Parkinson’s Disease: Speech and Swallowing

By:
Marjorie L. Johnson
MA/CCC-SLP
Struthers Parkinson’s Center
Minneapolis, MN

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Introduction

Most people with Parkinson’s disease (PD) will experience changes in speech, voice and swallowing at some point during the course of the disease. The same PD symptoms that occur in the muscles of the body – tremor, stiffness and slow movement – can occur in the muscles used in speaking and swallowing. This can cause the following issues:

- Soft voice
- Mumbled or fast speech
- Loss of facial expression
- Problems communicating
- Trouble swallowing

While PD medications help improve many symptoms, they are not as helpful for speech and swallowing problems. Many people report little improvement in speech and voice with changes in medication. Still, some people do report that their voices are stronger when PD medicines are at peak effectiveness.

Most people get the best improvement with speech and swallowing when medications are paired with a speech therapy program. Speech-language pathologists are trained to evaluate and treat speech, language, memory and swallowing problems. Every person who has speech or swallowing changes associated with PD, whether mild or severe, is encouraged to consult with a qualified speech-language pathologist. Your physician or other health care professional can refer you to a qualified speech-language pathologist who can develop a personalized speech therapy program for you.

Like other symptoms of PD, difficulties with speech and swallowing will vary from one person to another. This book will provide you with information, tools and exercises to help you better understand and manage speech and swallowing problems.
About 75% of people with PD experience changes in speech and voice at some time during the course of the disease. These changes usually come on gradually and can vary from moderate to severe.

Communication is a vital part of daily life. Problems communicating can lead to feelings of frustration, depression and withdrawal. Learning how PD affects communication and what you can do about it can help you better cope with problems that you might experience.

For example, many of the problem areas can be improved with speech therapy. Talk to your doctor or health care professional about an evaluation by a qualified speech-language pathologist.

**How Do I Know if I Have Problems with Speech and Communication?**

This self-test can help you determine if you have a communication problem. Think about the following statements, and place a check mark next to the ones that apply to you.

- I am often asked to repeat a statement.
- People look slightly confused or as if they are trying hard to listen when I speak.
- My care partner says that I sometimes slur or mumble words.
- My care partner asks that I speak louder.
- I feel that my care partner is ignoring me or may need a hearing aid.
- I do not attend social gatherings as often as before.
- I notice that I often stop trying to communicate in a group where others seem to talk over me.
- I feel like people do not listen to me anymore.
- I feel like people think that I don’t have anything interesting to say.
- I try to avoid the telephone.
- I need to clear my throat often.
- I cannot complete a conversation without feeling frustrated about my inability to communicate what I have to say.

If you checked any of these statements, you are probably experiencing changes in communication related to PD.
Care Partner Speech and Communication Survey

If you are a care partner, family member or friend who has regular contact with a person with PD, complete this questionnaire. Check the statements that are true for your family member or friend.

- I have difficulty hearing when s/he speaks.
- I have difficulty understanding his or her speech.
- S/he does not talk as much as in the past.
- S/he does not attend social functions as frequently as in the past.
- S/he often asks me to make phone calls or order from a menu for him or her.
- S/he clears his or her throat often.
- S/he often sounds as if s/he is running out of breath when speaking.
- S/he suspects that I need a hearing aid.
- S/he thinks I ignore what s/he has to say.

If you checked more than one box, your family member or friend probably has problems with speech and communicating.

What Can I Do to Improve My Speech and Communication?

In addition to seeing a speech-language pathologist, there are some strategies that you, your family and your friends can use to improve communication.

Take Care of Your Voice

It is important to take care of your voice. Here are some simple suggestions for good “voice hygiene.”

- Drink plenty of water or other non-caffeinated, non-alcoholic liquids each day.
- Do not try to shout over noise when you talk.
- Rest your voice when it is tired. Like other muscles in your body, the muscles controlling your speech need a break sometimes.
- Reduce throat clearing or coughing. Use a hard swallow or soft sound instead.
- Reduce or eliminate heartburn.
- If the air is dry in your home, use a humidifier.
Tips for Family and Friends

Family and friends are often the best support system for people with PD. There are several things you can do to help your loved one communicate more effectively.

The first and most important thing is to encourage your family member or friend to consider speech therapy when changes in voice and speech are noticed. A speech-language pathologist can develop a home exercise program tailored to his or her needs. The following tips and strategies are also helpful:

- Look at one another when talking. Lip reading can help you understand more of the conversation.
- Reduce background noise. Turn off the radio and TV, close car windows and shut doors to noisy areas.
- Be aware that people with PD may not show facial expressions because of rigid facial muscles. Don’t assume that your family member/friend does not understand your message. Don’t depend on facial expression to gauge reaction.
- Use shorter sentences, and encourage your family member/friend to do the same.
- Ask questions that can be answered in a short sentence or with a “yes” or “no.”
- Be patient. Allow ample time for the person with PD to communicate. Don’t rush or force responses.
- While PD does not cause hearing loss, it is more common as people age. If you suspect your family member/friend has hearing loss, a hearing aid might help. Ask a physician or other health care professional about an evaluation.

Keep Talking

The best way to practice talking is to talk! Do not limit your speaking because you feel self-conscious or have difficulty. The saying “use it or lost it” applies to speech, too.

Here is a list of possible conversation topics. If you don’t have a companion to talk to, talk out loud to yourself!

- Talk about your family: who is related to whom, where everyone is from, etc.
- Describe a favorite hobby or pastime in detail.
- Give a report about a trip or vacation you enjoyed.
- Discuss a period of time or particular event you recall from childhood.
- Describe your favorite food or restaurant.
- Give your opinion and thoughts about a favorite topic.
• Talk about things you hope to accomplish in the next year.
• Acknowledge people by sharing what it is you most appreciate about them.

Facial Exercises

Many individuals with PD request face and mouth exercises to reduce the effects of rigidity of muscles in the face and increase facial expression. Try the exercises below to figure out which muscles need the most work.

Start with 10 repetitions of each facial movement explained below. Each exercise should be completed with purposeful movements and sustained effort. For instance, if smiling is the exercise, try to smile as wide as you can, and hold each smile for 5-10 seconds. Make sure you continue to breathe throughout the exercises. Try practicing in front of a mirror, so you can see your muscles work.

3. Alternate puckering and smiling.
   Pucker as tightly and smile as hard as you can. To increase the benefit of this exercise, knit your eyebrows together when you pucker, and raise the brows when you smile.
4. Open your mouth and move the tip of your tongue all around the lips.
   The tongue should touch every part of the lips: bottom, top and both corners. Movements should be deliberate, not darting.
5. Open your mouth and move the tongue around the gumline.
   Move your tongue over the back of top and bottom teeth, front of top and bottom teeth and edges of top and bottom teeth.
6. Open your mouth as wide as you can – hold – relax – repeat.
7. Say KA – a prolonged sound – as loud and hard as you can.
8. Say PA-TA-KA as loud and fast as you can.

Singing and Voice

Singing is a great exercise for the voice! Singing uses the same muscles that are used for speech. Try taking a deep breath and singing your favorite songs. Gently reach for the high and low notes and sing the lyrics as clearly as you can. This is not only great exercise – it can help you feel good emotionally, too.

See Appendix A for details about the anatomy of speech production.
Chapter 2
Swallowing Changes

People with PD may notice changes or difficulty with chewing, eating or swallowing. These changes can happen at any time, but they tend to increase as PD progresses. Common changes include the following:

- Slowness in eating
- A sensation that food is caught in the throat
- Coughing or choking while eating or drinking
- Difficulty swallowing pills and drooling

How Do I Know if I Have a Swallowing Problem?

This self-assessment can help you determine if you have a swallowing problem. Carefully consider each statement below as it relates to you and your swallowing. Check the statements that apply to you.

- I have recently lost weight without trying.
- I tend to avoid drinking liquids.
- I get the sensation of food being stuck in my throat.
- I tend to drool.
- I notice food collecting around my gumline.
- I tend to cough or choke before, during or after eating or drinking.
- I often have heartburn or a sore throat.
- I have trouble moving food to the back of my mouth.
- I have trouble keeping food or liquid in my mouth.
- It takes me a long time to eat a meal.
- I sometimes have trouble swallowing pills.
- My eating habits have changed recently or I have a loss of appetite.
- I notice changes in my voice quality after eating or drinking.

If you checked any boxes above, you may need to see a speech-language pathologist for a swallowing assessment. Your physician or other health care provider can help you with a referral.
Care Partner Swallowing Survey

If you are a care partner, family member or friend who has regular contact with a person with PD, complete this questionnaire. Check the statements that are true for your family member or friend.

- S/he seems uninterested in food.
- S/he often coughs during meals.
- S/he often coughs following a meal when we are doing other activities such as watching TV or reading.
- It takes him/her longer to eat a meal than it used to.
- S/he sounds “wet” or “gurgly” when s/he speaks.
- I have had to use the Heimlich maneuver on him/her.

Checked boxes are symptoms of chewing, swallowing or eating difficulties. Encourage the person with PD to seek referral for a swallowing evaluation by a qualified speech-language pathologist. A physician or health care provider can help with a referral.

How Can I Improve My Swallowing?

The following tips and techniques can help improve your eating, chewing and swallowing.

- Always sit upright when eating, drinking and taking pills.
- Chew small amounts of food well, and swallow it all before adding more.
- Put your fork down between bites to slow yourself down.
- Make yourself swallow twice after every bite.
- Take small sips when drinking. Alternate bites of food and sips. This helps clear food from the mouth and throat.
- Take one sip at a time. Do not gulp.
- Be wary of straws. Straws are useful when someone has severe tremors or dyskinesias but can put too much liquid too far back too fast. Put the straw only in the front of the mouth.
- Keep your chin slightly down or at least parallel to the table. There is sometimes a tendency to lift the chin when drinking the last little bit of liquid in a cup or bottle. When the chin is raised, there is an increased risk of getting fluid in the lungs. Don’t try to drink out of a can. Use a glass instead.
- Don’t talk with food in your mouth.

The types of foods you eat can affect chewing and swallowing. Some foods, such as raw vegetables, nuts and peanut butter, may be more difficult to chew or swallow. In
general, the best foods are ones that are moist, slippery, don’t crumble or fall apart and require less vigorous chewing. A speech-language pathologist or registered dietician can recommend foods and beverages that are easiest to swallow. An occupational therapist can recommend various types of helpful tools that can make eating a more pleasant experience.

**What Can I Do About Drooling?**

If you tend to drool, you probably don’t have more saliva than you used to have; you are just not swallowing it as automatically as before. Frequent sips of water or sucking on ice chips during the day can help you swallow more often. When you are not talking or eating, keep your head up, with your chin parallel to the floor and your lips closed. Sugar tends to make more saliva in the mouth, so reducing sugar intake can be helpful.

Many people with PD complain that they have a thick phlegm or mucous in the throat. Drinking more water will help thin this phlegm. Drinking carbonated beverages or tea with lemon may also help. Eating or drinking dairy products can make phlegm worse.

See Appendix B for details about the anatomy of swallowing.
What Is a Speech-Language Pathologist?

Speech-language pathologists are healthcare professionals trained to evaluate and treat people with speech, voice, language, memory and swallowing problems. Many are trained specifically in treating people with PD. A speech-language pathologist has a graduate degree and is certified by the American Speech-Language and Hearing Association (ASHA).

You can find speech-language pathologists at local hospitals and rehabilitation centers. They also provide services to patients in care centers, clinics and even at home. In addition, many speech-language pathologists have private practices that accept new patients with referral from a physician. Evaluation and treatment costs are usually covered in part by Medicare or other medical insurance providers.

How Can I Find a Speech-Language Pathologist?

Your physician or other health care provider may be able to refer you to a speech-language pathologist who is experienced with PD. To find a speech-language pathologist in your area, visit the website of the American Speech-Language and Hearing Association at www.asha.org/findpro or call 1-800-638-8255.

What Happens When I Visit a Speech-Language Pathologist?

At the appointment, the speech-language pathologist will evaluate your speech, voice, swallowing and memory/thinking function. If indicated, he or she will recommend a specific course of treatment, and together you will establish treatment goals. Treatment may focus on improving overall communication and, in some cases, swallow function and/or thinking skills.

What Is the Lee Silverman Voice Treatment?

Ongoing research regarding a speech therapy program known as the Lee Silverman Voice Treatment (LSVT) method is funded by the National Institutes of Health (NIH) and the U.S. Department of Education. The LSVT method is highly regarded within the medical community because of its demonstrated effectiveness in improving voice and speech in persons with PD.

Dr. Lorraine Ramig of the University of Colorado and the Wilbur James Gould Voice Research Center in Denver pioneered LSVT. It is considered the first speech treatment for PD proven to significantly improve speech after one month of treatment.

Exercises taught in the LSVT method are easy to learn and typically have an immediate impact on communication. Improvements have been shown to last up to two years following treatment. LSVT methods have also been used with some success in treating speech and voice problems in individuals with atypical Parkinson syndromes such as
Shy-Drager syndrome, progressive supranuclear palsy (PSP) and multiple system atrophy (MSA). Research studies are evaluating the effects of LSVT on improving swallow function as well as speech production.

For more information on LSVT or to find an LSVT-certified clinician, visit www.lsvtglobal.com or call 1-888-438-5788.

**When Should I See a Speech-Language Pathologist?**

Early intervention is key to maintaining and improving communication and swallow function. As soon as you or a care partner notice changes in speech, swallowing or memory and cognition, it is time to seek help from a speech-language pathologist. It is easier to learn strategies and techniques than it is to rebuild what has already been lost. Still, it is never too late to get help for speech and swallowing. Improvements following therapy at whatever stage of PD are often surprising and rewarding. Self-assessments included in Chapters 1 and 2 of this book can help you decide if you should see a speech-language pathologist.

**Alternative Treatment for Speech and Voice**

Collagen injections have been used in the treatment of voice and/or speech impairment in PD. The purpose of collagen injections is to build up vocal folds that do not close completely while talking. The procedure involves injecting collagen directly into the vocal folds. Individuals who have undergone this procedure report some improvement in voice, specifically loudness and voice quality. However, the injection does not improve respiratory or articulatory function. The collagen effect typically lasts for about six months, then it must be re-injected. After each injection, the body slowly absorbs the collagen. As this happens, there is usually a gradual decline in voice function. Collagen injections do not work for everyone. More information can be obtained by consulting an ear, nose and throat specialist.

**Assistive Communication Devices**

In some cases, fatigue or other illness may make it difficult for you to use your normal voice. At times, it may seem difficult to talk at all. When this happens, using an augmentative or assistive communication device can make it easier to communicate.

Assistive devices come in all shapes, sizes and prices. A personal amplification system is the device most often used by persons with PD. It is most effective for people who have a soft voice. Using a microphone and speaker system, the device amplifies speech. The microphone can be hand-held, worn on the head like a pair of glasses or as a headset or attached to a shirt pocket or collar. The amplifiers do not affect breath, articulation or rate of speech, and they are not particularly effective with whispered speech.

Other communication devices range from hand-made communication boards to sophisticated computerized equipment. The latter can be expensive and cumbersome, and some people think they are distracting. However, for other people this is acceptable in exchange for an increased ability to communicate. A speech-language pathologist can recommend a device that is appropriate for you.
Chapter 4
Memory and Thinking Changes in PD

Speech-language pathologists can be helpful when dealing with changes in memory and thinking that sometimes occur as PD progresses. Slowness in responding, day-to-day forgetfulness, trouble concentrating, especially when other things are going on, and feelings of sadness or depression can be signs of changes in thinking. Sometimes PD medications, which are so important in helping the physical symptoms of PD, can make a person less alert and more likely to be confused and can even cause hallucinations.

Most of us probably have experienced short-term memory lapses. Trying to remember all of the items needed at the grocery store, what you went into the basement to get or what you did three days ago can be difficult at times. Some changes in memory seem to be a part of the normal aging process. People with PD experience these same challenges but report that their problems seem more severe or happen more often than would be expected due to normal aging.

**Thinking changes can be a challenge. They may include any or all of the following:**

- Reduced ability to concentrate or think through an activity
- Reduced ability to solve problems
- Slowness in responding, or needing increased time to think through information
- Requiring additional time to think of what you want to say
- Difficulty thinking of a specific word you want to use
- Loss of your train of thought while speaking
- Being easily distracted

If you are concerned about changes in your memory, thinking or concentration, ask your physician for an evaluation. Adjusting the dose of or discontinuing a particular medication can often correct the problem. The physician can also assess the cause of cognitive problems, such as undetected depression or underlying infection.

Your physician may refer you to a speech-language pathologist who can further evaluate memory and thinking skills. He or she may work on a team with other health care professionals, such as occupational therapists, nurses and social workers. A comprehensive evaluation can pinpoint the exact nature of the memory and thinking changes. It can lead to therapy or other strategies to make living with PD easier and safer, giving you more independence and self-confidence.
Brain Power Boosters

- Read for pleasure. Discuss articles in newspapers or magazines. Use a red pen to underline or circle important information.
- Work crossword puzzles or word search puzzles.
- Go through old photos and make memory books for your children and grandchildren.
- Play board or card games.
- Develop or continue a favorite hobby, such as bird watching or crafts.
- Exercise daily with some outside activity, such as short walks in the neighborhood, sweeping sidewalks or gardening.
- Plan a household job to do every day.

Memory Joggers

- Keep a detailed diary of events and review it every day.
- Keep a calendar of appointments and engagements and review it daily.
- Have paper and pencil by each phone in your home.
- Organize lists in categories to stimulate memory.
- Focus on remembering main points, not trying to recall every detail.

Tips for Family and Friends

- Always be eye-to-eye when talking to the person with PD. Don’t try to talk when you cannot see each other.
- Socializing in small groups or one-on-one will probably be more satisfying than trying to socialize in large groups. Talk beforehand about who will be in the group and what possible topics may come up.
- Don’t jump from topic to topic during conversation.
- Use proper names rather than pronouns (say “Sally” instead of “she”).
- When asking someone with PD to make a choice, offer options. For example, instead of asking, “What would you like for dinner?” say, “Would you like chicken or beef?”
- Every morning, review upcoming activities for that day. Write down important information, such as where you are going and when you will return, on a dry erase board in a highly visible area of the home.
- Keep routines the same, and perform activities of daily living in the same order every day. People who have memory problems function better during the day if they know what is going to happen and when.
How Do We Produce Speech and Voice?

To improve communication, it is helpful to understand the five parts of speech and voice production. Each part builds upon the next, and all work together as a system.

1. **Respiration**

   Respiration, or breathing, is the fuel for speaking. The respiratory system is composed of the lungs, ribs and diaphragm. The diaphragm is a dome-shaped muscle that sits just under the lungs and on top of the stomach area. As we fill our lungs with air, the diaphragm flattens and the rib cage expands outward and rises slightly. This part of the respiratory cycle is called inhalation. Once the lungs have filled, the exhalation part of the respiratory cycle begins. As the air leaves the lungs, the diaphragm rises and the rib cage moves inward and downward. It is this cycle of inhalation and exhalation that supports our voice and gives us the power for a strong voice. Voice starts at the top of the breath, at the moment when the cycle changes from inhalation to exhalation. Muscle stiffness and reduced muscle movement make it more of a challenge for people with PD to fill the lungs completely and to forcefully exhale.

   Control of inhalation and exhalation enables a person to maintain adequate loudness of speech throughout a conversation. If the breathing muscles are not well-controlled, the voice tends to fade away at the end of a sentence. If too few breaths are taken, there is not enough respiratory support for a strong voice. A person with PD may speak at the bottom of his or her breath—inhale, exhale, then speak—rather than at the top of the breath—inhale, speak, exhale remaining air.

2. **Phonation**

   Your vocal folds, also called vocal cords, are two small bands of muscle that sit horizontally across the top of the airway and lie within the larynx, or voice box. During the exhalation portion of the breathing cycle, as air is rushed up through the windpipe, the vocal folds meet and begin to vibrate rapidly. This vibration is the “buzz” of our voice. If the vocal folds do not meet well or do not maintain a consistent vibration, the voice may sound hoarse or breathy and soft. If the vocal folds do not stretch well, the voice may sound monotone or flat.

3. **Resonance**

   Resonance determines the richness of the voice. As the buzz of the voice moves up from the vocal folds, the amount of opening of the throat, mouth and passage to the nose subtly change the tone. People with PD have a tendency to not open the mouth widely enough,
and the voice sounds thin or flat. If the soft palate, located at the back of the roof of the mouth, doesn’t close off the passage to the nose, the voice may have a nasal quality.

4. Articulation

The articulatory system is comprised of the muscles of the face, lips, tongue and jaw. While speaking, these muscles move at rapid speeds in a coordinated manner, turning the buzz of the voice into understandable sounds and words. If these movements are slowed because of muscle stiffness, or if they don’t move to all of the right targets within the mouth, the speech will sound slurred or mumbled. Sometimes people with PD have a rate of speech that is simply too fast to allow the tongue or lips to reach all of the targets. Tremor or dyskinesias in the oral structures can make this coordination even more difficult.

5. Facial Expression

Much of what we say is communicated by our facial expression. Unfortunately, due to muscle rigidity, many people with PD have difficulty moving the facial muscles. Think about a time when your face was very cold. You might have noticed that it was difficult to move your facial muscles, and your speech became slightly slurred or unclear. This sensation is similar to the one experienced by individuals with reduced movement in the facial muscles. When there is reduced facial expression, the listener may think that the person with PD is uninterested in conversation, not understanding what is said or even angry.

Putting It All Together

Clear and understandable speech consists of sitting up as straight as possible, taking a deep abdominal breath, exhaling with good energy, closing and vibrating the vocal folds, opening the mouth widely and using precise tongue and lip movements for articulation.

Try the following steps for practice:

1. Sit up straight.
2. Take a deep breath and feel your stomach area expand as you fill your lungs.
3. As you begin to exhale, start your voice on a loud and clear “ah.” Think of your “ah” as coming from your breathing and being thrown across to the other side of the room in an arc.
4. Continue taking deep breaths, and start your voice as you exhale. Give each word a new breath as you say any of the following:
   - Days of the week
   - Months of the year
   - Numbers 1-20
   - Letters of the alphabet

Remember to use plenty of breathing energy to power your voice and to exaggerate your tongue and lip movements. Do not strain to push your voice from your throat area.

More voice and speech practice materials are included in Chapter 1 of this book.
Appendix B
Anatomy of Swallowing

There are three stages of a swallow: oral, pharyngeal (also called transition) and esophageal. All three work together as a system, and all may be affected by PD.

1. Oral Stage

The oral stage begins when food is placed into the mouth, chewed, formed into a ball on top of the tongue and moved to the back of the mouth.

Because the tongue, lips, jaw and face are all composed of muscles, the oral stage of swallowing can be affected by muscle rigidity, reduced movement, tremors or dyskinesias in the same way mobility in an arm or leg can be affected.

Changes due to PD in this stage of swallowing can include a feeling of excess saliva in the mouth, food or liquid slipping out from the lips, dry mouth, food trapped around the gumline and teeth, difficulty moving food to the back of the mouth and difficulty starting the swallow itself.

2. Transition Stage

The second stage of a swallow starts the moment the food is propelled from the tongue into the throat. The stage ends when the food has moved down the throat and enters the esophagus, or food tube, bypassing the trachea, or windpipe. Correct movement of food and liquid during this stage of swallowing is important because of the proximity of the trachea to the esophagus. Difficulty can occur at this stage due to a reduced or delayed swallow trigger, reduced contraction and downward pushing by the throat muscles, reduced elevation of the voice box and vocal folds that do not close completely or fast enough to protect the airway.

Symptoms that can occur during this stage are coughing or choking before, during or after the swallow as well as aspiration, when foreign material enters the lungs by way of the trachea. There can be a delay in the swallow causing a buildup of food in the throat, which gives the feeling that food is stuck in the throat. Food may also sit at the top of the esophagus because that muscle doesn’t open as well as it once did.

3. Esophageal Stage

The third stage of a swallow starts once food enters the esophagus. One symptom that may be noticed is the sensation of food stuck in the esophagus or going down very slowly. You may feel full even though not you have not eaten very much. Heartburn or acid reflux may occur during or after eating. Consult a physician, such as a gastroenterologist, if you suspect difficulty with this stage of swallow.
About the Author

Marjorie L. Johnson, MA/CCC-SLP, is the senior speech pathologist at the Struthers Parkinson’s Center in Golden Valley, MN. She is certified in the Lee Silverman Voice Treatment (LSVT) and is part of the Allied Team Training for Parkinson’s, a health professional education program of the National Parkinson Foundation. Marjorie may be contacted at johnsma@parknicollet.com.

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This book is part of the Parkinson’s Educational Book Series, which addresses important topics for people with Parkinson’s disease. All topics and titles in the series are listed below. To request a free copy of any book(s) in the series, contact the NPF Helpline at 1-800-4PD-INFO (800-473-4636) or visit www.parkinson.org/books.

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