Cognitive Changes

Some people with Parkinson's disease (PD) experience mild cognitive impairment. Feelings of distraction or disorganization can accompany cognitive impairment, along with finding it difficult to plan and accomplish tasks.

It may be harder to focus in situations that divide your attention, like a group conversation. When facing a task or situation on their own, a person with PD may feel overwhelmed by having to make choices. They may also have difficulty remembering information or have trouble finding the right words when speaking. These changes can range from being annoying to interfering with managing household affairs.

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To some degree, cognitive impairment affects many people with PD. The same brain changes that lead to motor symptoms can also result in slowness in memory and thinking. Stress, medication and depression can also contribute to these changes.

Symptoms of mild cognitive impairment (MCI) often do not interfere with home and work life. They may not even be noticeable, but can be detected through testing. Doctors used to believe that cognitive changes did not develop until **middle to late-stage PD**, but recent research suggests that mild changes may be present at the time of diagnosis.

Tell your doctor if you have concerns about cognitive changes. You may need to change your medication or see a neurologist or neuropsychologist for assessment. An occupational therapist can also help you find strategies for adapting and coping with these symptoms. A speech therapist can help with language difficulties.

In general, mental and motor decline tend to occur together as the disease progresses. Significant cognitive impairment in PD is often associated with:

- Caregiver distress
- Worse day-to-day function
- Diminished quality of life
- Poorer treatment outcomes
- Greater medical costs due to nursing home placements
- Increased mortality

Cognitive impairment is different from dementia, which is when cognitive impairments occur in more than one area of cognition, leading to more severe loss of intellectual abilities that interferes with daily, independent living. While approximately 50% of people with PD will experience some form of cognitive impairment, not all lead to a **dementia** diagnosis.

Two long-term studies suggest that many people with PD will eventually develop a mild form of dementia as the disease progresses, usually many years after their initial diagnosis. One medication, Exelon (rivastigmine tartrate), can treat dementia in PD. Other medications are being studied.

What causes cognitive changes in

What causes cognitive changes in people with PD?

One cause is a drop in the level of dopamine, the neurotransmitter that is involved in regulating the body's movements. However, the cognitive changes associated with dopamine declines are typically mild and restricted.

Other brain changes are likely also involved in cognitive decline in PD. Scientists are looking at changes in two other chemical messengers — acetylcholine and norepinephrine — as possible additional causes of memory and executive function loss in Parkinson's.

Effects of Cognitive Changes

The cognitive changes that accompany Parkinson's early on tend to be limited to one or two mental areas, with severity varying from person to person. Areas most often affected include:

Attention

- Difficulty with complex tasks that require person with PD to maintain or shift their attention.
- Problems with mental calculations or concentrating during a task.

Speed of Mental Processing

- Slowing in thinking is often associated with depression in PD.
- Signs include: a delay in responding to verbal or behavioral stimuli, taking longer to complete tasks and difficulty retrieving information from memory.

Problem-solving or Executive Function

- Trouble planning and completing activities.
- Difficulties in generating, maintaining, shifting and blending different ideas and concepts.
- More concrete in approach to tasks.
- Loved ones can help the person with PD by providing cues, reminders and greater structure of activity.

Memory Issues

- The basal ganglia and frontal lobes of the brain (both help the brain organize and recall of information) may be damaged in PD.
- Difficulty with common tasks such as making coffee, balancing a checkbook, etc.
- People with dementia can experience both short-term and long-term memory impairment.

Language Abnormalities

- Issues with word-finding, known as “tip of the tongue” phenomenon.
- Difficulty with language when under pressure or stress.
- Difficulty comprehending complex sentences where the question or information is included with other details.
- Problems with production of language and dysarthria — slurred or unarticulated speech due to weakened muscles caused by brain changes.
- Problems in naming or misnaming objects — more common in middle to late stages of PD.

Visuospatial Difficulties

- During early PD stages: difficulty with measuring distance and depth perception, which may interfere with parking a car or remembering where the car is parked.
- During advanced PD: in combination with dementia, problems with processing information about their surroundings or environment.
- Subtle visual-perceptual problems may contribute to the visual misperceptions or illusions.
- Increased chances of visual misperceptions or illusions in low-light situations (like nighttime) and if experiencing other visual problems (like macular degeneration).
- In severe cases, problems telling apart non-familiar faces or recognizing emotional expressions.

How are cognitive issues diagnosed?

Common ways to assess and diagnose cognitive disorders:

- Interview the person with PD.
- Ask family members or care partners about their observations.
- Administer cognitive screening tests such as the Mini-Mental State Examination (MMSE) or Montreal Cognitive Assessment (MOCA). The neurologist will ask questions that evaluate the person's understanding of where and who they are, the date and year, attention, memory, language and problem-solving skills.
- A neurologist may suggest seeing a clinical neuropsychologist for a more detailed assessment.
- Neuropsychological assessment can be an important diagnostic tool for differentiating PD from other illnesses such as Alzheimer's disease, stroke or dementia.

How are cognitive changes in PD different than Alzheimer's disease?

Overall, dementia produces a greater impact on social and occupational functioning in PD than **Alzheimer's** due to the combination of motor and cognitive impairments.

There is some overlap between symptoms and biological changes seen in Alzheimer's and PD. However, it is less likely for both disorders to occur at the same time. Development of dementia in people with PD represents progression of the disease, usually after several years of motor impairment.

Dementia may or may not occur in people with PD. According to recent research, 30% of people with Parkinson's do not develop dementia as part of the disease progression.

See 10 Signs of Alzheimer's.

What co-existing conditions affect thinking and memory?

There are other factors that can have a negative impact on a person's cognitive skills, such as disorders of mood, anxiety and sleep. In some cases, these factors can make memory and thinking deficits worse, as well as directly affect a person's quality of life.

Depression

- Up to 50% of people with PD experience some form of depression during the disease.
- More likely to occur in people who experience severe cognitive impairment.
- Successful treatment of depression with medication and psychotherapy can improve cognitive symptoms.
- Can make it difficult to control motor symptoms (such as tremor and balance problems) in PD.
- Tends to be more severe in people with worse motor symptoms.

Anxiety

- May be as common as depression in Parkinson's.
- While less studied, up to 40% of people with PD experience some form of anxiety.
- Can interfere with memory storage, disrupt attention and complex task performance. For example, most people remember going blank on a school exam when feeling anxious.
- Negatively impacts social life. People with poorly controlled anxiety often avoid social situations, which can impact family and work relationships.
- People with PD may experience anticipatory anxiety in situations where they have to use cognitive skills.
- Similar to depression, successful treatment can lead to improvement of cognitive problems related to anxiety.

Sleep Issues

- The impact of poor sleep on attention, alertness and memory are well-known.
- Problems with falling and staying asleep are common in PD, especially as the disease progresses.
- Mild reductions in sleep can directly impair attention, judgment and the ability to multi-task because people with PD have a lower cognitive reserve or resistance of the brain to stressors.
- Undergoing a sleep study examines sleeping patterns and how often sleep is disrupted.
- Sleep problems are often addressed with medication and behavioral treatments. As sleep improves, its impact on thinking and memory is reduced.

Four types of **sleep problems** have been reported in PD:

1. Issues staying asleep and early morning awakening (insomnia).
2. Involuntary movements and pain that interrupt sleep.
3. Increased nighttime urination.
4. Nighttime agitation, vivid dreams and visual misperceptions or hallucinations.

Fatigue

- Just as fatigue can cause problems with movement and walking in PD, it can also impair thinking and memory. For example, a person with PD may have difficulty performing a complex cognitive task (like working on taxes over extended periods).
- Maximize attention and energy resources by dividing tasks into more manageable 10 to 15-minute sections. This helps minimize fatigue and keep you on task.
- Be aware that as the day wears on, people with PD may begin to fatigue — physically and cognitively.
- Medications can help improve energy and alertness (methylphenidate (Ritalin®) and modafinil (Provigil®)), but many have yet to be studied extensively for PD and fatigue.

Some medications used to treat PD have also been shown to have stimulating effects on thinking and energy levels (like selegiline (Eldepryl®) and amantadine).

Seeking Help for Cognitive Changes

Cognitive change is a sensitive issue. In fact, the doctor is often as hesitant to address this subject as the person with PD is to ask about it. Sometimes, the doctor will delay discussing cognitive impairment out of concern for the person who is still coping with the shock of a new PD diagnosis or struggling with motor symptoms.

For this reason, the person with PD often needs to be the one to initiate the conversation. Tell your doctor if you or your loved one is experiencing problems that upset the family or cause interruptions at work.

Cognitive issues are never too mild to address with your care team. A doctor can provide ways to help, often referring you to a psychiatrist, neuropsychologist, speech or occupational therapist for further evaluation and assistance. The neuropsychological evaluation can be particularly useful, especially in the early stages of a cognitive problem. Having this baseline test can help the doctor determine whether future changes are related to medications, the progression of the PD itself or to other factors such as depression.

When reporting symptoms of mild cognitive impairment, the doctor will first want to rule out causes other than PD, such as vitamin B-12 deficiency, depression, fatigue or sleep disturbances. It should be noted that PD does not cause sudden changes in mental functioning. If a sudden change occurs, the cause is likely to be something else, such as a medication side-effect.

If cognitive symptoms are traceable to PD, there are drug therapies available. Though developed for Alzheimer's, these medications have been found to have some effect in PD. These include rivastigmine (the only medication approved by the FDA for dementia in PD), donepezil and galantamine. In addition, a person with attention difficulties that are due to daytime sleepiness may benefit from stimulants.

How are cognitive problems treated?

Much remains to be learned about the basic biology that underlies cognitive changes in PD. Researchers work towards the development of diagnostic tests to identify people who seem to be at greatest risk for cognitive changes and to differentiate cognitive problems in people with PD from those that occur in another disorder — related but different — known as dementia with Lewy bodies.

A combination of medications and behavioral strategies is usually the best treatment for cognitive problems in PD.

Cognitive Remediation Therapy

For those with milder cognitive deficits, **cognitive remediation therapy** is a treatment that emphasizes teaching alternative ways to compensate for memory or thinking problems. In this treatment, the clinician uses information from neuropsychological testing to identify cognitive strengths that can be used to help overcome weaker areas of thinking.

- While widely used in the treatment of cognitive problems resulting from brain injury or stroke, there has been less use of this technique in people with PD.
- Does not reverse or cure cognitive disorders, but instead teaches strategies that can help with daily functioning and coping with cognitive problems.
- Depending on the severity of cognitive impairment, many can use these skills independently.
- In cases where the person is more impaired, care partners or family members can help apply these strategies.
- Usually conducted by a neuropsychologist or speech-language pathologist, who is specially trained in these techniques and can provide a supportive environment for the person with PD to express concerns and frustrations over changes in mental functioning.
- Works best with milder forms of cognitive deficits, as it requires insight into the person's own memory and thinking problems.

Behavioral Management

In this type of treatment, changes in the environment can be made to help minimize memory, visual-perceptual or orientation difficulties.

- Strategies include simplifying the décor of the living area to reduce excessive stimuli and minimize confusion and using a nightlight or low-level lighting to reduce visual misperceptions and confusion at nighttime.
- Behavioral strategies can help deal with other problems such as impulsivity, wandering, poor initiation and problems with communication.

- A person with PD may benefit from a regular routine in their day-to-day activities and feel more comfortable with a clear, structured schedule.

Tips for Care Partners

- Offer help only when asked.
- Prompt the person — for example, instead of asking, "Did anyone call?" ask, "Did Linda call?"
- Say the name of the person and make eye contact when speaking to gain and hold attention.
- Put reminder notes and lists in a prominent place.
- Keep things in routine places.
- To ensure medications are taken on time, provide a dispenser, perhaps with a built-in alarm.
- Use photos on cell phone contact entries to prompt face-name association.
- If the person is searching for a word, provide a cue, such as, "the word you are looking for probably begins with 'd'."
- Do not finish the sentences of a person who needs more time to put them together.
- When presenting the person with a list of actions, first verbalize them, then write them down.
- Ask questions to moderate the conversation pace and allow catch up and reinforcement.

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Parkinson's Foundation Helpline

Contact 1-800-4PD-INFO or Helpline@Parkinson.org for answers to your Parkinson's questions.

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