GUIDELINE CPD

Canadian guideline for Parkinson disease

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A French version of this article as well as the full guideline in English and French are available in Appendix 1 at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.181504/-/DC1

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Parkinson disease is chronic and progressive in nature, decreasing the quality of life for both patients with the disease and their caregivers and placing an onerous economic burden on society.[1]

The first Canadian guideline on Parkinson disease was published in 2012.[2] Since that guideline, there have been substantial advances in the literature on the disease, particularly with respect to diagnostic criteria and treatment options. Parkinson Canada undertook to update the existing guideline to reflect these advances, as well as to add information on palliative care.

With the aim of enhancing care for all Canadians with Parkinson disease, this guideline is based on the best published evidence, involves expert consensus when there is a lack of evidence, offers practical clinical advice, takes patient choice and informed decision-making into account and is relevant to the Canadian health care system. The guideline has been divided into 5 main sections to improve the ease of use: communication, diagnosis and progression, treatment, nonmotor features and palliative care. The full guideline is available in Appendix 1, at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.181504/-/DC1.

KEY POINTS

- This guideline update reflects substantial changes in the literature on diagnosis and treatment of Parkinson disease, and adds information on palliative care.
- Impulse control disorders can develop in a person with Parkinson disease who is on any dopaminergic therapy at any stage in the disease course, especially for those taking dopamine agonists.
- Advanced therapies like deep brain stimulation and intrajejunal levodopa-carbidopa gel infusion are now routinely used in Parkinson disease to manage motor symptoms and fluctuations.
- Evidence exists to support early institution of exercise at the time of diagnosis of Parkinson disease, in addition to the clear benefit now shown in those with well-established disease.
- Palliative care requirements of people with Parkinson disease should be considered throughout all phases of the disease, which includes an option of medical assistance in dying.

Scope

The target users for this guideline are health care professionals. However, the guideline may also be used by policy-makers, funding bodies and people with Parkinson disease and their families. These recommendations are intended to serve as a guide for health care providers; clinical discretion should be used by all who follow these recommendations. Resource problems and individual patient preference may make it difficult to put every recommendation into practice, but the guideline is intended to improve the standard of and access to care for individuals with Parkinson disease in all regions of Canada.

Methods

Parkinson Canada sponsored this guideline update; the Knowledge Synthesis Group at the Ottawa Hospital Research Institute, Ottawa (P.B., B.H.), led the methodology used. Experts from the main Parkinson clinics across Canada were invited to participate. The steering committee for the overall development of the guidelines consisted of the authors of each of the sections, with 4 leads (D.G., B.H., M.F., P.B.). This guideline was updated with input from the guideline panel, which included experts in movement disorders, neurology, functional neurosurgery, psychiatry, family medicine, nursing, methodology, physiotherapy, occupational therapy, pharmacy, neuropsychology and patient advocacy (Parkinson Canada), as well as individuals with Parkinson disease.

The overall objective was to identify recently published scientific evidence that would require specific recommendations to be updated. A series of Web-based surveys was sent out to a group of 16 clinical experts from across Canada to gain insight from the clinical community as to which recommendations from the 2012 guideline[2] needed to be prioritized for updating. The experts were asked to assess the validity of each recommendation based on their knowledge and whether they were aware of new

evidence that they thought would warrant making an update to a recommendation. For those recommendations still considered valid, the experts were asked if they were aware of any new evidence that would change the grade or strength of evidence.

The Knowledge Synthesis Group used components of the ADAPTE process as the basis for the update.[3] Literature searches included those in English from 2006 to December 2016, using the following databases: National Guideline Clearinghouse, the Guidelines International Network, National Library of Guidelines, CPG Infobase, Trip Medical Database, Google Scholar, Embase and Ovid MEDLINE (including Epub Ahead of Print, In-Process and Other Nonindexed Citations), Cochrane Library (limited to Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects and the Health Technology Assessment database). Research undertaken only in animals and opinion pieces were removed from the results.

The Knowledge Synthesis Group first searched for clinical practice guidelines on the care of patients with Parkinson disease. If no sufficiently high-quality guidelines or no guidelines were identified, then a staged approach to identification of evidence was implemented, where first moderate- to high-quality systematic reviews were systematically searched for and used as evidence. In the absence of such reviews, or if there were no systematic reviews, then randomized controlled trials (RCTs) were searched for.

The Knowledge Synthesis Group used the Appraisal of Guidelines for Research & Evaluation (AGREE II) instrument to assess the rigour of clinical practice guidelines,[4] the 16-point A MeaSurement Tool to Assess Systematic Reviews (AMSTAR 2)[5] to assess systematic reviews, and the Cochrane Risk of Bias tool to assess RCTs.[6]

The Knowledge Synthesis group developed packages of information (including strengths of evidence, citations and summaries of new studies) and compiled them in the form of summaries for distribution to working groups of panel members with relevant expertise (e.g., treatment, communication, etc.) in preparation for a consensus meeting.

Before the consensus meeting, the guideline panel identified several additional topics that were thought to be important and that had not been initially captured because of the stringent topic search conducted. These included depression and Parkinson disease (the initial search had been restricted to amitriptyline, as it was the only antidepressant included in the original guideline), pimavanserin and rotigotine. The Knowledge Synthesis Group extracted data from systematic reviews for these topics, and produced additional summaries to be distributed in advance of the consensus meeting.

Many recommendations from the 2006 National Institute for Health and Care Excellence (NICE) guideline[7] had been adapted for inclusion in the 2012 Canadian guideline. An updated version of the NICE guideline was not identified in the literature search, as its publication date was initially scheduled for June 2017 (published in July 2017).[8] However, a draft version of the updated NICE guideline was available from October 2016 and was included in the materials supplied to the guideline panel for the consensus meeting.

A full-day meeting with 29 guideline panel members was held on Apr. 8, 2017 (Supplement Table 5 in Appendix 1). The working groups reviewed the relevant summaries and the full text of the new literature on their topic. Each working group chair presented their group's recommendations to the entire guideline panel; this served as the basis for the initial voting matrix for each recommendation. An open voting process and summary discussion method identified 5 main areas on which to base the guideline update: communication, diagnosis and progression, treatment, nonmotor features and a new section on palliative care.

Working group members used recommendations from the clinical practice guidelines identified during the literature search to update or create new recommendations. (At the meeting, some recommendations that required updating were identified that had not been raised by the original survey of experts.) If no appropriate recommendation was found in the available clinical practice guidelines, the guideline panel discussed the topic and referred it to the Knowledge Synthesis Group for a follow-up search of systematic reviews and, if necessary, RCTs.

The guideline panel made substantial effort to maintain the phrasing of any recommendation extracted from another guideline, although some were modified slightly to achieve standardized terminology or to make the recommendation more specific. The source for each recommendation extracted from another guideline is cited at the end of the recommendation. When the recommendation was created *de novo* by the working groups from systematic review or RCT evidence or expert opinion, the recommendation is denoted as "CAN." The classifications for determining the level of evidence used across the guidelines differed slightly, but the recommendation grade was maintained from the original source (i.e., if a recommendation had a grade of B in its source guideline, it was retained as grade B in this guideline update) (Box 1).

After the meeting, we created a voting matrix, organized into the 5 main themes with subsections. We conducted Web-based voting using SurveyMonkey (www.surveymonkey.com) to ensure that the majority (> 75%) agreed on each of the recommendation points. One recommendation did not reach 75% agreement but was considered to be an essential topic to include. The section leads subsequently modified the wording of this recommendation and the newly worded recommendation was approved by the guideline panel. More information on the methods used to develop this guideline is available in Appendix 1.

Management of competing interests

All guideline panel members agreed to terms of reference that included disclosure of all perceived and actual competing interests to the entire panel at the beginning and end of the guideline development process. Panellists with competing interests were permitted to participate in panel discussions, and later in the voting matrix, without restriction.

Recommendations

The complete list of recommendations appears in Tables 1 to 5; a description of the underlying evidence for each recommendation is available in Appendix 1.This synopsis provides information on selected recommendations, along with the grade of and source for the recommendation. (When the term "CAN" is used as a source, it refers to a recommendation that was developed *de novo* for this guideline and was not adapted from another source.)

PARKINSON DISEASE

VISUAL SUMMARY OF RECOMMENDATIONS FROM THE **CANADIAN GUIDELINE FOR PARKINSON DISEASE, 2ND ED**

COMMUNICATION

- People with Parkinson disease should be encouraged to participate in choices about their own care.
- Communication should be in verbal and written form.
- Discussions should aim to achieve a balance between providing realistic information and promoting optimism.
- Families and caregivers should be informed about the condition and available support services.

DIAGNOSIS AND PROGRESSION

- Parkinson disease should be suspected in anyone with tremor, stiffness, slowness, balance problems or gait disorders.
- CT or MRI brain scanning should not be routinely used to diagnose Parkinson disease.
- Patients, especially young, who request genetic testing should be assessed by a movement disorders specialist.
- No therapies are effective for slowing or stopping brain degeneration in Parkinson disease.

TREATMENT

- Levodopa is the most effective medication and may be used early.
- A regular exercise regimen begun early has proven benefit.
- Patients with possible diagnosis of Parkinson disease may benefit from a trial of dopamine replacement therapy to help with diagnosis.
- Impulse control disorders can develop on dopaminergic therapy at any stage in the disease but are more common in patients on dopamine agonists.
- Deep brain stimulation and gel infusion are now routinely used to manage motor symptoms.
- Rehabilitation therapists experienced with Parkinson disease can help newly diagnosed patients, and others through all stages.

PALLIATIVE CARE

- The palliative care needs of people with Parkinson disease should be considered throughout all phases of the disease.
- If the patient asks, the option of medical assistance in dying should be discussed.

NONMOTOR FEATURES

- Botulinum toxin A helps control drooling.
- Drug therapy for low blood pressure includes midodrine, fludrocortisone and domperidone.
- Management of depression should be tailored to the individual and their current therapy.
- Dementia should not exclude a diagnosis of Parkinson disease, even if present early.
- Rapid eye movement sleep behaviour disorder can pre-date the diagnosis of Parkinson disease.

Box 1: Grading scheme from SIGN, EFNS and NICE*

Grade of recommendation	Evidence
A	At least 1 meta-analysis, systematic review or RCT rated as 1++, and directly applicable to the target population; *or* A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2++, directly applicable to the target population and demonstrating overall consistency of results; *or* Extrapolated evidence from studies rated as 1++ or 1+
C	A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; *or* Extrapolated evidence from studies rated as 2++
D	Evidence level 3 or 4; *or* Extrapolated evidence from studies rated as 2+
GPP	Recommended best practice based on the clinical experience of the guideline development group
Levels of evidence	
1++	High-quality meta-analyses, systematic reviews of RCTs or RCTs with a very low risk of bias
1+	Well-conducted meta-analyses, systematic reviews or RCTs with a low risk of bias
1–	Meta-analyses, systematic reviews or RCTs with a high risk of bias. High-quality systematic reviews of case–control or cohort studies
2++	High-quality case–control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2+	Well-conducted case–control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2–	Case–control or cohort studies with a high risk of confounding or bias and a substantial risk that the relationship is not causal
3	Nonanalytic studies (e.g., case reports, case series)
4	Expert opinion

Note: EFNS = European Federation of Neurological Societies,[14,15] GPP = good practice point, NICE = National Institute for Health and Clinical Excellence,[7,8] RCT = randomized controlled trial, SIGN = Scottish Intercollegiate Guidelines Network.[13]
*When no grade was assigned or when a recommendation was created from a systematic review or RCT, the SIGN grading table was used.

Table 1: Summary of recommendations for communication

Recommendation number	Recommendation	Source	Grade
C1	Communication with people with PD should be aimed at empowering them to participate in the judgments and choices about their own care.	NICE[7]	D
C2	Discussions should be aimed at achieving a balance between the provision of honest, realistic information about the condition and the promotion of a feeling of optimism.	NICE[7]	D
C3	Because people with PD may develop impaired cognitive ability, a communication deficit or depression, they should be provided with both verbal and written communication throughout the course of the disease — which should be individually tailored and reinforced as necessary — and consistent communication from the professionals involved.	NICE[7]	D GPP
C4	Families and caregivers should be given information about the condition, their entitlements to care assessment and the support services available.	NICE[7]	D GPP
C5	People with PD should have a comprehensive care plan agreed upon between the individual, their family and caregivers, and all health care providers.	NICE[7]	D GPP
C6	People with PD should be offered an accessible point of contact with specialist services.	NICE[7]	D GPP

Note: GPP = good practice point, NICE[7] = National Institute for Health and Clinical Excellence 2006 PD Guidelines,[7] PD = Parkinson disease.

Table 2: Summary of recommendations for diagnosis and progression

Recommendation number	Recommendation	Source	Grade
C7	PD should be suspected in people presenting with tremor, stiffness, slowness, balance problems or gait disorders.	NICE[7]	D GPP
C8	PD can be diagnosed using the MDS Clinical Diagnostic Criteria.	CAN	GPP
C9	Clinicians should be aware of the poor specificity of a clinical diagnosis of PD in the early stages of the disease, and consider this uncertainty when giving information to the patient and when planning management.	SIGN[13]	C
C10	Patients should be offered long-term, regular follow-up to review the diagnosis of PD. This should include a review of the ongoing benefits in those started on dopamine replacement therapy.	SIGN[13]	GPP
C11	Patients initially considered to have a possible diagnosis of PD may benefit from a trial of dopamine replacement therapy to assist with an accurate diagnosis.	SIGN[13]	GPP
C12	Patients with suspected PD, with substantial disability or exclusion criteria or red flags as per the MDS diagnostic criteria, should be seen by a clinician with sufficient expertise in movement disorders to make the diagnosis.	SIGN[13]	C GPP
C13	Acute challenge testing with either levodopa or apomorphine should not be used in the diagnosis of PD. Patients with suspected PD should be considered for a trial of chronic levodopa treatment.	SIGN[13]	A
C14	Objective olfactory testing is not recommended in the diagnosis of PD.	SIGN[13]	B
C15	Routine use of functional imaging is not recommended for the differential diagnosis of PD and Parkinson plus disorders such as progressive supranuclear palsy and multiple system atrophy.	SIGN[13]	C
C16	PET scanning is not recommended as part of the diagnostic work-up of parkinsonian syndromes, except within a research framework.	SIGN[13]	GPP
C17	^{123}I-FP-CIT SPECT scanning should be considered as an aid to clinical diagnosis in patients where there is uncertainty between PD and nondegenerative parkinsonism or tremor disorders.	SIGN[13]	B
C18	Computed tomography or MRI brain scanning should not be routinely applied in the diagnosis of idiopathic PD.	SIGN[13]	C
C19	Vitamin E should not be used as a neuroprotective therapy for people with PD. Co-enzyme Q10 should not be used as a neuroprotective therapy for people with PD.	NICE[8]	A
C20	Levodopa (grade: GPP), amantadine (grade: GPP), dopamine agonists (pramipexole, ropinirole, rotigotine, apomorphine, bromocriptine) (grade: A), or MAO inhibitors (selegiline, rasagiline) (grade: A) should not be used as neuroprotective therapies for people with PD, except in the context of clinical trials.	CAN	Varied
C21	Genetic testing for monogenic parkinsonism is not recommended in routine clinical practice.	SIGN[13]	GPP
C22	Patients who request genetic testing, particularly those with young-onset parkinsonism, should be assessed in a specialist movement disorders clinic for consideration of counselling and testing.	SIGN[13]	GPP

Note: ^{123}I-FP-CIT = ^{123}I-ioflupane, CAN = new Canadian Guideline recommendation, GPP = good practice point, MAO = monoamine oxidase, MDS = Movement Disorder Society Evidence-Based Medicine Review,[16] MRI = magnetic resonance imaging, NICE[7] = National Institute for Health and Clinical Excellence 2006 PD Guidelines,[7] NICE[8] = National Institute for Health and Clinical Excellence — 2017 PD Guidelines,[8] PD = Parkinson disease, PET = positron emission tomography, SIGN[13] = Scottish Intercollegiate Guidelines Network,[13] SPECT = single-photon emission computed tomography.

Communication

Communication with people with Parkinson disease should be aimed at empowering them to participate in the judgments and choices about their own care (grade: D; source: NICE[7]).

Discussions should be aimed at achieving a balance between the provision of honest, realistic information about the condition and the promotion of a feeling of optimism (grade: D; source: NICE[7]).

Because people with Parkinson disease may develop impaired cognitive ability, a communication deficit or depression, they should be provided with both verbal and written communication throughout the course of the disease — which should be individually tailored and reinforced as necessary — and consistent communication from the professionals involved (grade: D, good practice point; source: NICE[7]).

Families and caregivers should be given information about the condition, their entitlements to care assessment and the support services available (grade: D, good practice point; source: NICE[7]).

Good communication is at the heart of every interaction between people with Parkinson disease, their caregivers and health professionals. Health care professionals committed to clear and empathic communication can make a meaningful difference to their patients. When people with Parkinson disease know what health care professionals recommend and why, they can participate in shared decision-making. Communication should be supported by the provision of evidence-based information, offered in a form that is tailored to the needs of the individual. Where possible, written material should be provided that includes instructions for medication use. Parkinson disease affects people living with the illness and their caregivers and family. It is important that they all have access to the same information and services.

Table 3 (part 1 of 3): Summary of recommendations for treatment of motor symptoms

Recommendation number	Recommendation	Source	Grade
General considerations			
C23	People with PD should have regular access to the following: • Clinical monitoring and medication adjustment • A continuing point of contact for support, including home visits, when appropriate • A reliable source of information about clinical and social matters of concern to people with PD and their caregivers, which may be provided by a PD nurse specialist.	NICE[7]	C
C24	Antiparkinsonian medication should not be withdrawn abruptly or allowed to fail suddenly owing to poor absorption (e.g., gastroenteritis, abdominal surgery), to avoid the potential for acute akinesia or neuroleptic malignant syndrome.	NICE[7]	D GPP
C25	The practice of withdrawing patients from their antiparkinsonian drugs (so-called "drug holidays") to reduce motor complications should not be undertaken because of the risk of neuroleptic malignant syndrome.	NICE[7]	D GPP
C26	In view of the risks of sudden changes in antiparkinsonian medication, people with PD who are admitted to hospital or care homes should have their medication: i) given at the appropriate times, which in some cases may mean allowing self-medication; ii) adjusted by, or adjusted only after discussion with, a specialist in the management of PD.	NICE[7]	D GPP
C27	Surveillance for dopamine dysregulation syndrome should be undertaken in patients receiving levodopa or intermittent apomorphine.	SIGN[13]	GPP
C28	When starting dopamine agonist therapy, people and their family members and caregivers (as appropriate) should be given verbal and written information about the following, and the discussion should be recorded as having taken place: • The increased risk of developing impulse control disorders when taking dopamine agonist therapy, and that these may be concealed by the person affected • The different types of impulse control disorders (e.g., compulsive gambling, hypersexuality, binge eating and obsessive shopping) • Who to contact if impulse control disorders develop • The possibility that if problematic impulse control disorders develop, dopamine agonist therapy will be reviewed and may be reduced or stopped.	NICE[8]	GPP
C29	It should be recognized that impulse control disorders can develop in a person with PD who is on any dopaminergic therapy at any stage in the disease course.	NICE[8]	GPP
Pharmacologic therapy in early PD			
C30	Before starting treatment for people with PD, the following should be discussed: • The person's individual clinical circumstances; for example, their symptoms, comorbidities and risks from polypharmacy • The person's individual lifestyle circumstances, preferences, needs and goals • The potential benefits and harms of the different drug classes.	NICE[8]	GPP
C31	Levodopa may be used as a symptomatic treatment for people with early PD.	NICE[7]	A
C32	The dose of levodopa should be kept as low as possible to maintain good function in order to reduce the development of motor complications.	NICE[7]	A
C33	Controlled-release formulations of levodopa or adding entacapone are not effective for delaying motor complications.	EFNS[14]	A
C34	Dopamine agonists may be used as a symptomatic treatment for people with early PD.	NICE[7]	A
C35	A dopamine agonist should be titrated to a clinically efficacious dose. If adverse effects prevent this, another agonist or a drug from another class should be used in its place.	NICE[7]	D GPP
C36	Ergot-derived dopamine agonists should not be used as first-line treatment for PD.	SIGN[13]	B
C37	When an ergot-derived dopamine agonist is used, patients should undergo: • Baseline echocardiographic screening and regular follow-up echocardiographic testing to identify cardiac abnormalities • Baseline laboratory (ESR, serum creatinine) and radiological (e.g., chest x-ray) investigations with regular follow-up surveillance to identify serosal fibrosis.	SIGN[13]	GPP
C38	MAO-B inhibitors may be used as a symptomatic treatment for people with early PD.	NICE[7]	A
C39	There is insufficient evidence to support the use of amantadine in the treatment of patients with early PD.	SIGN[13]	A

Table 3 (part 2 of 3): Summary of recommendations for treatment of motor symptoms

Recommendation number	Recommendation	Source	Grade
C40	Anticholinergic drugs should not be used as first-line treatment in patients with PD.	SIGN[13]	B
C41	Beta-adrenergic antagonists may be used in the symptomatic treatment of selected people with postural tremor in PD, but should not be drugs of first choice.	NICE[7]	D GPP
Pharmacologic therapy for motor symptoms in later PD			
C42	The choice of an adjunct to levodopa for people with PD who have developed dyskinesia or motor fluctuations despite optimal levodopa therapy should take into account: • The person's individual clinical circumstances; for example, their PD symptoms, comorbidities and risks from polypharmacy • The person's individual lifestyle circumstances, preferences, needs and goals • The potential benefits and harms of the different drug classes.	NICE[8]	GPP
C43	Catechol-*O*-methyltransferase inhibitors (entacapone) and MOA-B inhibitors (rasagiline) may be considered for the reduction in off-time in patients with advanced PD who have motor fluctuations.	SIGN[13]	A
C44	Dopamine agonists (oral [pramipexole, ropinirole] or transdermal [rotigotine]) may be considered for the management of motor complications in patients with advanced PD.	SIGN[13]	A
C45	Levodopa controlled release may improve wearing-off (grade: C) and nighttime akinesia (grade: GPP).	EFNS[14]	Varied
C46	Subcutaneous apomorphine infusions or injections may be considered for the management of severe motor complications, but should be provided only in units that have sufficient experience and resources.	SIGN[13]	C
C47	Intrajejunal levodopa-carbidopa enteric gel administered through percutaneous gastrostomy may be considered for the reduction of off-time or to reduce dyskinesia.	EFNS[14]	C
C48	Amantadine is recommended for the treatment of dyskinesia in PD (200–400 mg/d).	EFNS[14]	A
Surgery			
C49	Deep brain stimulation of the STN or the GPi is effective against motor fluctuations and dyskinesia.	EFNS[14]	A
C50	With the current evidence, it is not possible to decide if the STN or GPi is the preferred target for deep brain stimulation for people with PD, or whether 1 form of surgery is more effective or safer than the other.	NICE[7]	D
C51	Thalamic deep brain stimulation may be considered as an option in people with PD who predominantly have severe disabling tremor.	NICE[7]	D
C52	Unilateral pallidotomy is efficacious at reducing contralateral dyskinesia.	EFNS[14]	A
C53	Unilateral thalamotomy improves contralateral tremor and rigidity but has no consistent effect on akinesia.	EFNS[14]	D
C54	Preoperative response to levodopa should be considered as a factor predictive of outcome after deep brain stimulation of the STN.	AAN[17]	B
C55	Age and duration of PD may be considered as factors predictive of outcome after deep brain stimulation of the STN. Younger patients with shorter disease durations may possibly have improvement greater than that of older patients with longer disease durations.	AAN[17]	C
Rehabilitation			
C56	Consideration should be given to referring people who are in the early stages of PD to a physiotherapist with experience of the disease for assessment, education and advice, including information about physical activity.	NICE[8]	B
C57	Physiotherapy specific to PD should be offered to people who are experiencing balance or motor function problems.	NICE[8]	A
C58	Consideration should be given to referring people who are in the early stages of PD to an occupational therapist with experience of PD for assessment, education and advice on motor and nonmotor symptoms.	NICE[8]	B
C59	Occupational therapy specific to PD should be offered to people who are having difficulties with activities of daily living.	NICE[7]	A

Table 3 (part 3 of 3): Summary of recommendations for treatment of motor symptoms

Recommendation number	Recommendation	Source	Grade
C60	Speech and language therapy should be offered to people with PD who are experiencing problems with communication, swallowing or saliva. Therapy should include: • Strategies to improve the safety and efficiency of swallowing to minimize the risk of aspiration, such as expiratory muscle stress • Strategies to improve speech and communication, such as attention to effort therapies.	NICE[8]	A
C61	Consideration should be given to referring people for alternative and augmentative communication equipment that meets their communication needs as PD progresses and their needs change.	NICE[8]	GPP
C62	Discussion should take place about a diet in which most of the protein is eaten in the final main meal of the day (a protein redistribution diet) for people with PD on levodopa who experience motor fluctuations.	NICE[8]	GPP
C63	People with PD should be advised to avoid a reduction in their total daily consumption of protein.	NICE[8]	GPP
C64	Consideration should be given to referring people with PD to a dietitian for specialist advice.	NICE[8]	GPP
C65	People with PD should be advised to take a vitamin D supplement.	NICE[8]	B GPP
C66	People with PD should be advised not to take over-the-counter dietary supplements without first consulting their pharmacist or other health care professional.	NICE[8]	GPP

Note: AAN = American Academy of Neurology practice parameters,[18] EFNS[14] = European Federation of Neurological Societies — Motor Guidelines,[14] ESR = erythrocyte sedimentation rate, GPi = globus pallidus interna, GPP = good practice point, MAO-B = monoamine oxidase B, NICE[7] = National Institute for Health and Clinical Excellence 2006 PD Guidelines,[7] NICE[8] = National Institute for Health and Clinical Excellence — 2017 PD Guidelines,[8] PD = Parkinson disease, SIGN[13] = Scottish Intercollegiate Guidelines Network,[13] STN = subthalamic nucleus.

Diagnosis and progression

Parkinson disease should be suspected in people presenting with tremor, stiffness, slowness, balance problems or gait disorders (grade: D, good practice point; source: NICE[7]).

Parkinson disease can be diagnosed using the Movement Disorder Society Clinical Diagnostic Criteria (grade: good practice point; source: CAN).

Parkinson disease is characterized by a constellation of clinical manifestations, which include slowness of movement (bradykinesia), rest tremor, rigidity and postural instability. The diagnosis of Parkinson disease is still based predominantly on its clinical features; in 2015, the Movement Disorder Society[9] published new criteria for clinically established and probable Parkinson disease. Typical Parkinson disease must be differentiated from secondary parkinsonism or tremor resulting from neuroleptic drug exposure, essential tremor or structural changes in the brain, such as from normal pressure hydrocephalus, multiple small vessel disease strokes (i.e., vascular parkinsonism) and other neurodegenerative forms of parkinsonism, for example (Figure 1).

Patients initially considered to have a possible diagnosis of Parkinson disease may benefit from a trial of dopamine replacement therapy to assist with an accurate diagnosis (grade: good practice point; source: SIGN[13]).

A clear response to dopamine replacement therapy (e.g., levodopa/carbidopa 600 mg/d) in an individual with Parkinson disease could help to reinforce that an accurate diagnosis has been established.

Routine use of functional imaging is not recommended for the differential diagnosis of Parkinson disease and Parkinson plus disorders such as progressive supranuclear palsy and multiple system atrophy (grade: C; source: SIGN[13]).

Positron emission tomography scanning is not recommended as part of the diagnostic work-up of parkinsonian syndromes, except within a research framework (grade: good practice point; source: SIGN[13]).

^{123}I-ioflupane (^{123}I-FP-CIT) single-photon emission computed tomography (SPECT) scanning should be considered as an aid to clinical diagnosis in patients where there is uncertainty between Parkinson disease and nondegenerative parkinsonism or tremor disorders (grade: B; source: SIGN[13]).

Computed tomography or magnetic resonance imaging brain scanning should not be routinely applied in the diagnosis of idiopathic Parkinson disease (grade: C; source: SIGN[13]).

Imaging modalities have been extensively researched over the years for a more accurate diagnosis of Parkinson disease, in the differential diagnosis of parkinsonian disorders, as well as in the consideration of a possible progression marker for typical Parkinson disease. However, to date, no single test has been shown to have sufficient sensitivity and specificity to accomplish all 3 objectives.

Table 4 (part 1 of 3): Summary of recommendations on treatment of nonmotor features of PD

Recommendation number	Recommendation	Source	Grade
Autonomic dysfunction			
C67	Botulinum toxin A is efficacious for the symptomatic control of sialorrhea in PD.	MDS[16]	A
C68	General measures for treating urinary urgency and incontinence include before bedtime, avoiding coffee and limiting water ingestion. When symptoms appear suddenly, exclude urinary tract infection. • Nocturia: reduce intake of fluid after 6 pm. Sleep with head-up tilt of bed to reduce urine production. • Nighttime dopaminergic therapy should be optimized. • For urinary urgency (overactive bladder), anticholinergic or antispasmodic drugs may be useful, but care must be taken regarding central adverse effects. • Botulinum toxin type A injected in the detrusor muscle.	EFNS[15]	GPP
C69	For orthostatic hypotension, general measures would include the following: • Avoid aggravating factors such as large meals, alcohol, exposure to a warm environment and drugs known to cause orthostatic hypotension, such as diuretics or antihypertensive drugs. Levodopa and dopamine agonists may also worsen orthostatic hypotension. • Increase salt intake in symptomatic orthostatic hypotension. • Ensure head-up tilt of the bed at night. • Wear elastic stockings. • Highlight postprandial effects. In some patients, hypotension occurs only postprandially. Warning the patient about this effect and taking frequent small meals may be helpful.	EFNS[15]	GPP
C70	For orthostatic hypotension, drug therapy includes the addition of: • Midodrine • Fludrocortisone • Domperidone.	 EFNS[14] EFNS[14] CAN	 A GPP GPP
C71	For gastrointestinal motility problems in PD, general measures for treating constipation should be applied: • Increased intake of fluid and fibre is recommended (grade: GPP). • Increased physical activity can be beneficial (grade: GPP). • Polyethylene glycol solution (macrogol) is recommended (grade: A). • Fibre supplements such as psyllium (grade: B) or methylcellulose and osmotic laxatives (e.g., lactulose) are recommended (grade: GPP). • Short-term irritant laxatives for selected patients are recommended (grade: GPP). • The use of drugs with anticholinergics activity should be reduced or discontinued (grade: GPP). • Domperidone should be added (grade: B).	EFNS[14]	Varied
C72	For individuals with PD and erectile dysfunction: • Drugs associated with erectile dysfunction (e.g., α-blockers) or anorgasmia (e.g., selective serotonin reuptake inhibitors) should be discontinued. Dopaminergic therapy can have both negative and positive effects on this symptom (grade: GPP). • Sildenafil 50–100 mg, 1 h before sex, can be tried in patients with PD with these problems (grade: B). • Other drugs of this class, such as tadalafil (10 mg, 30 min–12 h before sex) or vardenafil (10 mg, 1 h before sex) can be alternative choices (grade: GPP). • In some patients, apomorphine injections (5–10 min before sex) can also be an alternative treatment (grade: GPP). • Intracavernous injections of papaverine or alprostadil can be considered in selected patients (grade: GPP).	EFNS[15]	Varied
Cognitive impairment			
C73	The diagnoses of dementia associated with PD and of mild cognitive impairment in PD can be made using the Movement Disorder Society Clinical Diagnostic Criteria. These require reports of subjective cognitive decline and difficulties on psychometric testing.	CAN	GPP
C74	For PD dementia, cholinesterase inhibitors could be added: rivastigmine (grade: A), donepezil (grade: A), or galantamine (grade: C). There may be idiosyncrasy in clinical response and adverse effects, so it is worth trying an alternative agent (grade: GPP). Memantine can be added or substituted if cholinesterase inhibitors are not tolerated or lack efficacy (grade: C).	EFNS[14]	Varied
C75	No interventions have been proven to reduce the risk of progression of PD from mild cognitive impairment to dementia but lifestyle modifications, such as engaging in cognitive and social activities and physical exercise, are encouraged.	CAN	GPP

Table 4 (part 2 of 3): Summary of recommendations on treatment of nonmotor features of PD

Recommendation number	Communication	Source	Grade
Sleep disorders			
C76	A full sleep history should be taken from people with PD who report sleep disturbance.	NICE[7]	D GPP
C77	Good sleep hygiene should be advised in people with PD with any sleep disturbance and includes: • Avoidance of stimulants (e.g., coffee, tea, caffeine) in the evening • Establishment of a regular pattern of sleep • Comfortable bedding and temperature • Provision of assistive devices, such as a bed lever or rails to aid with moving and turning, allowing the person to get more comfortable • Restriction of napping in the late afternoon and early evening • Advice about taking regular and appropriate exercise to induce better sleep • Advice to avoid remaining in bed for long periods of time if unable to sleep • A review of all medication and avoidance of any drugs that may affect sleep or alertness, or may interact with other medication (e.g., selegiline, antihistamines, H_2 antagonists, antipsychotics and sedatives).	NICE[7]	D GPP
C78	Optimization of nighttime dopaminergic treatment (grade: B), melatonin (grade: B) and low doses of sedating antidepressants such as doxepin or trazodone (grade: GPP) may be beneficial for subjective symptoms of insomnia in patients with PD.	EFNS[14]	Varied
C79	Care should be taken to identify REM sleep behaviour disorder in people with PD. Melatonin or clonazepam may be useful, if pharmacologic treatment is required.	NICE[8]	GPP
C80	Care should be taken to identify and manage restless legs syndrome in people with PD and sleep disturbance. Patients with bothersome restless legs syndrome should be screened for iron deficiency. Potential treatments include optimization of dopaminergic therapy or GABAergic agents such as pregabalin.	NICE[8] CAN	GPP GPP
C81	People with PD who have daytime sleepiness or sudden onset of sleep should be advised not to drive, and to consider any occupational hazards. Their medicines should be adjusted to reduce its occurrence.	NICE[8]	GPP
C82	Modafinil should be considered for the treatment of excessive daytime sleepiness in people with PD, only if a detailed sleep history has excluded reversible pharmacologic and physical causes.	NICE[8]	B GPP
Depression			
C83	Clinicians should have a low threshold for diagnosing depression in PD.	NICE[7]	D GPP
C84	Clinicians should be aware that there are difficulties in diagnosing mild depression in people with PD because the clinical features of depression overlap with the motor features of PD.	NICE[7]	D GPP
C85	Self-rating or clinician-rated scales may be used to screen for depression in patients with PD. • Diagnosis of depression should not be made on the basis of rating scale score alone. • Assessment or formulation of depression should be carried out via clinical interview, with a focus on low mood, and with due caution in relation to interpretation of cognitive or somatic symptoms that may be symptoms of PD rather than depression. • Relatives or caregivers who know the patient well should be invited to provide supplementary information to assist the diagnosis, particularly in the context of cognitive impairment.	SIGN[13] SIGN[13] SIGN[13] SIGN[13]	C GPP GPP GPP
C86	The management of depression in people with PD should be tailored to the individual — in particular, to their co-existing therapy.	NICE[7]	D GPP
Psychosis			
C87	All people with PD and psychosis should receive a general medical evaluation and treatment for any precipitating condition.	NICE[7]	D GPP
C88	For patients with PD and psychosis, polypharmacy should be reduced. • Anticholinergic antidepressants should be reduced or stopped; anxiolytics or sedatives should be reduced or stopped. • Antiparkinsonian drugs should be reduced. Anticholinergics should be stopped, amantadine should be stopped, dopamine agonists should be reduced or stopped, MAO-B and COMT inhibitors should be reduced or stopped and, lastly, levodopa should be reduced.	EFNS[14]	GPP

Table 4 (part 3 of 3): Summary of recommendations on treatment of nonmotor features of PD

Recommendation number	Communication	Source	Grade
C89	Hallucinations and delusions should not be treated if they are well tolerated by the person with PD and their family members and caregivers (as appropriate). Even minor hallucinations or delusions should be considered a marker of disease progression, and should warrant a general medical evaluation and treatment for any precipitating factors.	NICE[8]	GPP
C90	For patients with PD and psychosis needing treatment: • Quetiapine is possibly useful. • Clozapine is useful but requires monitoring.	 EFNS[14] EFNS[14]	 GPP A
C91	With the exception of quetiapine and clozapine as described in recommendation C90, all other antipsychotics should be avoided in PD psychosis (grade: GPP). Olanzapine (grade: A), risperidone (grade: C) and aripiprazole (grade: GPP) can worsen parkinsonism (harmful).	EFNS[14]	Varied
C92	Pimavanserin could be considered as a treatment for PD psychosis.	CAN	B

Note: CAN = new Canadian Guideline recommendation, COMT = catechol-*O*-methyltransferase, EFNS[14] = European Federation of Neurological Societies — Motor Guidelines,[14] EFNS[15] = European Federation of Neurological Societies — late Guidelines,[15] GABA = γ-aminobutyric acid, GPP = good practice point, MAO-B = monoamine oxidase B, MDS = Movement Disorder Society Evidence-Based Medicine Review,[16] NICE[7] = National Institute for Health and Clinical Excellence 2006 PD Guidelines,[7] NICE[8] = National Institute for Health and Clinical Excellence — 2017 PD Guidelines,[8] PD = Parkinson disease, REM = rapid eye movement, SIGN[13] = Scottish Intercollegiate Guidelines Network.[13]

Table 5: Summary of recommendations for palliative care

Recommendation number	Recommendation	Source	Grade
C93	People with PD and their family members and caregivers (as appropriate) should be offered opportunities to discuss the prognosis of their condition. These discussions should promote people's priorities, shared decision-making and patient-centred care.	NICE[8]	D
C94	People with PD and their family members and caregivers should be given appropriate verbal and written information about the following, and it should be recorded that the discussion has taken place: • Progression of PD • Possible future adverse effects of medicines for PD • Advance care planning, including orders for advanced decisions to refuse treatment and do not attempt resuscitation, and lasting power of attorney for finance and health and social care • Options for future management • What could happen at the end of life • Available support services; for example, personal care, equipment and practical support, financial support and advice, care at home and respite care.	NICE[8]	D
C95	When discussing palliative care, it should be recognized that family members and caregivers may have different information needs from the person with PD.	NICE[8]	D
C96	Consideration should be given to referring people at any stage of PD to the palliative care team to give them and their family members or caregivers (as appropriate) the opportunity to discuss palliative care and care at the end of life.	NICE[8]	D
C97	Palliative care requirements of people with PD should be considered throughout all phases of the disease; this includes an option of medical assistance in dying.	CAN	GPP

Note: CAN = new Canadian Guideline recommendation, GPP = good practice point, NICE[8] = National Institute for Health and Clinical Excellence — 2017 PD Guidelines,[8] PD = Parkinson disease.

Genetic testing for monogenic parkinsonism is not recommended in routine clinical practice (grade: good practice point; source: SIGN[13]).

To date, there is no established therapy for any of the genetic risk factors that have been convincingly identified in the development of either early-onset, monogenic parkinsonism or for the "complex disease-type," late-onset Parkinson disease variant; this is one reason why genetic testing is not recommended in routine clinical practice at this time.

Treatment

Many symptomatic treatments are available for Parkinson disease. These include medications, surgical procedures, physiotherapy, occupational therapy and other support services. These treatments can have a substantial impact on improving an affected individual's quality of life and should be made available. Despite the increase in nonpharmacologic treatments, individuals with Parkinson disease become more reliant on their medication to maintain their ability to function as the

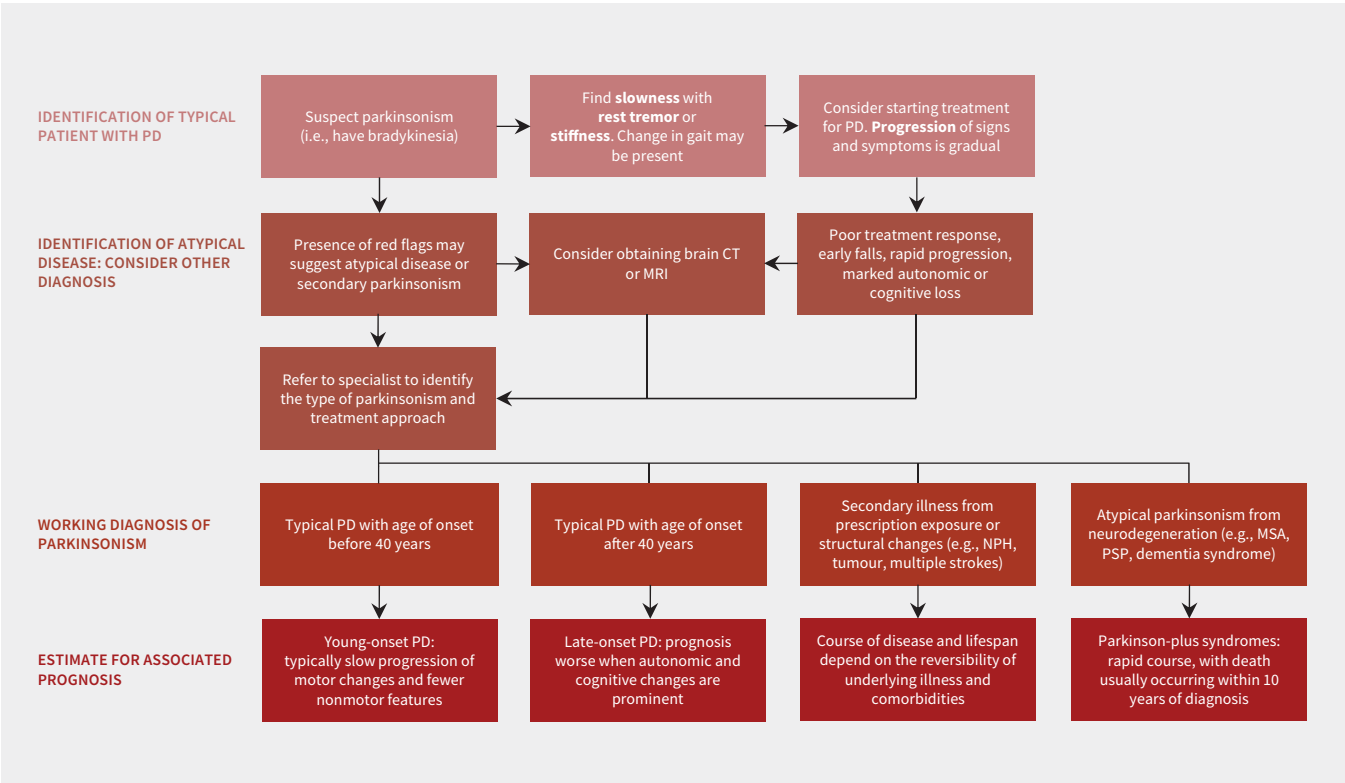

Figure 1: Diagnosis and prognosis of Parkinson disease (PD). Note: CT = computed tomography, MRI = magnetic resonance imaging, MSA = multiple system atrophy, NPH = normal pressure hydrocephalus, PSP = progressive supranuclear palsy.

Table 6: Potential benefit and harms of initial Parkinson disease medication options

Characteristic	Levodopa	Dopamine agonists	Monoamine oxidase B inhibitors
Motor symptom improvement	+++	++	+
Motor complications	+++	++	+
Specific adverse events*	++	+++	+

*Impulse control disorders, excessive sleepiness and hallucinations.

disease progresses. A balance between the adverse effects of the medication and the benefit often becomes more difficult with time (Table 6).

Levodopa

Levodopa may be used as a symptomatic treatment for people with early Parkinson disease (grade: A; source: NICE[7]).

Levodopa remains the most effective medication for the treatment of motor symptoms and there is no reason to delay its use for those with bothersome motor symptoms.

Dopamine agonists

Dopamine agonists may be used as a symptomatic treatment for people with early Parkinson disease (grade: A; source: NICE[7]).

A dopamine agonist should be titrated to a clinically efficacious dose. If adverse effects prevent this, another agonist or a drug from another class should be used in its place (grade: D, good practice point; source: NICE[7]).

Although dopamine agonists are effective in the initial treatment of Parkinson disease, the risk of adverse effects is higher than with levodopa. In patients older than 70 years, dopamine agonists should be used with even more caution, if at all. There is no good evidence that one dopamine agonist is superior to another regarding control of motor symptoms in Parkinson disease, but only nonergot dopamine agonists should be used because of the risk of pulmonary and cardiac fibrosis seen with the older ergot agonists (e.g., bromocriptine). A transdermally administered dopamine agonist (rotigotine) is now available in Canada and has the convenience of a single, daily, nonoral administration.

Subcutaneous apomorphine infusions or injections may be considered for the management of severe motor complications, but should be provided only in units that have sufficient experience and resources (grade: C; source: SIGN[13]).

Apomorphine is a nonergot dopamine agonist that can be administered in the form of subcutaneous injection. Health Canada has recently approved the latter formulation for the acute, intermittent treatment of "off" episodes. However, training is required for patients and caregivers.

When starting dopamine agonist therapy, people and their family members and caregivers (as appropriate) should be given verbal and written information about the following, and the discussion should be recorded as having taken place:

- *The increased risk of developing impulse control disorders when taking dopamine agonist therapy, and that these may be concealed by the person affected.*
- *The different types of impulse control disorders (e.g., compulsive gambling, hypersexuality, binge eating and obsessive shopping).*
- *Who to contact if impulse control disorders develop.*
- *The possibility that if problematic impulse control disorders develop, dopamine agonist therapy will be reviewed and may be reduced or stopped (grade: good practice point; source: NICE[8]).*

It should be recognized that impulse control disorders can develop in a person with Parkinson disease who is on any dopaminergic therapy at any stage in the disease course (grade: good practice point; source: NICE[8]).

While impulse control disorders can develop at any time when dopaminergic therapies are used, it occurs in nearly half of those taking dopamine agonists over a prolonged period.[10]

Device-aided therapies

Deep brain stimulation of the subthalamic nucleus or the globus pallidus interna is effective against motor fluctuations and dyskinesia (grade: A; source: EFNS[14]).

Deep brain stimulation is currently the surgical treatment of choice in appropriately selected patients with substantial motor complications when optimized medical treatment has failed in treating motor symptoms (such as motor fluctuations or dyskinesia).

Intrajejunal levodopa-carbidopa enteric gel administered through percutaneous gastrostomy may be considered for the reduction of off-time or to reduce dyskinesia (grade: C; source: EFNS[14]).

The intrajejunal levodopa-carbidopa gel infusion through a percutaneous enteral tube is now available in Canada. It is accessible under limited use in tertiary movement disorders centres and can substantially reduce off-times when compared with standard oral levodopa.[14]

Rehabilitation

Consideration should be given to referring people who are in the early stages of Parkinson disease to a physiotherapist with experience of the disease for assessment, education and advice, including information about physical activity (grade: B; source: NICE[8]).

Physiotherapy specific to Parkinson disease should be offered to people who are experiencing balance or motor function problems (grade: B; source: NICE[8]).

Although previously relegated to later stages of illness, rehabilitative therapies have much to offer patients who have recently received a diagnosis of Parkinson disease. Evidence exists to support early institution of exercise at the time of diagnosis, in addition to the clear benefit now shown in those with well-established disease. It improves not only how people with Parkinson disease feel, but also their ability to perform activities of daily living.[8] Physical and exercise therapies should focus on gait re-education, improvement of balance and flexibility, enhancement of aerobic capacity and strength, improvement of movement initiation, augmentation of functional independence — including with transfers, overall mobility and activities of daily living — and the provision of advice regarding safety in the home environment. Continued therapy is required to sustain benefits, and this is particularly important in Parkinson disease as apathy is a barrier to patient adherence in the absence of scheduled lessons or training.

Occupational therapy specific to Parkinson disease should be offered to people who are having difficulties with activities of daily living (grade: A; source: NICE[7]).

Consideration should be given to referring people who are in the early stages of Parkinson disease to an occupational therapist with experience of Parkinson disease for assessment, education and advice on motor and nonmotor symptoms (grade: B; source: NICE[8]).

Speech and language therapy should be offered to people with Parkinson disease who are experiencing problems with communication, swallowing or saliva. Therapy should include (grade: A; source: NICE[8]):

- *Strategies to improve the safety and efficiency of swallowing to minimize the risk of aspiration, such as expiratory muscle stress*
- *Strategies to improve speech and communication, such as attention to effort therapies*

Parkinson disease–specific occupational therapy, as well as speech and language therapy, are indicated for people who are having difficulties with activities of daily living, but also early on, for prevention.

Nonmotor features

Autonomic dysfunction is a common complication of Parkinson disease and can include cardiovascular, gastrointestinal, urogenital and thermoregulatory problems. These have a substantial negative impact on quality of life; however, the quality of evidence to guide management is poor.

Botulinum toxin A is efficacious for the symptomatic control of sialorrhea in Parkinson disease (grade: A; source: MDS[16]).

Sialorrhea can be cosmetically disturbing and can contribute to functional disability. Botulinum toxin A injections into the salivary glands have been shown to be efficacious to treat sialorrhea.[16]

For orthostatic hypotension, drug therapy includes the addition of:
- *midodrine (grade: A; source: EFNS[14])*
- *fludrocortisone (grade: good practice point; source: EFNS[14])*
- *domperidone (grade: good practice point; source: CAN)*

Symptoms of orthostatic hypotension are likely under-reported in patients with Parkinson disease. Movement disorder specialists in Canada have used domperidone for decades. Domperidone given either before a meal or 30 minutes before each dose of dopaminergic medication may prevent peripheral vasodilation. Although good evidence of efficacy for its use is lacking, it was included in the guideline given its widespread use. There is, however, a Health Canada warning[18] about concerns of QT prolongation with domperidone. It should therefore be used with caution in conjunction with other drugs known to prolong QT interval and in those patients with Parkinson disease with a history of cardiovascular disease.[11]

Care should be taken to identify rapid eye movement (REM) sleep behaviour disorder in people with Parkinson disease. Melatonin or clonazepam may be useful if pharmacologic treatment is required (grade: good practice point; source: NICE[8]).

Rapid eye movement sleep behaviour disorder can pre-date the diagnosis of Parkinson disease; most patients with idiopathic REM sleep behaviour disorder in middle age will develop a neurodegenerative synucleinopathy (e.g., Parkinson disease, Lewy body dementia).[12] In observational studies, both clonazepam (0.25–1 mg hs) and melatonin (3–12 mg hs) could suppress REM sleep behaviour disorder; clonazepam was more effective than melatonin, but had a higher adverse effect profile, particularly with sedation, balance impairment and cognitive changes.[8]

The management of depression in people with Parkinson disease should be tailored to the individual — in particular, to their co-existing therapy (grade: D, good practice point; source: NICE[7]).

Depression frequently manifests even before the onset of motor symptoms of Parkinson disease and becomes more prominent and increasingly challenging to treat with disease progression. Unfortunately, there continues to be a paucity of high-quality research trials to support the choice of symptomatic therapies. The principles guiding the use of antidepressants in Parkinson disease are similar to those guiding their use in other medically ill populations in general: start low and go slow, with the effective dose often being less than that recommended for the general population.

For patients with Parkinson disease and psychosis needing treatment:
- *Quetiapine is possibly useful (grade: good practice point; source: EFNS[14])*
- *Clozapine is useful but requires monitoring (grade: A; source: EFNS[14])*

Pimavanserin could be considered as a treatment for Parkinson disease psychosis (grade: B; source: CAN).

For patients with Parkinson disease and psychosis needing treatment, quetiapine and clozapine have been standard treatment, but a recent addition to the treatment armamentarium of psychosis in Parkinson disease is pimavanserin, a selective serotonin 5-hydroxytryptamine 2A (5-HT2a) inverse agonist; however, this is not yet available in Canada.

For Parkinson disease dementia, cholinesterase inhibitors could be added: rivastigmine (grade: A), donepezil (grade: A), or galantamine (grade: C). There may be idiosyncrasy in clinical response and adverse effects, so it is worth trying an alternative agent (grade: good practice point). Memantine can be added or substituted if cholinesterase inhibitors are not tolerated or lack efficacy (grade: C). (Source: EFNS.[14])

Cholinesterase inhibitors have shown efficacy for the treatment of cognitive decline in PD.[14]

Palliative care

There is growing information with respect to palliative care in Parkinson disease and the guideline panel therefore thought that the topic was an important addition to the new guideline.

People with Parkinson disease and their family members and caregivers (as appropriate) should be offered opportunities to discuss the prognosis of their condition. These discussions should promote people's priorities, shared decision-making and patient-centred care (grade: D; source: NICE[8]).

People with Parkinson disease and their family members and caregivers should be given appropriate verbal and written information about the following, and it should be recorded that the discussion has taken place (grade: D; source: NICE[8]):
- *Progression of Parkinson disease*
- *Possible future adverse effects of medicines for Parkinson disease*
- *Advance care planning, including orders for advanced decisions to refuse treatment and do not attempt resuscitation, and lasting power of attorney for finance and health and social care*
- *Options for future management*
- *What could happen at the end of life*
- *Available support services; for example, personal care, equipment and practical support, financial support and advice, care at home and respite care.*

When discussing palliative care, it should be recognized that family members and caregivers may have different information needs from the person with Parkinson disease (grade: D; source: NICE[8]).

Palliative care requirements of people with Parkinson disease should be considered throughout all phases of the disease; this includes an option of medical assistance in dying (grade: good practice point; source: CAN).

End-of-life choices, including advance care planning with an open and frank discussion with the patient and the person designated as decision-maker, should be initiated early in the disease process. Conversations occurring in the ambulatory setting are likely to be more productive and less crisis driven than leaving such conversations until an acute stay in hospital.

Implementation

Parkinson Canada will assist in disseminating print and electronic versions of the guideline to health care providers, individuals with Parkinson disease and their families, as well as post the full guideline on its website. As part of the Parkinson Canada affiliation with the Neurological Health Charities Canada, the guideline will be used to assist in advocacy efforts to federal and provincial governments to improve the care of individuals with Parkinson disease, as well as other brain diseases.

A clear barrier to the implementation of this guideline is a lack of adequate access to health care providers with expertise in dealing with individuals with Parkinson disease. This includes not only specialty physicians but also nurses, speech, occupational and physical therapists with adequate training to deal with these patients who have this very complex condition. Access to palliative care treatment is also lacking for Canadians with neurodegenerative disease and should be addressed at local and national levels of care delivery.

Deep brain stimulation therapy and intrajejunal levodopa-carbidopa enteric gel therapy are expensive and complex to use, and most centres have limited budgetary or human resources with respect to the number of procedures they can perform and continue to manage.

The cost of care for neurodegenerative diseases in general will increase as our population ages. The limits that our publicly funded health care system can provide must be addressed, but are outside the scope of this guideline. Parkinson Canada, as well as patients and their families, will continue to play an important role in advocating for more resources and the dissemination of knowledge to improve the care and support of all of those affected by this disease.

Other guidelines

This guideline draws on the recommendations of the Scottish Intercollegiate Guidelines Network,[13] the European Federation of Neurological Societies,[14,15] the Movement Disorder Society,[16] the National Institute for Health and Clinical Excellence[7,8] and the American Academy practice parameters.[17] We used knowledge taken from these other guidelines to form the basis of this guideline update, and we chose the recommendations for their relevance to our Canadian health care system.

Gaps in knowledge

There remain important knowledge gaps with respect to many areas of Parkinson disease. Understanding the pathophysiology of the disease will allow for the development of more effective and potentially disease-modifying treatments. Even if we do not yet fully understand disease-causing mechanisms, having good biomarkers for Parkinson disease will accelerate the development of new therapies. Progress has been made in our understanding and management of nonmotor features of Parkinson disease, but evidence for optimal treatment, especially for this area in Parkinson disease, is lacking, as can be appreciated by the low grade of many recommendations in this section.

Conclusion

Important strides have been made in improving our understanding of Parkinson disease, as well as its treatment. Management of the disease remains complex, and all members of the health care team need access to the most up-to-date information available. Effectively communicating information among all members of the health care team and the patient is essential for optimal care delivery, yet obstacles remain. The cost of care for Parkinson disease and neurodegenerative diseases in general will increase as our population ages. Decisions about the limits that our publicly funded health care system can provide need to be addressed.

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