Accordant
A CVS Caremark Company

Clinical Practice Guidelines

Parkinson's Disease

Program Update: 06/30/2014

Approved by:
Andrew Krueger, MD
Kelvin L. Chou, MD
Un Jung Kang, MD

Accordant Clinical Practice Guidelines:
Parkinson's Disease

Table of Contents

Accordant Clinical Practice Guidelines:
Parkinson's Disease

INTRODUCTION

The Accordant program works with health plans to assess, monitor, and support those with certain complex, chronic conditions. The focus of the program is to improve health outcomes and prevent or limit disease-related complications. Accordant Care offers unique services at no additional charge to the patient, putting them in a strong position to adhere to their treatment plan.

There are several ways Accordant augments physicians' efforts. Through regular telephone contact, Accordant nurses:

- Keep patients informed about the disease process
- Coach patients in self-motivation and self-care skills
- Encourage patients to alert their physician when new symptoms arise
- Direct patients to resources that help pay for medication, transportation, home modifications, etc.
- Ensure preventive and screening measures are accomplished
- Provide emotional support to patients and caregivers
- Screen for depression
- Find local support groups

We invite physicians to make use of the services offered by Accordant and to suggest ways we can further patients' treatment goals. To offer feedback, get more information, ask questions or voice concerns call toll-free 1-800-948-2497 to speak with a program representative from 8 a.m. to 9 p.m., Monday through Thursday, and from 8 a.m. to 5 p.m. on Friday, Eastern Time. Messages left after hours will be returned the next business day.

Intent of Guidelines

The purpose of this Clinical Practice Guideline is to describe current patterns of practice where there is no fully established national guideline for diagnosis and management. It is not meant to dictate care of patients. Decisions about care are made by the physician and the patient based on the individual needs of that patient.

A patient's health plan may or may not pay for the all medicines, tests, equipment, or services mentioned in this document. Benefits should be checked with the individual's health plan to assure payment.

DISEASE OVERVIEW

Parkinson's disease is a chronic, progressive, neurodegenerative syndrome, which is likely to be a heterogeneous mixture of several genetic forms and sporadic forms that may be subject to variable degrees of environmental factors.[1,2] The disease is characterized by the unexplained degeneration of neurons in various parts of the brain, most notably the dopamine-producing cells of the substantia nigra pars compacta portion of the midbrain.[3] The hallmark clinical signs of PD are:

- resting tremor of the hands, arms, legs, jaw, or head.[1,3]
- bradykinesia[1-3] (slowness of movements, small amplitude [hypokinesia] of movements, decrement in amplitude of movement with repetition, poverty of spontaneous movements, diminished associated movements, and decreased dexterity).
- muscular rigidity with or without a characteristic cogwheel quality.[2,3]
- postural disorder and balance instability[1] in the later stages of disease.[3]

Up to one million Americans are afflicted with PD.[4] In the United States the combined direct and indirect cost of Parkinson's is estimated to be nearly $25 billion per year.[4] This includes treatment, social security payments, and lost income from inability to work. Medication costs for an individual person with PD average $2,500 a year, and therapeutic surgery can cost up to $100,000 dollars per patient.[4]

DIAGNOSIS OF DISEASE[3]

Detailed patient history
Neurological exam with findings of at least two of the three main symptoms of PD

- Tremor
- Rigidity
- Bradykinesia

Asymmetry of signs
Consideration of other medical conditions/medications that might contribute to the condition
Postural instability (usually occurs later in course of disease)
Absence of clinical features to indicate alternative diagnosis
Levodopa and apomorphine challenge when diagnosis is in doubt[5]
Positron emission tomography (PET) and SPECT (DaTscan™) to differentiate from essential tremor
Consistent with the quality measures for Parkinson's disease published in 2010 by the American Academy of Neurology, patients with Parkinson's disease should have their diagnosis reviewed regularly.[6]

APPROACH TO MANAGEMENT OF PRIMARY CONDITION

Regular care from a neurologist is recommended for patients with Parkinson's disease.[6] It is associated with fewer hospitalizations and days spent in a nursing home and lower costs for DME, home health, and hospice services.[7]

Dopaminergic therapies, while initially effective, are eventually complicated with motor fluctuations, dyskinesia, and in some cases, compulsive behavior like excessive gambling and overeating. Adjustments in the dose of levodopa and the addition of adjunctive therapies are used to address these problems, but a truly effective strategy aimed at eliminating these complications is one of the major unmet needs in Parkinson's.

While dopaminergic therapies are a mainstay of the treatment of bradykinesia, rigidity, and tremor, there are other whole-person aspects of care that are equally important to the patient's outcome and quality of life. Finding and treating the underreported nonmotor complications, such as mood disorders, poor quality sleep, and sexual dysfunction, is of primary concern to the overall well being of the patient.

Within the context of this understanding, the goals of treatment are to[3]:

- enable patients to maintain their activities of daily living by controlling their symptoms
- minimize secondary disability (e.g., deconditioning, contractures) with exercise therapy
- maintain drug efficacy
- minimize disabling drug-induced dyskinesias
- prevent neuropsychiatric complications
- slow disease progression

Medications used to treat PD motor symptoms/reduce off time

Dopamine precursor[8]

- levodopa-carbidopa (Atamet®, Sinemet®, Sinemet CR®)

Dopaminergic agonists[9]

- apomorphine (Apokyn®)
- pramipexole (Mirapex®)
- ropinirole (Requip®)
- rotigotine (Neupro®)[10]

MAO-B inhibitors[9]

- selegiline (deprenyl) (Carbex®, Eldepryl®, Zelapar®)
- rasagiline (Azilect®)

COMT inhibitors

- entacapone (Comtan®)[9]
- levodopa-carbidopa-entacapone (Stalevo®)
- tolcapone (Tasmar®)[9]

Glutamate antagonist[9]

- amantadine (Symmetrel®)

Anticholinergics[11]

- trihexyphenidyl (Artane®)
- benztropine (Cogentin®)
- ethopropazine (Parsidol®)

Medications used to treat the nonmotor symptoms of PD when necessary

Sleep Dysfunction

- manipulate the dosage of carbidopa/levodopa
- try melatonin for insomnia[12] or REM behavior disorder symptoms
- try clonazepam (Klonopin®)[13] for REM behavior disorder symptoms
- consider using a dopamine agonist one hour before going to bed for restless-legs syndrome,[14] or consider prescribing
    - gabapentin (Neurontin®)—preferred;
    - carbidopa/levodopa (Sinemet®)—preferred;
    - or opiates(not a preferred choice).[15]

Fatigue

- modafinil (Provigil®)[12]
- methylphenidate (Ritalin®, Concerta®)[16]

Dementia

- rivastigmine (Exelon®)[17,18]
- donepezil (Aricept®)[18]
- galantamine (Reminyl®)[19]

Depression

- Selective serotonin reuptake inhibitors (SSRIs)[2]
    - citalopram (Celexa®)
    - sertraline (Zoloft®)
    - paroxetine (Paxil®)
- Tricyclic antidepressants (TCAs)[13]
    - nortriptyline (Aventyl® and Pamelor®)
    - amitriptyline (Elavil® and Endep®)

Anxiety disorders and panic attacks[20]

- SSRIs
- TCAs

- benzodiazepines
    - clonazepam (Klonopin®)
    - lorazepam (Ativan®)
    - alprazolam (Xanax®)
- buspirone (BuSpar®)

Hallucination/Psychosis[18]
- clozapine (Clozaril®)
- quetiapine (Seroquel®)

Bowel/Bladder dysfunction[14]
- oxybutynin (Ditropan®)
- tolterodine (Detrol®)
- desmopressin (DDAVP®) for nocturia

Sexual dysfunction[21]
- phosphodiesterase-5 inhibitors
    - sildenafil (Viagra®)[16]
    - vardenafil (Levitra®)
    - tadalafil (Cialis®)
- intracavernous or intraurethral alprostadil (Muse®)

Orthostatic hypotension
- fludrocortisone (Florinef®)
- midodrine (ProAmatine®)
- droxidopa (Northera)[22]
- indomethacin
- pyridostigmine
- domperidone

Sialorrhea
- sublingual anticholinergics
- glycopyrrolate [Robinul®]
- botulinum toxin injections[23]

Recommended non-drug therapies

Diet
While there is currently no proof that any specific dietary factor is beneficial, a normal, healthy diet can promote overall well-being for PD patients just as it would for anyone else. Eating a fiber-rich diet and drinking plenty of fluids also can help alleviate constipation. A high protein diet, however, may limit levodopa's effectiveness.[1] High-dose vitamin E should *not* be considered for neuroprotection.[24]

Exercise

Exercise can help people with PD improve their mobility and flexibility. An individualized exercise program with a challenging balance component has been shown to improve balance in PD[25], and strength and balance training (eg, Tai Chi) have been shown to prevent falls in those patients at risk.[26,27] LSVT BIG physical therapy appears to improve motor performance.[28] Treadmill exercise appears to improve gait speed and cardiovascular fitness.[29] Progressive resistance exercise improves parkinsonian motor signs when examined off medication.[30] The progressive nature of Parkinson's suggests that exercise/motor training should probably be ongoing in order to maintain benefit.

Surgical therapies

- Deep brain stimulation (DBS) of the ventral intermediate (VIM) nucleus of the thalamus
- DBS of the globus pallidus internus
- DBS of the subthalamic nucleus[9]

PREVENTION AND MANAGEMENT OF COMPLICATIONS

Accordant helps patients prevent and manage complications by teaching early warning signs, encouraging adherence to treatment plans, offering supportive care, and recommending physician contact where needed. The list of goals and cooperative interventions below does not represent a comprehensive list of complications but reflects some of the more common clinical situations specific to Parkinson's disease. General health topics (eg, age-appropriate cancer screening) are beyond the scope of this document.

Goal: Improve self-management skills
Cooperative interventions include teaching patients the importance of:

- Personal motivation building
- Prevention-focused, behavioral self-management skills development
- Confidence and communication
- Adhering to treatment plan
- Knowledge development

Goal: Control Anxiety and Panic Attacks
Cooperative interventions include teaching patients to:

- Recognize the signs of anxiety and panic disorders and to report them to their doctor
- Report if the timing of an anxiety attack is associated with medication dose, such as at the end of the dose interval just before the next dose
- Understand and practice relaxation techniques
- Develop and work with a support group

Goal: Minimize the impact of cognitive impairment and dementia
Cooperative interventions include teaching patients to:

- Recognize the signs of cognitive disorder and report them to their doctor as early as possible
- Utilize mnemonic techniques, compensating strategies, and other devices
- Develop and work with a support group

Goal: Minimize the impact of depression
Cooperative interventions include teaching patients to:

- Recognize the early signs of depression and report them to their doctor
- Report any suicidal ideation to their doctor immediately
- Adhere to all medication schedules and report adverse side effects to their doctor as soon as possible
- Report sleep disturbances or poor appetite to their doctor as soon as possible

Goal: Prevent or limit the occurrence of dysphagia, sialorrhea, and dysarthria
Cooperative interventions include teaching patients to:

- Recognize the signs of swallowing and speaking disorders and report them to their doctor
- Practice restitution exercises to restore disturbed functions
- Learn new postures and swallowing techniques
- Use modified eating utensils and to change food consistency
- Develop and work with a support group

Goal: Minimize the impact of neurogenic bladder
Cooperative interventions include teaching patients to:

- Modify their diet and fluid intake to exclude alcohol, caffeine, etc, as recommended by their doctor
- Practice Kegel exercises to strengthen pelvic muscles
- Utilize timed voiding as a strategy to control urinary frequency
- Reduce evening fluid intake
- Plan trips and other activities in advance to include opportunities for voiding the bladder
- Perform self-catheterization as needed

Goal: Minimize the impact of neurogenic bowel
Cooperative interventions include teaching patients to:

- Understand the causes of bowel dysfunction
- Realize that the gastrocolic reflex occurs approximately 30 minutes after a meal, making this the optimal time to schedule a bowel movement
- Understand how lifestyle changes (diet, fluid intake, exercise, daily schedules) can prevent and treat bowel dysfunction

Goal: Orthostatic hypotension
Cooperative interventions include teaching patients to:

- Recognize the symptoms of orthostatic hypotension and report them to their doctor
- Increase fluid and salt intake
- Advise patients about the appropriateness of waist-high compression hose
- Elevate the head of the bed, and have patients rise slowly from the prone position
- Practice the proper techniques used to monitor orthostatic hypotension from home

Goal: Prevent falls with fractures
Cooperative interventions include teaching patients to[31]:

- Recognize the signs of posture problems
- Exercise regularly as directed by their doctor or physical therapist
- Understand home safety measures and facilitate pre-emptive home safety evaluation if needed
- Educate about the risk of osteoporosis and the importance of compliance with osteoporosis medications
- Understand the benefits of strengthening and balance exercises (eg, Tai Chi)[26]
- Use approved DME as necessary
- Use proper footwear
- Monitor for nocturia, nightmares, and other types of sleep disruption and educate about fall prevention at night
- Look for drug-induced hallucinations
- Look for presence of symptomatic orthostatic hypotension

Goal: Psychosis
Cooperative interventions include teaching patients to:

- Recognize the early signs of psychosis and to report them to their doctor
- Adhere to medications schedule and report adverse side effects to their doctor
- Understand the treatment options and their side effects
- Utilize community and national support resources

Goal: Skin Breakdown
Cooperative interventions include teaching patients to:

- Contact the doctor right away if there is broken skin or open sores
- Get immediate medical care if there are signs of infection such as fever, drainage from the sore, a foul odor, or increased heat and redness in the surrounding skin
- Contact the doctor if unresolved skin irritation exists in a moist area for evaluation, topical treatment, and bowel/bladder plan
- Understand the need to stay as mobile as possible
- Understand why eating and drinking adequate amounts of food and fluids is important

- Minimize skin exposure to excess moisture
- Use topical agents that provide protective barriers to moisture
- Understand the importance of mattress and wheelchair cushioning
- Understand the importance of stopping smoking

Goal: Sleep Dysfunction
Cooperative interventions include teaching patients to:

- Avoid driving if they are subject to somnolence or sudden sleep onset
- Report all symptoms of sleep dysfunction to a nurse or doctor, including frequent awakening in the middle of the night
- Adhere to medication schedule

Goal: Maintain dental health
Cooperative interventions include education about[32]:

- Use of electric tooth brush
- One-handed strategies (eg, using a nail brush to clean dentures suctioned onto a wall)
- Stannous fluoride gel treatments from dentist
- Chlorhexidine or baking soda mouthwash if swallowing isn't a problem
- Visiting dentist in the morning 60-90 minutes after a dose of L-dopa
- Planning several short visits rather than fewer long ones

PATIENT FOLLOW-UP

Consistent with the quality measures for Parkinson's disease published in 2010 by the American Academy of Neurology, patients with Parkinson's disease may need to be followed for[6]

- Psychiatric disorders or disturbances (e.g., psychosis, depression, anxiety disorder, apathy, or impulse control disorder)
- Cognitive impairment or dysfunction
- Symptoms of autonomic dysfunction (e.g., orthostatic hypotension, constipation, urinary urgency/incontinence/retention and fecal incontinence, or persistent erectile failure)
- Sleep disturbances
- Falls
- Rehabilitative therapy options (e.g., physical, occupational, or speech therapy)
- Safety issues (e.g., injury prevention, medication management, or driving)
- Medication–related motor complications (e.g., wearing off, dyskinesia, or off-time)
- Regular review of medical and surgical treatment options (e.g., nonpharmacologic treatment, pharmacologic treatment, or surgical treatment)

PATIENT EDUCATION

The Accordant Health Communities Web site at:
https://www.accordant.com

Other approved and informative Web sites for patient education include the following:

National Parkinson Foundation
- http://www.parkinson.org

American Parkinson Disease Association
- http://www.apdaparkinson.org

The Center for Neurologic Study (patient information)
- http://www.cnsonline.org/?page=18

The Michael J. Fox Foundation for Parkinson's Research
- http://www.michaeljfox.org

Parkinson Disease Foundation
- http://www.pdf.org/

References

1. *Parkinson's Disease: Hope Through Research.* Bethesda, MD: National Institutes of Health, NINDS; NIH Publication No. 06-139. http://www.ninds.nih.gov/disorders/parkinsons_disease/detail_parkinsons_disease.htm. Accessed March 16, 2007.
2. Parkinson Disease and Other Movement Disorders. WebMD: ACP Medicine. http://www.acpmedicine.com/cgi-bin/publiccgi.pl [available with subscription]. Accessed February 23, 2007.
3. Levine CB, Fahrbach KR, Siderowf AD, Estok RP, Ludensky VM, Ross SD. U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality. *Diagnosis and Treatment of Parkinson's Disease: A Systematic Review of the Literature.* Rockville, MD: AHRQ Pub. No. 03-E039.
4. Parkinson's Disease Foundation. http://www.pdf.org/en/parkinson_statistics. Accessed February 22, 2011.
5. Suchowersky O, Reich S, Perlmutter J, Zesiewicz T, Gronseth G, Weiner WJ. Practice Parameter: diagnosis and prognosis of new onset Parkinson disease (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2006;66(7):968-975.
6. Cheng EM, Tonn S, Swain-Eng R, Factor SA, Weiner WJ, Bever CT, Jr. Quality improvement in neurology: AAN Parkinson disease quality measures: report of the Quality Measurement and Reporting Subcommittee of the American Academy of Neurology. *Neurology*. 2010;75(22)(PMC3014235):2021-2027.
7. Willis AW, Schootman M, Tran R, et al. Neurologist-associated reduction in PD-related hospitalizations and health care expenditures. *Neurology*. 2012;79(17)(PMC3475618):1774-1780.
8. Olanow CW, Watts RL, Koller WC. An algorithm (decision tree) for the management of Parkinson's disease (2001): treatment guidelines. *Neurology*. 2001;56(11 Suppl 5):S1-S88.
9. Pahwa R, Factor SA, Lyons KE, et al. Practice Parameter: treatment of Parkinson disease with motor fluctuations and dyskinesia (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2006;66(7):983-995.
10. Rotigotine transdermal system (Neupro) [package insert]. Smyrna, GA : UCB, Inc. April 2012.
11. National Parkinson Foundation. http://www.parkinson.org/NETCOMMUNITY/Page.aspx?&pid=227&srcid=201. Accessed February 24, 2011.
12. Seppi K, Weintraub D, Coelho M, et al. The Movement Disorder Society Evidence-Based Medicine Review Update: Treatments for the non-motor symptoms of Parkinson's disease. *Mov Disord*. 2011;26 Suppl 3:S42-S80.
13. Rao SS, Hofmann LA, Shakil A. Parkinson's disease: diagnosis and treatment. *Am Fam Physician*. 2006;74(12):2046-2054.
14. Goudreau JL. Medical management of advanced Parkinson's disease. *Clinical Geriatric Medicine*. 2006;22(4):753-772.
15. Louter M, Aarden WC, Lion J, Bloem BR, Overeem S. Recognition and diagnosis of sleep disorders in Parkinson's disease. *J Neurol*. 2012;259(10)(PMC3464375):2031-2040.

16. Zesiewicz TA, Sullivan KL, Arnulf I, et al. Practice Parameter: treatment of nonmotor symptoms of Parkinson disease: report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2010;74(11):924-931.
17. Exelon (rivastigmine) [package insert]. East Hanover, NJ: Novartis Pharmaceuticals Corporation; June 2006.
18. Miyasaki JM, Shannon K, Voon V, et al. Practice Parameter: evaluation and treatment of depression, psychosis, and dementia in Parkinson disease (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2006;66(7):996-1002.
19. Barbas NR. Cognitive, affective, and psychiatric features of Parkinson's disease. *Clinical Geriatric Medicine*. 2006;22(4):773-796.
20. MedlinePlus [Internet]. Bethesda, MD: National Library of Medicine (US); [updated 2011 Oct 31]. Methotrexate; [updated 2009 Apr 01; cited 2011 Nov 04]; [about 5 p.]. Available from: http://www.nlm.nih.gov/medlineplus/druginfo/medmaster/a682019.html.
21. Bunting LK. Palliative care in Parkinson's disease: implications for neuroscience nursing. *J Neurosci Nurs*. 38(2):106-113.
22. Northera (droxidopa) [package insert]. Charlotte, NC: Chesea Therapeutics; March 2014.
23. Lagalla G, Millevolte M, Capecci M, Provinciali L, Ceravolo MG. Long-lasting benefits of botulinum toxin type B in Parkinson's disease-related drooling. *J Neurol*. 2009;256(4):563-567.
24. Suchowersky O, Gronseth G, Perlmutter J, Reich S, Zesiewicz T, Weiner WJ. Practice Parameter: neuroprotective strategies and alternative therapies for Parkinson disease (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2006;66(7):976-982.
25. Allen NE, Sherrington C, Paul SS, Canning CG. Balance and falls in Parkinson's disease: a meta-analysis of the effect of exercise and motor training. *Mov Disord*. 2011;26(9):1605-1615.
26. Gillespie LD, Robertson MC, Gillespie WJ, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev*. 2009;(2):CD007146.
27. Li F, Harmer P, Fitzgerald K, et al. Tai chi and postural stability in patients with Parkinson's disease. *N Engl J Med*. 2012;366(6)(PMC3285459):511-519.
28. Ebersbach G, Ebersbach A, Edler D, et al. Comparing exercise in Parkinson's disease--the Berlin LSVT(R)BIG study. *Mov Disord*. 2010;25(12):1902-1908.
29. Shulman LM, Katzel LI, Ivey FM, et al. Randomized clinical trial of 3 types of physical exercise for patients with Parkinson disease. *JAMA Neurol*. 2013;70(2):183-190.
30. Corcos DM, Robichaud JA, David FJ, et al. A two-year randomized controlled trial of progressive resistance exercise for Parkinson's disease. *Mov Disord*. 2013;28(9)(PMC3701730):1230-1240.
31. Movement Disorder Virtual University. http://www.mdvu.org/library/disease/pd/par_nphm.html. Accessed March 26, 2010.
32. Friedlander AH, Mahler M, Norman KM, Ettinger RL. Parkinson disease: systemic and orofacial manifestations, medical and dental management. *J Am Dent Assoc*. 2009;140(6):658-669.

