

## Parkinson's Disease Symptom Management: An Interdisciplinary Approach

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### INTRODUCTION

The complexity of Parkinson's disease (PD) symptoms and their physical, emotional, social, and financial impact presents a significant treatment challenge, even for the most expert and sensitive practitioner. An integrated, interdisciplinary team approach offers the skills and support necessary to ensure the highest quality of care for patients and their caregivers (Table 1). Patients derive maximum benefit from access to a full complement of professional services, including rehabilitation therapies, emotional and psychological support. This includes the provision of appropriate information and education at each stage of the disease process. Caregivers also need timely and appropriate information, support, and resources.

**TABLE 1** Sample Configuration: Interdisciplinary Teams

	Physician	Physical therapy	Speech pathology	Occupational therapy	Nurse	Social worker	Music therapy	Tai chi/ yoga	Massage	Neuro- psychology	Rehab psychology	Patient	Caregiver	Dietician
Balance loss and falls	X	X	X	X	X						X	X	X	
Gait training	X	X		X		X					X	X		
Daily self-care	X	X	X	X	X						X	X	X	X
Controlling pain	X	X	X	X							X	X		
Exercise and activity	X	X	X	X	X						X	X		
Carepartner education	X	X	X	X	X					X	X	X	X	
Stress management	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anxiety and depression	X	X	X	X	X	X	X	X	X	X	X	X	X	
Cognition	X	X	X	X	X				X	X	X	X	X	
Speech and voice	X		X								X	X		
Swallowing and eating	X		X	X							X	X	X	X
Saliva control	X		X	X							X	X	X	X

## **THE INTERDISCIPLINARY TEAM**

Although patients can benefit from the services of multiple disciplines, patients and even providers sometimes lack sufficient information regarding the availability and particular expertise of each of the rehabilitation and complementary therapies. This can be addressed through the referral process and an education program for patients that not only provides the right information about the disease at the right time, but informs them of multidisciplinary treatment options. This information, combined with prompt team recognition of changing patient and family needs through periodic reassessment, allows “best practice” management throughout the continuum of care.

Coordination of care through regular communication is essential among team members to ensure a comprehensive plan that addresses all areas of concern. It is essential for all team members to have a basic understanding of PD, specialized skills in treating patients with PD, and access to ongoing staff education to foster the expertise needed to manage these complicated patients effectively.

Together with the neurologist and primary care physician, nurses and social workers are at the hub of the referral process, providing and coordinating patient care and support along the disease continuum, from the time of diagnosis through the challenges of managing the complexities of advanced disease.

One of the most difficult situations faced by practitioners in the current healthcare system is the limited amount of time available for evaluation and treatment. There is often not enough time to adequately and completely discuss the disease process, goals of treatment, medications, to say nothing of the broader psychosocial and spiritual issues.

The availability of professionals who are well informed and prepared to listen and offer support and referral is important at the time of diagnosis and throughout the disease process. The emotional impact of dealing with the diagnosis combined with the need for early-stage information, developing a plan of self-care, and making appropriate connections for support are all areas that can best be addressed by the nurse and the social worker.

Registered nurses with a strong background in the treatment of PD play a key role in managing clinical aspects of patient care, providing education regarding self-care strategies and medication management. Nurses serve as a primary resource and contact for patients and caregivers throughout the continuum of care, initiating or assisting with referrals to appropriate therapies.

Dealing with the diagnosis, addressing issues of ambiguous loss, maintaining a balance in family relationships, communication, work concerns, and early-stage feelings of isolation are just some of the concerns that can be addressed early through one-on-one counseling, peer counseling, support groups, referrals to community resources, and community service agencies. Licensed social workers play a key role in helping patients and caregivers deal with social and emotional issues and may make referrals as needed for more specialized services. Psychologists who have an understanding of the dynamics of chronic illness and family relationships, and ideally an understanding of PD, are helpful in addressing some of the complicated dynamics that develop over time.

Nurses and social workers partner effectively as case managers, coordinating the services of allied professionals such as physical and occupational therapists, speech language pathologists, dietitians, psychologists, and other specialized service providers.

Patient and family-centered care is the goal and ideal, with both patients and caregivers as key participants in the entire process of developing and executing their plan of care and support. However, providing the right information at the right time, remaining accessible, and providing appropriate interventions that promote and maintain maximum quality of life are often challenges in our current healthcare system.

While the progression of symptoms results in the gradual onset of disability over time, independence can be prolonged for many years with a combination of quality medical care, compensatory adjustments of lifestyle, rehabilitation, education, and supportive services.

Most patients are likely to benefit from the expertise of rehabilitation therapists at various times throughout their disease progression as needs change or new problems are identified, though the type and amount of treatment interventions can vary widely with each individual. All skilled rehabilitation therapy interventions should remain focused on identified patient problems relating to functional impairment.

The following are many of the physical and psychological manifestations and challenges of PD progression, accompanied by descriptions of the therapies and professionals employed to care for patients throughout the disease process.

## **MANAGING DAILY SELF-CARE**

Many PD patients report significant frustration and difficulty in performing the simple tasks of daily living. Symptoms, including bradykinesia, muscle rigidity, and declining balance skills, affect a patient's abilities to complete

daily tasks such as eating, dressing, bathing, and homemaking in a safe and time-effective manner. Patients should be advised to consider scheduling their daily tasks in relation to when their medications are most effective. Medication adjustment is important in maximizing patient mobility but may not be completely effective in eradicating the difficulties experienced in performing activities of daily living.

Regular exercise can enhance the muscle strength and flexibility needed to perform daily tasks safely. Rehabilitation therapies and adaptive equipment can also aid patients and caregivers in the performance of these important daily activities.

Evaluation and treatment by members of a multidisciplinary rehabilitation team can offer effective compensatory strategies, e.g., improving bed mobility and facilitating transfers to a chair, tub, or car. Appropriate adaptive equipment may also enhance the patient's ability to eat, dress, and complete hygiene tasks. Individual patient needs and concerns will vary, as should the instruction in compensatory strategies for homemaking, cooking, laundry, yard work, and other functions particular to each patient.

Care partner instruction may also enhance safety and assistance with a patient's performance of regular activities. If a patient is unable to safely perform necessary daily tasks independently or with care partner help, referrals to social services are indicated to aid in accessing community resources or other assistance as needed.

## **ACTIVITY AND EXERCISE**

Regular physical activity is an important element in the comprehensive management of PD. Physical therapy consultation is appropriate early in a patient's course of treatment to evaluate and teach appropriate home exercise programs. The rehabilitation team should be consulted periodically to reassess functional status and modify the plan of care as needed.

Objective, validated testing is recommended to assess baseline status and functional improvements resulting from participation in an exercise program or other treatment. Instructions in ongoing home exercise programs and referrals to community exercise resources are excellent ways to maintain ongoing activity after discharge from skilled therapies and should be included as part of a comprehensive care plan. Group exercise classes and adult day programs may help to foster patient motivation and follow-through.

Regular exercise can help reduce changes in motor disability, muscle strength, ambulation and quality of life (1–3). A variety of exercise methods, including water exercise, have been successfully utilized by PD patients.

Exercise programs should be based on individual ability and interest levels and must accommodate other health concerns. The program should include elements of stretching, strengthening, and conditioning activities, and caregivers may require instruction to assist as needed. Safety considerations should also be taken into account when designing the exercise program.

Approximately 30% of PD patients remain active in the workforce (4). Comprehensive assessment of daily tasks should also include assessment of work duties, and workplace evaluation may be indicated. Worksite modifications can be extremely helpful for those citing difficulty with work-related tasks.

A well-planned activity program should balance both movement and relaxation in the daily routine. Many patients seek a holistic approach to managing their PD symptoms and may wish to include complementary therapies such as tai chi, yoga, or other forms of movement. These activities can strengthen the mind-body connection, enhance wellness and relaxation, and even reduce stress, all important elements in a comprehensive program.

Other relaxation activities may include deep breathing, guided imagery, massage therapy, music, or involvement in forms of creative expression. Balancing activity and relaxation in daily life enhances quality of life and aids in helping those with PD take an active role in coping with their disease.

## **GAIT TRAINING**

Common gait changes in PD include a narrowed base of support, en bloc turns, festination, freezing, and decreases in step size, heel strike, and arm swing. Gait may also be compromised by other disease symptoms and medication side effects, e.g., dyskinesia and dystonia. Secondary medical conditions, injuries related to falling, foot dysfunction, and vision changes all have the potential to compromise a patient's ability to walk safely or for extended distances.

Many "helpful hints" have been written for patients to use in improving their gait pattern, but these multiple cues may be impractical to maintain on a conscious level while performing functional tasks. Physical therapists skilled in gait evaluation and training ensure comprehensive evaluation and appropriate, graduated training in compensation strategies, and/or the use of assistive devices to meet the patient's particular needs.

Many patients with PD benefit from the use of gait-assistive devices, which can help improve balance, reduce joint stress, and enhance feelings of security when moving about. A narrowed base of support, reduced heel strike, and difficulty turning corners prohibit safe use of four-post walkers and quad canes for the majority of PD patients. Single-end canes, walking

sticks, or wheeled walkers (with swivel casters, hand brakes, and bench seat) are usually more appropriate options, but their use should be assessed by a knowledgeable physical therapist prior to patient purchase. Inappropriate or poorly fitting devices will not maximize patient safety, and may contribute to balance problems.

Basic safety strategies, including instruction in appropriate footwear and the removal of home environmental barriers, should not be overlooked during gait instruction. Gait training should include practice on a variety of floor surfaces and with daily tasks such as reaching, turning, and carrying objects. Balance declines as the patient tries to focus on several tasks simultaneously; therefore, multitasking capabilities should also be assessed within the gait training session (5). Music therapy techniques, including rhythmic auditory stimulation, may also be effective in facilitating and optimizing ambulation (6).

## **PREVENTING FALLS**

Balance changes are frequently seen in the moderate stages of PD. Injury related to balance loss and falling is directly related to increased mortality rates, rising health care costs, and reduced quality of life (7–9). Repeated falls can also contribute to chronic pain, heightened anxiety, and/or decreased activity levels. Unfortunately, medications currently used in PD symptom control prove less efficacious in controlling symptoms of postural instability than other primary symptoms.

A multidisciplinary approach is the most effective for assessing the many reasons falls may occur and to provide appropriate interventions that can improve patient safety. Loss of flexibility, postural changes, reduced muscle strength, joint pain, postural hypotension, dizziness, changes in vision, and other medical conditions may all contribute to loss of balance and falls. Exercise programs, medications, rehabilitation therapies, complementary therapies such as tai chi, and other treatments should all be considered within a comprehensive fall-prevention program.

Compensation strategies may be helpful for patients experiencing retropulsion or freezing. “Counterbalancing strategies” when reaching overhead, opening doorways, or turning corners can reduce the likelihood of posterior balance loss, while a variety of “tricks” (including visualization, music, projected light or laser beams and inverted walking sticks) have been documented to aid some patients affected by freezing episodes (10–12).

Thorough assessments of the home environment and the patient’s performance of daily living activities are also important in the fall-prevention plan. Home modifications and use of appropriate adaptive equipment can be best identified after evaluation and treatment by an

occupational therapist. Occupational therapy sessions may include practicing safety strategies in the kitchen, bathroom, and other areas in the home environment where falls are most likely to occur.

Reduced cognitive skills may also impact patient safety and contribute to falls. Cognitive screening and assessment is recommended in order to tailor patient instruction and safety strategies to an appropriate level. Family or other caregivers may need to be involved in the education process to ensure that the recommendations are understood and utilized.

An emergency plan should be devised for all patients who experience frequent falling. An emergency response system (i.e., cell phones, Lifeline, family/neighbor “check-in,” or other appropriate alert systems) should be established. Caregivers should also be instructed in safe methods for helping patients get up from the ground after a fall, as they frequently provide primary assistance in these situations.

## **CONTROLLING PAIN**

Complaints of pain are not uncommon in patients with PD and may be related to excessive rigidity, postural changes, inability to perform independent position change, dystonia, injuries sustained from falling, or other medical conditions. A complete assessment is needed to determine the source, frequency and intensity of pain. Instruction in recognizing pain behaviors (symptoms) may be required for caregivers as patients experiencing significant cognitive changes may exhibit agitation, wandering, anxiety, or increased confusion as pain-related behaviors.

While some patients require the use of prescribed medications or over-the-counter analgesics for pain control, there are a variety of other nonpharmacological interventions that may offer relief or reduce discomfort. Many patients have reported improvements as a result of complementary therapies, such as massage and acupuncture, though further research is required to assess the benefits of these treatments (13,14). Use of superficial heat, cold, or physical therapy modalities may also be effective in pain management. Instruction in proper positioning, seating systems, and posture principles is recommended to decrease discomfort resulting from improper postural alignment. Relaxation strategies and other forms of complementary medicine may also prove beneficial as part of a holistic approach to pain management.

## **SPEECH/VOICE/COMMUNICATION**

An estimated 70–100% of people with PD experience changes in their ability to communicate effectively. Rarely, these changes are a first or very early

manifestation of PD (15). The primary changes in speech and voice include soft or fading voice volume, monotone pitch, imprecise or slurred articulation of speech sounds, rapid and irregular rate of speech, “stutter-like” speech, and hoarse voice quality.

The changes in speech and voice are caused by the physiological changes that occur with PD. Muscle rigidity, tremor, freezing, slowness, and diminished coordination of movements can all have an impact on the complicated coordinations of movement needed for clear, loud speech and voice. The emotional, social, and economic impact of this decreased vocal ability can be significant—reduced self-confidence, social isolation, frustration related to communication breakdowns, and reduced ability to continue working.

Medication management of PD, while extremely important and helpful in managing symptoms, does not typically improve speech and voice skills. Intervention by a speech language pathologist, initiated early in the disease process, offers the best possible outcomes of speech therapy. Traditional speech therapy techniques, such as practice on oral motor exercises, specific speech sound drills, and techniques to control speech rate and better coordinate breathing with voice, have been shown to be helpful.

The most effective treatment, however, that has documented positive and long-lasting results is the Lee Silverman Intensive Voice Treatment (LSVT) (16,17). This treatment protocol was first published in 1989. The treatment concepts are quite simple: “Think Loud/Think Shout.” The focus is on improving action of the vocal folds, using high effort to overcome muscle rigidity, and on intensity of practice and effort.

As PD progresses, it is sometimes necessary to “augment” speech and voice skills with devices such as personal amplifiers, word or picture boards, or computerized communication systems. Speech pathology intervention to maximize communication abilities may be needed at many different times during the course of PD as individual abilities change.

## **HEARING**

While hearing loss is not caused by PD, it should be considered in any progressive neurological disease that occurs in an elderly population. Identifying hearing loss and providing amplification in the form of hearing aids can be very important in improving communication. Other adaptations that can improve communication with hearing loss are making sure the speaker is always visible to the listener, preferably face to face, and reducing background or competing noise.

## **EATING AND SWALLOWING**

PD often has an impact on an individual's ability to eat and drink safely, requiring intervention by a number of professionals on the rehabilitation team. The speech pathologist focuses on the safety of the swallowing action, identifying underlying problems, making any necessary compensation for reduced ability and modifying the diet as needed for safety. The occupational therapist focuses on meal-preparation skills and strategies for getting the food from the plate to the mouth. The social worker's focus is on financial resources for purchasing food and assistance in getting the food to the home. The nurse and dietitian address general nutrition, constipation, hydration, and maximizing medication absorption with diet.

Warning signs of an eating- or swallowing-related problem include coughing or choking during eating, difficulty swallowing pills, weight loss, frequent respiratory infections, slowed rate of eating, and decreased pleasure in eating.

The speech pathologist's evaluation of swallowing safety typically includes a videofluoroscopic swallow evaluation. The patient is observed, using moving x-ray, eating and drinking substances with a variety of consistencies (thin and thick liquid, puree and solids) and trying a variety of safety techniques (e.g., chin tuck). This evaluation identifies the presence, absence, or risk of aspiration. Avoiding aspiration of contents into the lungs during eating and drinking is a primary goal of the intervention, since it often leads to pneumonia.

A diet modification that may reduce the risk of aspiration is thickening a patient's liquids to a nectar- or honey-like consistency. Techniques such as a chin tuck or double swallow may further reduce risk. Often a diet that consists of more "slippery" foods and avoids foods that are dry or crumbling can help with swallowing. Pills can be taken in applesauce.

Excessive saliva is often a concern related to reduced swallowing abilities. Learning cues to swallow more often, taking frequent sips of water or sucking on ice chips, keeping lips closed when not eating or talking, reducing sugar in the diet, and practicing lip-strengthening exercises may be helpful.

## **COGNITION**

Decrease in cognitive skills occurs frequently in individuals with PD, particularly as the disease progresses. About 15% have diagnosed dementia, but many more are disabled by cognitive problems (18). These changes in cognitive abilities can affect an individual's safety, independence, and quality of life.

The primary cognitive changes include decline in memory, problem-solving abilities, visual-spatial skills, and changes in personality and language (19). The rehabilitation team, along with professionals in psychology and neuropsychology, can provide helpful insights into cognitive problems. Patients and caregivers can be taught how to cope with these changes and compensate whenever possible.

Memory changes have the greatest impact on short-term memory, particularly the ability to remember and follow through on an activity after being distracted. PD patients may have difficulty organizing and storing new information, may get distracted while trying to learn new information or skills, and may require prompts or memory aids. Learning to use a new walking device, a television remote control, or remembering medication schedules may become difficult. Simplifying tasks and providing memory aids, such as pill timers, calendars, and memo boards, may be very helpful and can also bolster a patient's confidence and self-sufficiency.

A decrease in executive function may create problems with activities such as driving, managing finances, and meal planning and preparation. Bradyphrenia further reduces problem-solving ability. Important tasks or decisions may need to be shifted to a family member, a formal driving evaluation may be needed, and other routine tasks may need to be simplified.

The visual-perceptual changes in PD, such as reduced contrast sensitivity and visual inattention, may make using walking devices, going up and down stairs, and walking outside with changes in terrain difficult and unsafe. Brightly colored tape to mark walker handholds and the edges of steps, in addition to decluttering the household, may be helpful.

PD patients often experience feelings of depression and anxiety, both of which can decrease quality of life. Mood changes are often managed with medications. Ancillary therapies, including social services, music therapy, pastoral care, and creative expression, can help restore a sense of well-being and a positive outlook. Referral to a clinical psychologist for individual and/or family counseling may be indicated.

Language deficits such as those seen after a stroke or head injury are not usually seen in PD (20). However, many individuals report difficulty in thinking of words, searching for words to express an idea, and losing their "train of thought" while talking. The speech pathologist can work with patients to recapture some expressive language skills and also help the family with successful communication. Simplifying and shortening verbal directions, reducing extraneous background noise, asking "choice" rather than open-ended questions, and giving the patient extra time to process information and to respond are all helpful with language and information processing.

The rehabilitation social worker is also a key professional in helping families cope with cognitive decline. Accessing external resources, such as Social Security Disability, grocery delivery services, handicap transportation agencies, and resources for financial assistance, may be helpful.

## **CAREGIVER INSTRUCTION AND SUPPORT**

The National Family Caregivers Association estimates that in the past year 54 million Americans were involved in caregiving, spending an average of 73 hours a week or 10.5 hours a day providing care for a family member (21). All too often, the needs of these caregivers are not addressed until “burnout” or illness/injury occur.

Regarding PD, caregivers often lack adequate information or education and feel overwhelmed at the thought of trying to navigate the healthcare maze. Education regarding access to appropriate financial, supportive, and community resources is essential for caregivers, as is information about respite care options and self-care strategies.

Instruction in proper body mechanics for the physical aspects of caregiving can reduce the risk of injury to both the patient and the caregiver. Rehabilitation referrals regarding home modification, adaptive equipment, and assistance with daily activities can also be helpful to family caregivers.

The emotional aspects of caregiving can be extremely taxing, as families struggle with problems relating to role reversal, changing family dynamics, financial planning, and the physical changes experienced by their family member with PD. Social services and counseling can help caregivers adapt to these changes. Caregivers may also need specific recommendations, support, and resources to cope with the cognitive changes that PD patients experience.

Support groups may help caregivers to maintain balance and support through sharing common experiences with other group members. It is imperative that caregivers have the education, information, and support necessary to provide assistance for the PD patient, as well as to take appropriate care of themselves along the way.

Healthcare professionals must also recognize the value of caregivers as members of the interdisciplinary team. As the primary source of support for most people with PD, caregivers’ observations and information should be considered when developing the care plan, or when a patient requires hospitalization or transition to higher levels of care. Both patient and caregiver input is essential to care plan development and should be reassessed periodically to ensure agreement and cooperation with the ongoing plan.

Information for patients, families, and healthcare professionals can be obtained from the following organizations:

National Parkinson Foundation  
1501 NW 9th Avenue  
Miami, FL 33136  
800-327-4545  
[www.parkinson.org](http://www.parkinson.org)

Parkinson's Disease Foundation  
William Black Medical Building  
Columbia-Presbyterian Medical Center  
710 W 168th St,  
New York, NY 10032-9982  
800-457-6676  
[www.pdf.org](http://www.pdf.org)

American Parkinson Disease Association  
1250 Hylan Boulevard, Suite 4B  
Staten Island, NY 10305-1946  
800-223-2732  
[www.apdaparkinson.org](http://www.apdaparkinson.org)

The Michael J. Fox Foundation for Parkinson's Disease Research  
Grand Central Station  
P.O. Box 4777  
New York, NY 10143

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