Contents.

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# 1 - Background Information

## Introduction

Chronic or life-threatening illnesses can have a devastating impact on both the patient and the family. In today's new world of medicine, many consumers have come to realize that they are the ones who are primarily responsible for their own health care as well as for the health care of their loved ones.

When facing a chronic or life-threatening illness, you need to become an educated consumer in order to make an informed health care decision. Essentially that means finding out everything about the illness - the treatment options, the doctors, and the hospitals - so that you can become an educated health care consumer and make the tough decisions. In the past, consumers would go to a library and read everything available about a particular illness or medical condition. In today's world, many turn to the Internet for their medical information needs.

The first sites visited are usually the well known health "portals" or disease organizations and support groups which contain a general overview of the condition for the layperson. That's a good start but soon all of the basic information is exhausted and the need for more advanced information still exists. What are the latest "cutting-edge" treatment options? What are the results of the most up-to-date clinical trials? Who are the most notable experts? Where are the top-ranked medical institutions and hospitals?

The best source for authoritative medical information in the United States is the National Library of Medicine's medical database called PubMed®, that indexes citations and abstracts (brief summaries) of over 7 million articles from more than 3,800 medical journals published worldwide. PubMed® was developed for medical professionals and is the primary source utilized by health care providers for keeping up with the latest advances in clinical medicine.

A typical PubMed® search for a specific disease or condition, however, usually retrieves hundreds or even thousands of "hits" of journal article citations. That's an avalanche of information that needs to be evaluated and transformed into truly useful knowledge. What are the most relevant journal articles? Which ones apply to your specific situation? Which articles are considered to be the most authoritative - the ones your physician would rely on in making clinical decisions? This is where *Medifocus.com* provides an effective solution.

*Medifocus.com* has developed an extensive library of *MediFocus Guidebooks* covering a wide spectrum of chronic and life threatening diseases. Each *MediFocus Guidebook* is a

high quality, up- to-date digest of "professional-level" medical information consisting of the most relevant citations and abstracts of journal articles published in authoritative, trustworthy medical journals. This information represents the latest advances known to modern medicine for the treatment and management of the condition, including published results from clinical trials. Each *Guidebook* also includes a valuable index of leading authors and medical institutions as well as a directory of disease organizations and support groups. *MediFocus Guidebooks* are reviewed, revised and updated every 4-months to ensure that you receive the latest and most up-to-date information about the specific condition.

## About Your MediFocus Guidebook

### ***Introduction***

Your *MediFocus Guidebook* is a valuable resource that represents a comprehensive synthesis of the most up-to-date, advanced medical information published about the condition in well-respected, trustworthy medical journals. It is the same type of professional-level information used by physicians and other health-care professionals to keep abreast of the latest developments in biomedical research and clinical medicine. The *Guidebook* is intended for patients who have a need for more advanced, in-depth medical information than is generally available to consumers from a variety of other resources. The primary goal of a *MediFocus Guidebook* is to educate patients and their families about their treatment options so that they can make informed health-care decisions and become active participants in the medical decision making process.

The *Guidebook* production process involves a team of experienced medical research professionals with vast experience in researching the published medical literature. This team approach to the development and production of the *MediFocus Guidebooks* is designed to ensure the accuracy, completeness, and clinical relevance of the information. The *Guidebook* is intended to serve as a basis for a more meaningful discussion between patients and their health-care providers in a joint effort to seek the most appropriate course of treatment for the disease.

### ***Guidebook Organization and Content***

#### **Section 1 - Background Information**

This section provides detailed information about the organization and content of the *Guidebook* including tips and suggestions for conducting additional research about the condition.

#### **Section 2 - The Intelligent Patient Overview**

This section of your *MediFocus Guidebook* represents a detailed overview of the disease or condition specifically written from the patient's perspective. It is designed to satisfy the basic informational needs of consumers and their families who are confronted with the illness and are facing difficult choices. Important aspects which are addressed in "The Intelligent Patient" section include:

- The etiology or cause of the disease
- Signs and symptoms
- How the condition is diagnosed
- The current standard of care for the disease
- Treatment options

- New developments
- Important questions to ask your health care provider

### **Section 3 - Guide to the Medical Literature**

This is a roadmap to important and up-to-date medical literature published about the condition from authoritative, trustworthy medical journals. This is the same information that is used by physicians and researchers to keep up with the latest developments and breakthroughs in clinical medicine and biomedical research. A broad spectrum of articles is included in each *MediFocus Guidebook* to provide information about standard treatments, treatment options, new clinical developments, and advances in research. To facilitate your review and analysis of this information, the articles are grouped by specific categories. A typical *MediFocus Guidebook* usually contains one or more of the following article groupings:

- *Review Articles*: Articles included in this category are broad in scope and are intended to provide the reader with a detailed overview of the condition including such important aspects as its cause, diagnosis, treatment, and new advances.
- *General Interest Articles*: These articles are broad in scope and contain supplementary information about the condition that may be of interest to select groups of patients.
- *Drug Therapy*: Articles that provide information about the effectiveness of specific drugs or other biological agents for the treatment of the condition.
- *Surgical Therapy*: Articles that provide information about specific surgical treatments for the condition.
- *Clinical Trials*: Articles in this category summarize studies which compare the safety and efficacy of a new, experimental treatment modality to currently available standard treatments for the condition. In many cases, clinical trials represent the latest advances in the field and may be considered as being on the "cutting edge" of medicine. Some of these experimental treatments may have already been incorporated into clinical practice.

The following information is provided for each of the articles referenced in this section of your *MediFocus Guidebook*:

- Article title
- Author Name(s)
- Institution where the study was done
- Journal reference (Volume, page numbers, year of publication)

- Link to Abstract (brief summary of the actual article)

*Linking to Abstracts:* Most of the medical journal articles referenced in this section of your *MediFocus Guidebook* include an abstract (brief summary of the actual article) that can be accessed online via the National Library of Medicine's PubMed® database. You can easily access the individual abstracts online via PubMed® from the "electronic" format of your *MediFocus Guidebook* by clicking on the corresponding URL address that is provided for each cited article. If you purchased a printed copy of a *MediFocus Guidebook*, you can still access the article abstracts online by entering the individual URL address for a particular article into your web browser.

## **Section 4 - Centers of Research**

We've compiled a unique directory of doctors, researchers, medical centers, and research institutions with specialized research interest, and in many cases, clinical expertise in the management of the specific medical condition. The "Centers of Research" directory is a valuable resource for quickly identifying and locating leading medical authorities and medical institutions within the United States and other countries that are considered to be at the forefront in clinical research and treatment of the condition.

Inclusion of the names of specific doctors, researchers, hospitals, medical centers, or research institutions in this *Guidebook* does not imply endorsement by Medifocus.com, Inc. or any of its affiliates. Consumers are encouraged to conduct additional research to identify health-care professionals, hospitals, and medical institutions with expertise in providing specific medical advice, guidance, and treatment for this condition.

## **Section 5 - Tips on Finding and Choosing a Doctor**

One of the most important decisions confronting patients who have been diagnosed with a serious medical condition is finding and choosing a qualified physician who will deliver high-level, quality medical care in accordance with currently accepted guidelines and standards of care. Finding the "best" doctor to manage your condition, however, can be a frustrating and time-consuming experience unless you know what you are looking for and how to go about finding it. This section of your *Guidebook* offers important tips for how to find physicians as well as suggestions for how to make informed choices about choosing a doctor who is right for you.

## **Section 6 - Directory of Organizations**

This section of your *Guidebook* is a directory of select disease organizations and support groups that are in the business of helping patients and their families by providing access to information, resources, and services. Many of these organizations can answer your questions, enable you to network with other patients, and help you find a doctor in your geographical area who specializes in managing your condition.

## 2 - The Intelligent Patient Overview

# PARKINSON'S DISEASE

### Introduction to Parkinson's Disease

*Parkinson's disease* (PD) is a progressive, neurodegenerative disorder that primarily affects movement, muscle control, and balance, but can also affect non-motor functions. It is part of a group of conditions known as *motor systems disorders*. The disease was named for James Parkinson, a general practitioner in London who first described its symptoms in the 19th century. Symptoms describing Parkinson's disease are mentioned in the writings of medicine in India dating back to 5,000 BCE, as well as in Chinese writings dating back approximately 2,500 years.

The underlying disease process of Parkinson's disease involves the death of dopamine-producing cells and the subsequent reduction of available dopamine in the brain which affects motor function. The hallmark symptoms of Parkinson's disease (PD) are asymmetric (one side of the body) tremors at rest, rigidity (muscle stiffness), *bradykinesia* (slowness in movement), and impairment of gait and posture (walking and standing erect). There is currently no cure for Parkinson's disease; it is always chronic and progressive, meaning that the symptoms are persistent and typically worsen over time. The rate of progression varies from person to person, as do the intensity of the symptoms. Parkinson's disease itself is not usually fatal and many people live with the disease live into their older years. Mortality in individuals with PD is usually attributable to secondary complications, such as pneumonia or fall-related injuries.

There are three types of Parkinson's disease and they are grouped by age of onset:

- *Adult-Onset Parkinson's Disease* - This is the most common type of Parkinson's disease. The average age of onset is approximately 60 years old. The incidence of Adult-Onset PD rises noticeably as people advance in age (70's and 80's).
- *Young-Onset Parkinson's Disease* - The age of onset is between 21-40 years old. Although the incidence of Young-Onset Parkinson's disease is very high in Japan (approximately 40% of cases diagnosed with Parkinson's disease), it is still relatively uncommon in the U.S., with estimates ranging from 5-10% of all PD cases diagnosed.
- *Juvenile Parkinson's Disease* - The age of onset is before the age of 21. The incidence of Juvenile Parkinson's disease is very low.

There are hereditary forms of PD that affect up to 15% of individuals with Parkinson's disease and are usually associated with Juvenile or Adult-Onset PD.

Parkinson's disease significantly impairs the quality of life of patients but for their families as well, especially their primary caregivers. It is therefore important for caregivers and family members to educate themselves and become familiar with the course of Parkinson's disease and the progression of symptoms so that they can be actively involved in communication with health care providers and participating in all decisions regarding treatment.

## ***Epidemiology of Parkinson's Disease***

According to the American Parkinson's Disease Association (APDA), there are approximately 1.5 million people in the U.S. who suffer from Parkinson's disease - approximately 1-2% of people over the age of 60, and 3-5% of the population over age 85. The incidence of PD ranges from 8.6 to 19 per 100,000 people. Approximately 50,000 new cases are diagnosed in the U.S. annually. That number is expected to rise as the general population in the U.S. ages. All races and ethnic groups are affected.

The incidence of Parkinson's disease among males and females is generally equally distributed when onset of disease is before the age of 60. When onset is past 60 years of age, most studies report a higher incidence in males.

## ***Pathophysiology of Parkinson's Disease***

Increasing evidence suggests that Parkinson's disease is a multi-system brain disease in which various neurotransmitter systems are affected, including those controlling voluntary movement.

Deep in the brain, below the cerebral cortex, there are interconnected areas of grey matter collectively known as the *basal ganglia* (literally "basement structures"). These structures include the *caudate nucleus*, *putamen*, and *globus pallidum internus* (GPi) which are involved in controlling voluntary movement. Next to the basal ganglia are a cluster of nerve cells called the *substantia nigra* which produce *dopamine*, an essential neurotransmitter that is responsible for transmitting electrical signals between nerve cells to regulate movement. The substantia nigra sends out fibers to the *corpus striatum* (bands of tissue in the caudate nucleus and putamen) where the dopamine is released. The transmission of dopamine and its release into the corpus striatum is necessary for smooth, coordinated muscle movement.

Parkinson's disease occurs when there is a disruption of dopamine production, which leads to impaired neurotransmission (communication between brain cells) in the basal ganglia. As the nerve cells in the brain that make dopamine are destroyed, the reduced levels of dopamine cause the nerve cells to fire out of control, resulting in a loss of smooth, controlled muscle activity. The death of dopamine-producing cells in the substantia nigra leads to reduced levels of dopamine reaching the corpus striatum, which is the primary pathology of Parkinson's disease. By the time symptoms develop, there is at least a 60% loss of dopamine-producing cells in the substantia nigra and an 80 to 90% loss of dopamine in the corpus striatum.

Parkinson's disease is also characterized by the presence of *Lewy bodies*, abnormal structures that are found in the nerve cells of the substantia nigra as well as in other secondary locations. Lewy bodies are strongly correlated with neurodegeneration and are considered a diagnostic hallmark of

Parkinson's disease.

In addition, it is recognized that the disease process begins long before motor symptoms are clinically visible. Many patients report to their doctors that they already experienced non-motor symptoms associated with PD, such as fatigue, constipation, and olfactory changes, several years before onset of overt symptoms.

## ***The Braak Model of Parkinson's Disease***

The most widely cited model to explain the progressive neurodegenerative pathology of PD is the Braak hypothesis. This model suggests that PD develops in the following stages:

- Stages 1 and 2 - These are the earliest stages of the disease that start in the medulla and the olfactory bulb. Symptoms of these early stages include rapid eye movement sleep behavior disorder during which individuals physically act out their dreams while sleeping. There is also a decreased sensation of smell. At these early stages, motor symptoms are typically lacking.
- Stages 3 and 4 - During these stages, the disease progresses to the substantia nigra and other midbrain and forebrain structures. Classic motor symptoms of PD develop and the disease is typically diagnosed at these stages.
- Advanced PD - The disease progresses further to involve the cerebral cortex with the onset of symptoms of cognitive impairment and hallucinations.

To learn more about the Braak model of PD, please follow this link:

<https://pubmed.ncbi.nlm.nih.gov/19067353/>

## ***Risk Factors for Parkinson's Disease***

The hallmark features of Parkinson's disease are attributed to the degeneration of dopamine-producing neurons in the nigrostriatal system of the brain. Motor symptoms of PD develop when the loss of dopaminergic neurons reaches 60% to 80%. Although the underlying causes of what exactly triggers the degeneration of these neurons are currently not known, several risk factors have been identified which may, alone or in combination, play a role in the development and/or progression of PD. These risk factors include:

- Age - Age is the most important risk factor for PD. As the population ages, the worldwide incidence of PD is expected to rise significantly.
- Genetic predisposition - Researchers have found gene mutations related to juvenile and Young-Onset PD. Recently, a new mutation was identified on the LRRK2 gene that is believed to be related to idiopathic PD (from an unknown cause). Other genes that have been identified include SNCA, PARKIN, and PINK1. Another genetic risk factor for PD, particularly for Jews of Ashkenazi origin in the GBA1 gene - the gene that causes Gaucher

disease. A mutation of the GBA1 gene promotes the accumulation of a protein in the brainstem called *Î±-synuclein*, which increases the likelihood of developing PD.

- **Family history** - According to the National Institute of Neurologic Disorders and Stroke (NINDS), approximately 15% to 20% of individuals with Parkinson's disease have a close relative who exhibited a parkinsonian symptom. Estimates are that family members of an individual with PD have three to four times the risk of developing PD than the general population.
- **Oxidative damage** - Free radicals (unstable molecules) circulating in the brain may cause oxidation, resulting in damage to dopamine-producing neurons. Some researchers refer to free radicals as endogenous toxins (toxins produced by the body).
- **Toxins and chemicals** - Exposure to environmental toxins such as pesticides may cause degeneration of the dopamine-producing cells. It is known that exposure to the herbicide Paraquat™ elevates the risk for Parkinson's. Although not clearly understood, it appears that smoking lowers the risk of developing PD. Chemicals that are thought to be risk factors for PD include polychlorinated biphenyls, trichloroethylene, and carbon tetrachloride.
- **Head injuries** - Some studies suggest that head injuries from falls or other types of head trauma may increase the risk of PD.
- **Occupational exposure** - There is a higher prevalence of PD among welders, farmers, cabinet makers, and clothes cleaners than among other occupations. Industrial exposure to heavy metals (such as iron, zinc, copper, mercury, and magnesium) and drinking well water with high levels of heavy metals, also elevate the risk of PD.
- **Accelerated aging of neural cells** - This theory proposes that for unknown reasons, the normal age-related death of brain cells is accelerated in patients with Parkinson's disease, causing the dopamine-producing cells to "age" and die faster than normal.

The **Intelligent Patient Overview** in the complete **Medifocus Guidebook on Parkinson's Disease** also includes the following additional sections:

- **Diagnosis of Parkinson's Disease**
- **Treatment Options for Parkinson's Disease**
- **Quality of Life Issues and Lifestyle Interventions in Parkinson's Disease**
- **New Developments**
- **Questions to Ask Your Doctor about Parkinson's Disease**

To Order the Complete **Guidebook on Parkinson's Disease** [Click Here](#)  
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## 3 - Guide to the Medical Literature

### Introduction

This section of your *MediFocus Guidebook* is a comprehensive bibliography of important recent medical literature published about the condition from authoritative, trustworthy medical journals. This is the same information that is used by physicians and researchers to keep up with the latest advances in clinical medicine and biomedical research. A broad spectrum of articles is included in each *MediFocus Guidebook* to provide information about standard treatments, treatment options, new developments, and advances in research.

To facilitate your review and analysis of this information, the articles in this *MediFocus Guidebook* are grouped in the following categories:

- Review Articles - 114 Articles

The following information is provided for each of the articles referenced in this section of your *MediFocus Guidebook*:

- Title of the article
- Name of the authors
- Institution where the study was done
- Journal reference (Volume, page numbers, year of publication)
- Link to Abstract (brief summary of the actual article)

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## 4 - Centers of Research

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Use the *Centers of Research* directory to contact, consult, or network with leading experts in the field and to locate a hospital or medical center that can help you.

The following information is provided in the *Centers of Research* directory:

- **Geographic Location**

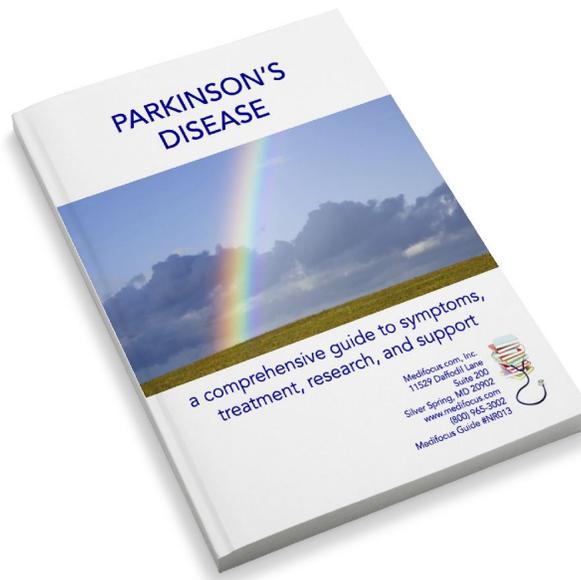
- United States: the information is divided by individual states listed in alphabetical order. Not all states may be included.
- Other Countries: information is presented for select countries worldwide listed in alphabetical order. Not all countries may be included.

- **Names of Authors**

- Select names of individual authors (doctors, researchers, or other health-care professionals) with specialized research interest, and in many cases, clinical expertise in the management of this specific medical condition, who have recently published articles in leading medical journals about the condition.
- E-mail addresses for individual authors, if listed on their specific publications, is also provided.

- **Institutional Affiliations**

- Next to each individual author's name is their **institutional affiliation** (hospital, medical center, or research institution) where the study was conducted as listed in their publication(s).
- In many cases, information about the specific **department** within the medical institution where the individual author was located at the time the study was conducted is also provided.



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