Parkinson's disease in adults: diagnosis and management

NICE guideline: short version

Draft for consultation, October 2017

This guideline covers diagnosing and managing Parkinson's disease in adults. It aims to improve care from the time of diagnosis, including monitoring and managing symptoms, providing information and support, and palliative care.

Who is it for?

- Healthcare professionals
- Commissioners and providers
- People with Parkinson's disease, their families and carers

This guideline will update and replace NICE guideline 35 (published June 2006).

We have updated or added new recommendations on treating Parkinson's disease symptoms, deep brain stimulation, monitoring and managing impulse control disorders, and palliative care.

You are invited to comment on the new and updated recommendations in this guideline. These are marked as:

- **[new 2017]** if the evidence has been reviewed and the recommendation has been added or updated **or**
- **[2017]** if the evidence has been reviewed but no change has been made to the recommended action.

You are also invited to comment on recommendations that NICE proposes to delete from the 2006 guideline.

We have not updated recommendations shaded in grey, and cannot accept comments on them. In some cases, we have made minor wording changes for clarification.

See Update information for a full explanation of what is being updated.

This version of the guideline contains the draft recommendations, context and recommendations for research. Information about how the guideline was developed is on the guideline's page on the NICE website. This includes the guideline committee's discussion and the evidence reviews (in the full guideline), the scope, and details of the committee and any declarations of interest.

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Contents

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.1 Communication with people with Parkinson's disease and their carers

1.1.1 Communication with people with Parkinson's disease should aim towards empowering them to participate in judgements and choices about their own care. **[2006]**

1.1.2 In discussions, aim to achieve a balance between providing honest, realistic information about the condition and promoting a feeling of optimism. **[2006]**

1.1.3 Because people with Parkinson's disease may develop impaired cognitive ability, communication problems and/or depression, provide them with:

- both oral and written communication throughout the course of the disease, which should be individually tailored and reinforced as necessary
- consistent communication from the professionals involved. **[2006]**

1.1.4 Give family members and carers (as appropriate) information about the condition, their entitlement to a Carer's Assessment and the support services available. **[2006]**

1.1.5 People with Parkinson's disease should have a comprehensive care plan agreed between the person, their family members and carers (as appropriate), and specialist and secondary healthcare providers. **[2006]**

1.1.6 Offer people with Parkinson's disease an accessible point of contact with specialist services. This could be provided by a Parkinson's disease nurse specialist. **[2006]**

1.1.7 Advise people with Parkinson's disease who drive that they should inform the Driver and Vehicle Licensing Agency (DVLA) and their car insurer of their condition when Parkinson's disease is diagnosed. **[2006]**

1.2 Diagnosing Parkinson's disease diagnosis

Definition and differential diagnosis

1.2.1 Suspect Parkinson's disease in people presenting with tremor, stiffness, slowness, balance problems and/or gait disorders. **[2006]**

1.2.2 If Parkinson's disease is suspected, refer people quickly and untreated to a specialist with expertise in the differential diagnosis of this condition. (People with suspected mild Parkinson's disease should be seen within 6 weeks, but new referrals in later disease with more complex problems require an appointment within 2 weeks.) **[2006]**

Clinical and post-mortem diagnosis

1.2.3 Diagnose Parkinson's disease clinically, based on the UK Parkinson's Disease Society Brain Bank Clinical Diagnostic Criteria. **[2006]**

1.2.4 Encourage healthcare professionals to discuss with people with Parkinson's disease the possibility of donating tissue to a brain bank for diagnostic confirmation and research. **[2006]**

Review of diagnosis

1.2.5 Review the diagnosis of Parkinson's disease regularly, and reconsider it if atypical clinical features develop. (People diagnosed with Parkinson's disease should be seen at regular intervals of 6–12 months to review their diagnosis.) **[2006]**

Single photon emission computed tomography (SPECT)

1.2.6 Consider ^{123}I-FP-CIT single photon emission computed tomography (SPECT) for people with tremor if essential tremor cannot be clinically differentiated from parkinsonism. **[2006, amended 2017]**

1.2.7 ^{123}I-FP-CIT SPECT should be available to specialists with expertise in its use and interpretation. **[2006]**

Positron emission tomography (PET)

1.2.8 Do not use positron emission tomography (PET) in the differential diagnosis of parkinsonian syndromes, except in the context of clinical trials. **[2006, amended 2017]**

Structural MRI

1.2.9 Do not use structural MRI to diagnose Parkinson's disease. **[2006, amended 2017]**

1.2.10 Structural MRI may be considered in the differential diagnosis of other parkinsonian syndromes. **[2006]**

Magnetic resonance volumetry

1.2.11 Do not use magnetic resonance volumetry in the differential diagnosis of parkinsonian syndromes, except in the context of clinical trials. **[2006, amended 2017]**

Magnetic resonance spectroscopy

1.2.12 Do not use magnetic resonance spectroscopy in the differential diagnosis of parkinsonian syndromes. **[2006, amended 2017]**

Acute levodopa and apomorphine challenge tests

1.2.13 Do not use acute levodopa and apomorphine challenge tests in the differential diagnosis of parkinsonian syndromes. **[2006, amended 2017]**

Objective smell testing

1.2.14 Do not use objective smell testing in the differential diagnosis of parkinsonian syndromes, except in the context of clinical trials. **[2006, amended 2017]**

1.3 Pharmacological management of motor symptoms

First-line treatment

1.3.1 Offer levodopa to people in the early stages of Parkinson's disease whose motor symptoms impact on their quality of life. **[new 2017]**

1.3.2 Offer a choice of dopamine agonists, levodopa or monoamine oxidase B (MAO-B) inhibitors to people in the early stages of Parkinson's disease whose motor symptoms do not impact on their quality of life, after a discussion with the person about their:

- clinical and lifestyle circumstances
- preferences, taking into account the potential benefits and harms of the different drug classes (see table 1). **[new 2017]**

Table 1 Potential benefits and harms of dopamine agonists, levodopa and MAO-B inhibitors

	Levodopa	Dopamine agonists	MAO-B inhibitors
Motor symptoms	More improvement in motor symptoms	Intermediate improvement in motor symptoms	Less improvement in motor symptoms
Activities of daily living	More improvement in activities of daily living	Less improvement in activities of daily living	Less improvement in activities of daily living
Motor complications	More motor complications	Fewer motor complications	Fewer motor complications
Adverse events	Fewer specified adverse events[1]	More specified adverse events[1]	Fewer specified adverse events[1]

Abbreviation: MAO-B, monoamine oxidase B.
[1] Excessive sleepiness, hallucinations and impulse control disorders (see the summary of product characteristics for full information on individual medicines).

Information and support

1.3.3 When starting treatment for people in the early stages of Parkinson's disease, give people and their family members and carers (as

appropriate) oral and written information about the following risks, and record that the discussion has taken place:

- Impulse control disorders with all dopaminergic therapy (and the higher risk with dopamine agonists). Also see recommendations 1.4.1–1.4.9.
- Excessive sleepiness and sudden onset of sleep with dopamine agonists. Also see recommendations 1.5.1–1.5.3.
- Psychotic symptoms (hallucinations and delusions) with all Parkinson's disease treatments (and the higher risk with dopamine agonists). Also see recommendations 1.5.13–1.5.20. **[new 2017]**

Adjuvant treatment of motor symptoms

1.3.4 If a person with Parkinson's disease has developed dyskinesia and/or motor fluctuations, including medicines 'wearing off', seek advice from a healthcare professional with specialist expertise in Parkinson's disease before modifying therapy. **[new 2017]**

1.3.5 Offer a choice of dopamine agonists, MAO-B inhibitors or catechol-O-methyl transferase (COMT) inhibitors as an adjunct to levodopa to people who have developed dyskinesia and/or motor fluctuations despite optimal levodopa therapy, after a discussion with the person about their:

- clinical and lifestyle circumstances
- preferences, taking into account the potential benefits and harms of the different drug classes (see table 2) **[new 2017]**

Table 2 Potential benefits and harms of dopamine agonists, MAO-B inhibitors, COMT inhibitors and amantadine

	Dopamine agonists	MAO-B inhibitors	COMT inhibitors	Amantadine
Motor symptoms	Improvement in motor symptoms	Improvement in motor symptoms	Improvement in motor symptoms	No evidence of improvement in motor symptoms
Activities of daily living	Improvement in activities of daily living	Improvement in activities of daily living	Improvement in activities of daily living	No evidence of improvement in activities of daily living
Off time	More off-time reduction	Off-time reduction	Off-time reduction	No studies reporting this outcome
Adverse events	Intermediate risk of adverse events	Fewer adverse events	More adverse events	No studies reporting this outcome
Hallucinations	More risk of hallucinations	Lower risk of hallucinations	Lower risk of hallucinations	No studies reporting this outcome
Abbreviations: MAO-B, monoamine oxidase B; COMT, catechol-O-methyl transferase.				

1.3.6 Do not offer anticholinergics to people with Parkinson's disease who have developed dyskinesia and/or motor fluctuations. **[new 2017]**

1.3.7 Do not offer amantadine to people with Parkinson's disease who have developed dyskinesia and/or motor fluctuations. **[new 2017]**

1.4 Managing and monitoring impulse control disorders as an adverse effect of dopaminergic therapy

Predictors for the development of impulse control disorders

1.4.1 Recognise that impulse control disorders can develop in a person with Parkinson's disease who is on any dopaminergic therapy at any stage in the disease course. **[new 2017]**

1.4.2 Recognise that the following are associated with an increased risk of developing impulse control disorders:

- Dopamine agonist therapy.
- A history of previous impulsive behaviours.

- A history of high alcohol consumption and/or smoking. **[new 2017]**

Information and support

1.4.3 When starting dopamine agonist therapy, give people and their family members and carers (as appropriate) oral and written information about the following, and record that the discussion has taken place:

- The increased risk of developing impulse control disorders when taking dopamine agonist therapy, and that these may be covert.
- Different types of impulse control disorders (for example, 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. **[new 2017]**

1.4.4 Discuss potential impulse control disorders at review appointments, particularly when modifying therapy, and record that the discussion has taken place. **[new 2017]**

1.4.5 Be aware that impulse control disorders can also develop while taking dopaminergic therapies other than dopamine agonists. **[new 2017]**

Managing dopaminergic therapy in people who have developed an impulse control disorder

1.4.6 If a person with Parkinson's disease has developed a problematic impulse control disorder, seek advice from a healthcare professional with specialist expertise in Parkinson's disease before modifying dopaminergic therapy. **[new 2017]**

1.4.7 Discuss the following with the person and their family members and carers (as appropriate):

- How the impulse control disorder is affecting their life.
- Possible treatments, such as reducing or stopping dopaminergic therapy.

- The benefits and disadvantages of reducing or stopping dopaminergic therapy. **[new 2017]**

1.4.8 When managing impulse control disorders, modify dopaminergic therapy by first gradually reducing any dopamine agonist before reducing levodopa. Monitor whether the impulse control disorder improves and whether the person has any symptoms of dopamine agonist withdrawal. **[new 2017]**

1.4.9 Offer specialist cognitive behavioural therapy targeted at impulse control disorders if modifying dopaminergic therapy is not effective. **[new 2017]**

1.5 Pharmacological management of non-motor symptoms

Daytime sleepiness

1.5.1 Consider modafinil to treat excessive daytime sleepiness in people with Parkinson's disease, only if a detailed sleep history has excluded reversible pharmacological and physical causes. **[new 2017]**

1.5.2 Healthcare professionals with specialist expertise in Parkinson's disease should review people who are taking modafinil at least every 12 months. **[new 2017]**

1.5.3 Advise people with Parkinson's disease who have daytime sleepiness and/or sudden onset of sleep not to drive (also see recommendation 1.1.7) and to consider any occupation hazards. Adjust their medicines to reduce its occurrence, having first sought advice from a healthcare professional with specialist expertise in Parkinson's disease. **[2017]**

Rapid eye movement (REM) sleep behaviour disorder

1.5.4 Take care to identify and manage restless leg syndrome and rapid eye movement (REM) sleep behaviour disorder in people with Parkinson's disease and sleep disturbance. **[2017]**

1.5.5 Consider clonazepam or melatonin to treat REM sleep behaviour disorder if a medicines review has addressed possible pharmacological causes[1]. **[new 2017]**

Nocturnal akinesia

1.5.6 Consider modified-release levodopa preparations or modified-release oral dopamine agonists to treat nocturnal akinesia in people with Parkinson's disease. If the selected option is not effective or not tolerated, offer the other instead. **[new 2017]**

1.5.7 Consider rotigotine if modified-release levodopa preparations and/or modified-release oral dopamine agonists are not effective in treating nocturnal akinesia. **[new 2017]**

1.5.8 Advise people to take modified-release oral dopamine agonists later in the day to ensure nocturnal dopaminergic stimulation (taking into account the half-life of modified-release levodopa preparations and modified-release dopamine agonists). **[new 2017]**

Orthostatic hypotension

1.5.9 If a person with Parkinson's disease has developed orthostatic hypotension, review the person's existing medicines to address possible pharmacological causes, including:

- antihypertensives (including diuretics)
- dopaminergics
- anticholinergics
- antidepressants
- proton pump inhibitors. **[new 2017]**

[1] At the time of consultation (October 2016), use of clonazepam or melatonin for this indication would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

1.5.10 Consider midodrine for people with Parkinson's disease and orthostatic hypotension, taking into account the contraindications and monitoring requirements (including monitoring for supine hypertension). **[new 2017]**

1.5.11 If midodrine is contraindicated, not tolerated or not effective, consider fludrocortisone[2] (taking into account its safety profile, in particular its cardiac risk and potential interactions with other medicines) or domperidone[3] (with QT interval monitoring). **[new 2017]**

Depression

1.5.12 For guidance on identifying, treating and managing depression in people with Parkinson's disease, see the NICE guideline on depression in adults with a chronic physical health problem. **[new 2017]**

Psychotic symptoms (hallucinations and delusions)

1.5.13 At review appointments and following medicines changes, ask people with Parkinson's disease and their family members and carers (as appropriate) whether the person is experiencing hallucinations (particularly visual) or delusions. **[new 2017]**

1.5.14 Perform a general medical evaluation for people with hallucinations or delusions, and offer treatment for any conditions that might have triggered them. **[new 2017]**

[2] At the time of consultation (October 2016), use of fludrocortisone for this indication would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

[3] At the time of consultation (October 2016), use of domperidone for this indication would be off-label. Medicines and Healthcare products Regulatory Agency (MHRA) guidance (2014) notes that domperidone is associated with a small increased risk of serious cardiac side effects. Domperidone is now contraindicated in certain groups in whom the risk of cardiac effects is higher; its marketing authorisations have also been restricted to its use in the relief of nausea and vomiting only, at the lowest effective dose and for the shortest possible time (usually not more than 1 week): see the MHRA guidance and summaries of product characteristics. The MHRA advises that prescribers should take into account the overall safety profile of domperidone, and in particular its cardiac risk and potential interactions with other medicines (such as erythromycin), if there is a clinical need to use it at doses or durations greater than those authorised. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

1.5.15 Do not treat hallucinations and delusions if they are well tolerated by the person and their family members and carers (as appropriate). **[new 2017]**

1.5.16 Reduce the dosage of any Parkinson's disease medicines that might have triggered hallucinations or delusions, taking into account the severity of symptoms and possible withdrawal effects. Seek advice from a healthcare professional with specialist expertise in Parkinson's disease before modifying therapy. **[new 2017]**

1.5.17 Offer 1 of the following as first-line pharmacological treatment for people with Parkinson's disease with hallucinations and delusions:

- quetiapine[4]
- clozapine (be aware that registration with the mandatory Clozaril patient monitoring service is required).

If the selected option is not effective or not tolerated, offer the other instead. **[new 2017]**

1.5.18 Be aware that lower doses of quetiapine and clozapine are needed for people with Parkinson's disease than in other indications. **[new 2017]**

1.5.19 Do not offer olanzapine to treat hallucinations and delusions in people with Parkinson's disease. **[new 2017]**

1.5.20 Recognise that other antipsychotic medicines (such as phenothiazines and butyrophenones) exacerbate the motor features of Parkinson's disease. **[new 2017]**

Drooling of saliva

1.5.21 Only consider pharmacological management for drooling of saliva in people with Parkinson's disease if non-pharmacological management (for

[4] At the time of consultation (October 2016), use of quetiapine for this indication would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

example, speech and language therapy; see recommendation 1.7.6) is not available or has not been effective. **[new 2017]**

1.5.22 Consider glycopyrrolate[5] to manage drooling of saliva in people with Parkinson's disease if non-pharmacological management is not available or has not been effective. **[new 2017]**

1.5.23 If treatment for drooling of saliva with glycopyrrolate is not effective, not tolerated or contraindicated (for example, in people with cognitive decline, hallucinations or delusions, or a history of adverse effects following anticholinergic treatment), consider referral to a specialist service for Botulinum toxin A[5]. **[new 2017]**

1.5.24 Only consider anticholinergic medicines other than glycopyrrolate to manage drooling of saliva in people with Parkinson's disease if their risk of cognitive adverse effects is thought to be minimal. **[new 2017]**

Parkinson's disease dementia

1.5.25 Offer a cholinesterase inhibitor[6] for people with mild or moderate Parkinson's disease dementia. **[new 2017]**

1.5.26 Consider a cholinesterase inhibitor[7] for people with severe Parkinson's disease dementia. **[new 2017]**

[5] At the time of consultation (October 2016), these medicines did not have a UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[6] At the time of consultation (October 2016), rivastigmine capsules are the only treatment with a UK marketing authorisation for this indication. Use of donepezil, galantamine or rivastigmine patches for this indication would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

[7] At the time of consultation (October 2016), use of cholinesterase inhibitors for this indication would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

1.5.27 Consider memantine[8] for people with Parkinson's disease dementia, only if cholinesterase inhibitors are not tolerated or are contraindicated. **[new 2017]**

1.5.28 For guidance on assessing and managing dementia, and supporting people living with dementia, see the NICE guideline on dementia[9]. **[new 2017]**

1.6 Pharmacological neuroprotective therapy

1.6.1 Do not use vitamin E as a neuroprotective therapy for people with Parkinson's disease. **[2006, amended 2017]**

1.6.2 Do not use co-enzyme Q10 as a neuroprotective therapy for people with Parkinson's disease, except in the context of clinical trials. **[2006, amended 2017]**

1.6.3 Do not use dopamine agonists as neuroprotective therapies for people with Parkinson's disease, except in the context of clinical trials. **[2006, amended 2017]**

1.6.4 Do not use MAO-B inhibitors as neuroprotective therapies for people with Parkinson's disease, except in the context of clinical trials. **[2006, amended 2017]**

1.7 Non-pharmacological management of motor and non-motor symptoms

Parkinson's disease nurse specialist interventions

1.7.1 People with Parkinson's disease should have regular access to:

- clinical monitoring and medicines adjustment

[8] At the time of consultation (October 2016), use of memantine for this indication would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

[9] The NICE guideline on dementia is being updated. It will include recommendations on the pharmacological management of dementia with Lewy bodies.

- 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 Parkinson's disease and their family members and their carers (as appropriate),

which may be provided by a Parkinson's disease nurse specialist. **[2006]**

Physiotherapy and physical activity

1.7.2 Consider referring people who are in the early stages of Parkinson's disease to a physiotherapist with experience of Parkinson's disease for assessment, education and advice, including information about physical activity. **[new 2017]**

1.7.3 Offer Parkinson's disease-specific physiotherapy for people who are experiencing balance or motor function problems. **[new 2017]**

Occupational therapy

1.7.4 Consider referring people who are in the early stages of Parkinson's disease to an occupational therapist with experience of Parkinson's disease for assessment, education and advice on motor and non-motor symptoms. **[new 2017]**

1.7.5 Offer Parkinson's disease-specific occupational therapy for people who are having difficulties with daily living activities. **[new 2017]**

Speech and language therapy

1.7.6 Offer speech and language therapy for people with Parkinson's disease who are experiencing problems with communication, swallowing or saliva. This should include:

- strategies to improve the safety and efficiency of swallowing to minimise the risk of aspiration, such as expiratory muscle strength training (EMST)
- strategies to improve speech and communication, such as attention to effort therapies. **[new 2017]**

1.7.7 Consider referring people for alternative and augmentative communication equipment that meets their communication needs as Parkinson's disease progresses and their needs change. **[new 2017]**

Nutrition

1.7.8 Discuss 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 Parkinson's disease on levodopa who experience motor fluctuations. **[new 2017]**

1.7.9 Advise people with Parkinson's disease to avoid a reduction in their total daily protein consumption. **[new 2017]**

1.7.10 Consider referring people with Parkinson's disease to a dietitian for specialist advice. **[new 2017]**

1.7.11 Advise people with Parkinson's disease to take a vitamin D supplement. See the NICE guideline on vitamin D for recommendations on vitamin D testing, and the NICE guidelines on falls in older people and osteoporosis. **[new 2017]**

1.7.12 Advise people with Parkinson's disease not to take over-the-counter dietary supplements without first consulting their pharmacist or other healthcare professional. **[new 2017]**

1.8 Deep brain stimulation and levodopa–carbidopa intestinal gel

Deep brain stimulation

1.8.1 Offer people in the later stages of Parkinson's disease best medical therapy, which may include continuous subcutaneous apomorphine infusion. **[new 2017]**

1.8.2 Do not offer deep brain stimulation to people whose Parkinson's disease is controlled by best medical therapy. **[new 2017]**

1.8.3 Consider deep brain stimulation for people in the later stages of Parkinson's disease whose symptoms are not controlled by best medical therapy. **[new 2017]**

Levodopa-carbidopa intestinal gel

1.8.4 Do not offer levodopa–carbidopa intestinal gel at any stage of Parkinson's disease. **[new 2017]**

1.9 Palliative care

Information and support

1.9.1 Offer people with Parkinson's disease and their family members and carers (as appropriate) opportunities to discuss the prognosis of their condition. These discussions should promote people's priorities, shared decision-making and patient-centred care. **[new 2017]**

1.9.2 Give people with Parkinson's disease and their family members and carers (as appropriate) oral and written information about the following, and record that the discussion has taken place:

- Progression of Parkinson's disease.
- Possible future adverse effects of Parkinson's disease medicines.
- Advance care planning, including Advanced Decisions to Refuse Treatment (ADRT) and Do Not Attempt Resuscitation (DNACPR) orders, and Lasting Power of Attorney for finance and/or 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. **[new 2017]**

1.9.3 Recognise that family members and carers may have different information needs from the person with Parkinson's disease when discussing palliative care. **[new 2017]**

Referral

1.9.4 Consider referring people at any stage of Parkinson's disease to the palliative care team to give them and their family members or carers (as appropriate) the opportunity to discuss palliative care and care at the end of life. **[new 2017]**

Putting this guideline into practice

[This section will be completed after consultation]

NICE has produced tools and resources [link to tools and resources tab] to help you put this guideline into practice.

[Optional paragraph if issues raised] Some issues were highlighted that might need specific thought when implementing the recommendations. These were raised during the development of this guideline. They are:

- [add any issues specific to guideline here]
- [Use 'Bullet left 1 last' style for the final item in this list.]

Putting recommendations into practice can take time. How long may vary from guideline to guideline, and depends on how much change in practice or services is needed. Implementing change is most effective when aligned with local priorities.

Changes recommended for clinical practice that can be done quickly – like changes in prescribing practice – should be shared quickly. This is because healthcare professionals should use guidelines to guide their work – as is required by professional regulating bodies such as the General Medical and Nursing and Midwifery Councils.

Changes should be implemented as soon as possible, unless there is a good reason for not doing so (for example, if it would be better value for money if a package of recommendations were all implemented at once).

Different organisations may need different approaches to implementation, depending on their size and function. Sometimes individual practitioners may be able to respond to recommendations to improve their practice more quickly than large organisations.

Here are some pointers to help organisations put NICE guidelines into practice:

1. **Raise awareness** through routine communication channels, such as email or newsletters, regular meetings, internal staff briefings and other communications with all relevant partner organisations. Identify things staff can include in their own practice straight away.

2. **Identify a lead** with an interest in the topic to champion the guideline and motivate others to support its use and make service changes, and to find out any significant issues locally.

3. **Carry out a baseline assessment** against the recommendations to find out whether there are gaps in current service provision.

4. **Think about what data you need to measure improvement** and plan how you will collect it. You may want to work with other health and social care organisations and specialist groups to compare current practice with the recommendations. This may also help identify local issues that will slow or prevent implementation.

5. **Develop an action plan**, with the steps needed to put the guideline into practice, and make sure it is ready as soon as possible. Big, complex changes may take longer to implement, but some may be quick and easy to do. An action plan will help in both cases.

6. **For very big changes** include milestones and a business case, which will set out additional costs, savings and possible areas for disinvestment. A small project group could develop the action plan. The group might include the guideline champion, a senior organisational sponsor, staff involved in the associated services, finance and information professionals.

7. **Implement the action plan** with oversight from the lead and the project group. Big projects may also need project management support.

8. **Review and monitor** how well the guideline is being implemented through the project group. Share progress with those involved in making improvements, as well as relevant boards and local partners.

NICE provides a comprehensive programme of support and resources to maximise uptake and use of evidence and guidance. See our into practice pages for more information.

Also see Leng G, Moore V, Abraham S, editors (2014) Achieving high quality care – practical experience from NICE. Chichester: Wiley.

Context

Parkinson's disease is a progressive neurodegenerative condition resulting from the death of dopamine-containing cells of the substantia nigra in the brain. There is no consistently reliable test that can distinguish Parkinson's disease from other conditions that have a similar clinical presentation. The diagnosis is primarily based on a clinical history and examination.

Parkinson's disease is one of the most common neurological conditions. It is estimated to affect up to 160 people per 100,000, with an annual incidence in the UK of 15–20 per 100,000.

People with Parkinson's disease classically present with the symptoms and signs described as 'parkinsonism': these include bradykinesia (slow movements), rigidity, rest tremor (shaking) and postural instability (loss of balance).

The symptoms of parkinsonism are not always a result of Parkinson's disease. Other causes include side effects of medicines, vascular disease, and less common degenerative conditions such as progressive supranuclear palsy and multiple system atrophy.

Parkinson's disease has historically been recognised as a primary movement disorder; however, other symptoms may be prominent, such as depression, cognitive impairment and dementia. In the later stages of the disease, people may develop pain and autonomic disturbances (such as dizziness and fainting, and problems with sweating, heart rate, digestion, vision and sexual function). These other symptoms are sometimes described as the 'non-motor' manifestations of Parkinson's disease. The condition may progress to cause significant impairments, adversely affecting quality of life and, indirectly, the quality of life of family and carers.

More information

To find out what NICE has said on topics related to this guideline, see our web page on neurological conditions.

Recommendations for research

The guideline committee has made the following recommendations for research. The committee's full set of research recommendations is detailed in the full guideline.

1 Combination treatment for Parkinson's disease dementia

What is the effectiveness of combination treatment with a cholinesterase inhibitor and memantine for people with Parkinson's disease dementia if treatment with a cholinesterase inhibitor alone is not effective or no longer effective?

Why this is important

The guideline committee felt that cholinesterase inhibitors, memantine, and combination therapy with both are all reasonable clinical options, but noted that some people do not tolerate cholinesterase inhibitors well due to side effects. The evidence base for memantine was considerably weaker than for cholinesterase inhibitors, and therefore there would be value in either additional trials of memantine versus placebo (in people for whom cholinesterase inhibitors are not an option), or non-inferiority studies versus cholinesterase inhibitors. In clinical practice, memantine is often added to a cholinesterase inhibitor when it is no longer proving effective, but there is no evidence base for this and randomised trials to establish if there is additional benefit would be valuable. Both of these questions could potentially be answered in a single study with 3 arms of memantine monotherapy, cholinesterase inhibitor monotherapy and combination treatment.

2 Orthostatic hypotension treatment

For people with Parkinson's disease, what is the most effective pharmacological treatment for orthostatic hypotension?

Particular interventions and comparisons of interest are:

- midodrine compared with fludrocortisone
- pyridostigmine
- ephedrine
- pseudoephedrine.

Why this is important

The guideline committee felt that orthostatic hypotension was an important practical problem, common in people with Parkinson's disease and a contributor to falls and injuries. The current best pharmacological treatment is not yet established and research in this area would be beneficial to determine this. The randomised controlled trials that have previously been undertaken have only provided low-quality evidence (due to both small sample sizes and weaknesses in the trial designs) and cover only a subset of the comparisons of interest, making future research in this area of value.

3 Psychotic symptoms (hallucinations and delusions)

What is the effectiveness of rivastigmine compared with atypical antipsychotic drugs for treating psychotic symptoms (particularly hallucinations and/or delusions) associated with Parkinson's disease?

Why this is important

Rivastigmine is commonly used to treat Parkinson's disease psychosis because it has shown some effectiveness in improving behavioural symptoms in people with Parkinson's disease dementia. At present, no evidence exists to support the efficacy of rivastigmine in treating people with Parkinson's disease whose symptoms are predominantly psychotic. It would be beneficial to undertake primary research in this area in order to determine the most effective treatment options for managing Parkinson's disease psychosis.

4 Rapid eye movement (REM) treatment

What is the best first-line treatment for REM sleep behaviour disorder in people with Parkinson's disease?

Why this is important

The guideline committee highlighted the importance of minimising sleep behaviour disorder, for both people with Parkinson's disease and their carers, particularly due to potential safety concerns. Only 1 paper was found to address optimal management, and this involved a population of people in whom first-line treatment had failed. With multiple possible treatment options and no current evidence on what the most effective first-line treatment is, research (in the form of randomised controlled trials) in this area would be beneficial.

5 Physiotherapy

Does physiotherapy started early in the course of Parkinson's disease, as opposed to after motor symptom onset, confer benefits in terms of delaying symptom onset and/or reducing severity?

Why this is important

The guideline committee felt that physiotherapy was beneficial for those in the earlier course of the disease as it may delay or lessen problems associated with symptoms, as well as for those who have developed symptoms and problems. At present, no substantial evidence exists to support the efficacy of physiotherapy as an early intervention to prevent the onset or reduce severity of motor symptoms, as most of the trials have been conducted in people who have already developed motor symptoms. If physiotherapy was shown to have a beneficial effect in either delaying the onset or decreasing the severity of symptoms, this would have a substantial beneficial impact on the quality of life of people with Parkinson’s disease and their family and carers. Relevant trials would not compare physiotherapy with no physiotherapy, but rather early physiotherapy (at the time of diagnosis) with physiotherapy offered at the current standard times in the UK.

Update information

This guideline is an update of NICE guideline CG35 (published June 2006) and will replace it.

New recommendations have been added on treating Parkinson's disease symptoms, deep brain stimulation, monitoring and managing impulse control disorders, and palliative care.

These are marked as:

- **[new 2017]** if the evidence has been reviewed and the recommendation has been added or updated
- **[2017]** if the evidence has been reviewed but no change has been made to the recommended action.

NICE proposes to delete some recommendations from the 2006 guideline, because either the evidence has been reviewed and the recommendations have been updated, or NICE has updated other relevant guidance and has replaced the original recommendations. Recommendations that have been deleted or changed sets out these recommendations and includes details of replacement recommendations. Where there is no replacement recommendation, an explanation for the proposed deletion is given.

Where recommendations are shaded in grey and end **[2006]**, the evidence has not been reviewed since the original guideline.

Where recommendations are shaded in grey and end **[2006, amended 2017]**, the evidence has not been reviewed but changes have been made to the recommendation wording that change the meaning (for example, because of equalities duties or a change in the availability of medicines, or incorporated guidance has been updated). These changes are marked with yellow shading, and explanations of the reasons for the changes are given in 'Recommendations that have been deleted or changed' for information.

See also the original NICE guideline and supporting documents.

Recommendations that have been deleted or changed

Recommendations to be deleted

Recommendation in 2006 guideline	Comment
It is not possible to identify a universal first-choice drug therapy for people with early PD. The choice of drug first prescribed should take into account: clinical and lifestyle characteristics patient preference, after the patient has been informed of the short- and long-term benefits and drawbacks of the drug classes. (1.4.1.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Levodopa may be used as a symptomatic treatment for people with early PD. (1.4.2.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
The dose of levodopa should be kept as low as possible to maintain good function in order to reduce the development of motor complications. (1.4.2.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Dopamine agonists may be used as a symptomatic treatment for people with early PD. (1.4.3.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
A dopamine agonist should be titrated to a clinically efficacious dose. If side effects prevent this, another agonist or a drug from another class should be used in its place. (1.4.3.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
If an ergot-derived dopamine agonist is used, the patient should have a minimum of renal function tests, erythrocyte sedimentation rate (ESR) and chest radiograph performed before starting treatment, and annually thereafter. (1.4.3.3)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
In view of the monitoring required with ergot-derived dopamine agonists, a non-	This recommendation has been replaced by recommendations from the guideline

ergot-derived agonist should be preferred in most cases. (1.4.3.4)	update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
MAO-B inhibitors may be used as a symptomatic treatment for people with early PD. (1.4.4.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
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. (1.4.5.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Amantadine may be used as a treatment for people with early PD but should not be a drug of first choice. (1.4.6.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Anticholinergics may be used as a symptomatic treatment typically in young people with early PD and severe tremor, but should not be drugs of first choice due to limited efficacy and the propensity to cause neuropsychiatric side effects. (1.4.7.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Modified-release levodopa preparations should not be used to delay the onset of motor complications in people with early PD. (1.4.8.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
It is not possible to identify a universal first-choice adjuvant drug therapy for people with later PD. The choice of adjuvant drug first prescribed should take into account: • clinical and lifestyle characteristics • patient preference, after the patient has been informed of the short- and long-term benefits and drawbacks of the drug classes. (1.5.1.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Modified-release levodopa preparations	This recommendation has been replaced

may be used to reduce motor complications in people with later PD, but should not be drugs of first choice. (1.5.2.1)	by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Dopamine agonists may be used to reduce motor fluctuations in people with later PD. (1.5.3.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
If an ergot-derived dopamine agonist is used, the patient should have a minimum of renal function tests, erythrocyte sedimentation rate (ESR) and chest radiograph performed before starting treatment, and annually thereafter6. (1.5.3.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
A dopamine agonist should be titrated to a clinically efficacious dose. If side effects prevent this, then another agonist or a drug from another class should be used in its place. (1.5.3.3)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
In view of the monitoring required with ergot-derived dopamine agonists, a non-ergot-derived agonist should be preferred, in most cases. (1.5.3.4)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
MAO-B inhibitors may be used to reduce motor fluctuations in people with later PD. (1.5.4.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Catechol-O-methyl transferase (COMT) inhibitors may be used to reduce motor fluctuations in people with later PD. (1.5.5.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
In view of problems with reduced concordance, people with later PD taking entacapone should be offered a triple combination preparation of levodopa,	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms,

carbidopa and entacapone . (1.5.5.2)	recommendations for which are included in section 1.3.
Tolcapone should only be used after entacapone has failed in people with later PD due to lack of efficacy or side effects. Liver function tests are required every 2 weeks during the first year of therapy, and thereafter in accordance with the 'Summary of product characteristics'. (1.5.5.3)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Amantadine may be used to reduce dyskinesia in people with later PD. (1.5.6.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
Intermittent apomorphine injections may be used to reduce off time in people with PD with severe motor complications. (1.5.7.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3 and 1.8.
Continuous subcutaneous infusions of apomorphine may be used to reduce off time and dyskinesia in people with PD with severe motor complications. Its initiation should be restricted to expert units with facilities for appropriate monitoring. (1.5.7.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3 and 1.8.
Antiparkinsonian medication should not be withdrawn abruptly or allowed to fail suddenly due to poor absorption (for example, gastroenteritis, abdominal surgery) to avoid the potential for acute akinesia or neuroleptic malignant syndrome. (1.6.1.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
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. (1.6.1.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.
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: • given at the appropriate times, which in some cases may mean allowing self-medication.	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on the pharmacological management of motor symptoms, recommendations for which are included in section 1.3.

• adjusted by, or adjusted only after discussion with, a specialist in the management of PD. (1.6.1.3)	
Clinicians should be aware of dopamine dysregulation syndrome, an uncommon disorder in which dopaminergic medication misuse is associated with abnormal behaviours, including hypersexuality, pathological gambling and stereotypic motor acts. This syndrome may be difficult to manage. (1.6.1.4)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on managing and monitoring impulse control disorders as an adverse effect of dopaminergic therapy, recommendations for which are included in section 1.4.
Bilateral subthalamic nucleus (STN) stimulation may be used in people with PD who: • have motor complications that are refractory to best medical treatment, • are biologically fit with no clinically significant active comorbidity, • are levodopa responsive and • have no clinically significant active mental health problems, for example, depression or dementia. (1.7.1.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on deep brain stimulation and levodopa–carbidopa intestinal gel, recommendations for which are included in section 1.8.
Bilateral globus pallidus interna (GPi) stimulation may be used in people with PD who: • have motor complications that are refractory to best medical treatment, • are biologically fit with no clinically significant active comorbidity, • are levodopa responsive and • have no clinically significant active mental health problems, for example, depression or dementia. (1.7.2.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on deep brain stimulation and levodopa–carbidopa intestinal gel, recommendations for which are included in section 1.8.
With the current evidence it is not possible to decide if the subthalamic nucleus or globus pallidus interna is the preferred target for deep brain stimulation for people with PD, or whether one form of surgery is more effective or safer than the other. In considering the type of surgery, account should be taken of: • clinical and lifestyle characteristics of the person with PD • patient preference, after the patient has been being informed of the potential benefits and drawbacks of the different surgical procedures. (1.7.3.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on deep brain stimulation and levodopa–carbidopa intestinal gel, recommendations for which are included in section 1.8.
Thalamic deep brain stimulation may be	This recommendation has been replaced

considered as an option in people with PD who predominantly have severe disabling tremor and where STN stimulation cannot be performed. (1.7.4.1)	by recommendations from the guideline update which undertook a new evidence review on deep brain stimulation and levodopa–carbidopa intestinal gel, recommendations for which are included in section 1.8.
Clinicians should have a low threshold for diagnosing depression in PD. (1.8.1.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5. Recommendations on depression are handled by a cross-reference to the NICE guideline on depression in adults with a chronic physical health problem.
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. (1.8.1.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5. Recommendations on depression are handled by a cross-reference to the NICE guideline on depression in adults with a chronic physical health problem.
The management of depression in people with PD should be tailored to the individual, in particular, to their co-existing therapy. (1.8.1.3)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5. Recommendations on depression are handled by a cross-reference to the NICE guideline on depression in adults with a chronic physical health problem.
All people with PD and psychosis should receive a general medical evaluation and treatment for any precipitating condition. (1.8.1.4)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Consideration should be given to withdrawing gradually antiparkinsonian medication that might have triggered psychosis in people with PD. (1.8.1.5)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.

Mild psychotic symptoms in people with PD may not need to be actively treated if they are well tolerated by the patient and carer. (1.8.1.6)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Typical antipsychotic drugs (such as phenothiazines and butyrophenones) should not be used in people with PD because they exacerbate the motor features of the condition. (1.8.1.7)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Atypical antipsychotics may be considered for treatment of psychotic symptoms in people with PD, although the evidence base for their efficacy and safety is limited. (1.8.1.8)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Clozapine may be used in the treatment of psychotic symptoms in PD, but registration with a mandatory monitoring scheme is required. It is recognised that few specialists caring for people with PD have experience with clozapine. (1.8.1.9)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Although cholinesterase inhibitors have been used successfully in individual people with PD dementia, further research is recommended to identify those patients who will benefit from this treatment. (1.8.1.10)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of Parkinson's disease dementia, recommendations for which are included in section 1.5.
A full sleep history should be taken from people with PD who report sleep disturbance. (1.8.2.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Good sleep hygiene should be advised in people with PD with any sleep disturbance and includes: • avoidance of stimulants (for example, coffee, tea, caffeine) in the evening • establishment of a regular pattern of sleep • comfortable bedding and temperature	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.

• 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 daytime siestas • advice about taking regular and appropriate exercise to induce better sleep • a review of all medication and avoidance of any drugs that may affect sleep or alertness, or may interact with other medication (for example, selegiline, antihistamines, H2 antagonists, antipsychotics and sedatives). (1.8.2.2)	
Care should be taken to identify and manage restless legs syndrome (RLS) and rapid eye movement (REM) sleep behaviour disorder in people with PD and sleep disturbance. (1.8.2.3)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
People with PD who have sudden onset of sleep should be advised not to drive and to consider any occupational hazards. Attempts should be made to adjust their medication to reduce its occurrence. (1.8.2.4)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
Modafinil may be considered for daytime hypersomnolence in people with PD. (1.8.2.5)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
For all people with PD at risk of falling, please refer to Falls: assessment and prevention of falls in older people NICE clinical guideline 21. (1.8.3.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.
People with PD should be treated appropriately for the following autonomic disturbances : • urinary dysfunction • weight loss • dysphagia • constipation • erectile dysfunction • orthostatic hypotension	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on pharmacological management of non-motor symptoms, recommendations for which are included in section 1.5.

• excessive sweating • sialorrhoea. (1.8.4.1)	
Physiotherapy should be available for people with PD. Particular consideration should be given to: • gait re-education, improvement of balance and flexibility • enhancement of aerobic capacity • improvement of movement initiation • improvement of functional independence, including mobility and activities of daily living • provision of advice regarding safety in the home environment. (1.9.2.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on non-pharmacological management of motor and non-motor symptoms, recommendations for which are included in section 1.7.
The Alexander Technique may be offered to benefit people with PD by helping them to make lifestyle adjustments that affect both the physical nature of the condition and the person's attitudes to having PD. (1.9.2.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on non-pharmacological management of motor and non-motor symptoms, recommendations for which are included in section 1.7.
Occupational therapy should be available for people with PD. Particular consideration should be given to: • maintenance of work and family roles, home care and leisure activities • improvement and maintenance of transfers and mobility • improvement of personal self-care activities, such as eating, drinking, washing and dressing • environmental issues to improve safety and motor function • cognitive assessment and appropriate intervention. (1.9.3.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on non-pharmacological management of motor and non-motor symptoms, recommendations for which are included in section 1.7.
Speech and language therapy should be available for people with PD. Particular consideration should be given to: • improvement of vocal loudness and pitch range, including speech therapy programmes such as Lee Silverman Voice Treatment (LSVT) • teaching strategies to optimise speech intelligibility • ensuring an effective means of communication is maintained throughout the course of the disease, including use of assistive technologies • review and management to	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on non-pharmacological management of motor and non-motor symptoms, recommendations for which are included in section 1.7.

support safety and efficiency of swallowing and to minimise the risk of aspiration. (1.9.4.1)	
Palliative care requirements of people with PD should be considered throughout all phases of the disease. (1.10.1.1)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on palliative care, recommendations for which are included in section 1.9.
People with PD and their carers should be given the opportunity to discuss end-of-life issues with appropriate healthcare professionals. (1.10.1.2)	This recommendation has been replaced by recommendations from the guideline update which undertook a new evidence review on palliative care, recommendations for which are included in section 1.9.

Amended recommendation wording (change to meaning)

Recommendation in 2006 guideline	Recommendation in current guideline	Reason for change
1.2.5.1, 1.2.6.1, 1.2.7.1, 1.2.8.1, 1.2.9.1, 1.2.10.1, 1.2.11.1, 1.3.1.1, 1.3.2.1, 1.3.3.1, 1.3.4.1.	1.2.6, 1.2.8, 1.2.9, 1.2.11, 1.2.12, 1.2.13, 1.2.14, 1.6.1, 1.6.2, 1.6.3, 1.6.4.	NICE has made editorial changes to the original wording to clarify the action to be taken (no change to meaning): a verb has been added, or the verb used has been changed. Yellow highlighting has been applied to these changes.

Changes to recommendation wording for clarification only (no change to meaning)

Recommendation numbers in current guideline	Comment
All recommendations except those labelled **[new 2017]**	Recommendations have been edited into the direct style (in line with current NICE style for recommendations in guidelines) where possible. Yellow highlighting has not been applied to these changes.