

## Medication for Parkinson's disease

Medication	Indications and comments	Adverse effects
<b>Anticholinergics:</b> Benztropine (Cogentin), Procyclidine (Kemadrin) Orphenadrine (Disipal)	Useful for symptomatic control of Parkinson's disease (benefits are mild to moderate); associated with more adverse effects than other drugs	Dry mouth, dry eyes, constipation, hypotension, cognitive impairment, urinary retention
Carbidopa/levodopa Immediate and carbidopa/levodopa SR (Sinemet). Benserazide/levodopa (Madopar – similar to Sinemet – dispersible tablet may be useful for people with swallowing difficulties)	Levodopa is the most effective medication and remains the primary treatment for symptomatic Parkinson's disease; no added benefit for motor complications with sustained-release versus immediate-release preparations	Nausea, somnolence, dyskinesia, hypotension, hallucinations. Long term use is limited by motor complications and drug-induced dyskinesias.
<b>COMT inhibitors:</b> Entacapone (Comtan)	Useful for managing motor fluctuations ('wearing-off' effect) in patients taking levodopa; levodopa dose may need to be reduced if dyskinesia appears.	Diarrhoea; exacerbates levodopa adverse effects; bright red-brown urine
Tolcapone (Tasmar)	Not generally recommended due to hepatotoxicity. Entacapone is preferred.	Diarrhoea, exacerbates levodopa adverse effects; rare liver failure (liver function monitoring needed)
<b>*Dopamine agonists:</b> Bromocriptine (Parlodel)	Useful for early disease and in patients with Parkinson's disease and motor fluctuations	Nausea, headache, dizziness. Pleuropulmonary changes, CNS effects, retroperitoneal fibrosis (long term use). Regular monitoring required.
Lisuride (Dopergin)	Useful for early disease and in patients with Parkinson's disease and motor fluctuations	Similar to bromocriptine and other ergot derivatives.
Ropinirole (Requip)	Useful for early disease and in patients with Parkinson's disease and motor fluctuations	Nausea, sleep attacks, edema, hallucinations, hypotension
<b>MAO-B inhibitors:</b> Selegiline (Eldepryl)	Useful for symptomatic control of Parkinson's disease (benefits are mild to moderate) and as adjuvant therapy for patients with Parkinson's disease and motor fluctuations	Nausea, insomnia, drug interactions with other MAO inhibitors/tyramine
<b>NMDA receptor inhibitor:</b> Amantadine (Symmeterel)	Useful for treating akinesia, rigidity, tremor, dyskinesia	Nausea, hypotension, hallucinations, confusion, edema

\* Pergolide is another dopamine agonist available in New Zealand but has been associated with significant cardiac and pulmonary fibrosis. Other agents are preferred.

## Management of non-motor features of Parkinson's disease

Symptom	Management strategies
<i>Cognitive impairment</i>	Evaluate for and treat medical problems (e.g. dehydration, metabolic disorders, infection); adjust antiparkinsonian medications; decrease or discontinue anticholinergics, dopamine agonists, amantadine (Symmetrel), and selegiline (Eldepryl).
<i>Constipation</i>	Patients should increase fluid and fibre intake; increase physical activity; discontinue anticholinergics; and use a stimulant laxative (e.g. Coloxyl with Senna), stool softeners, or enemas as needed.
<i>Depression</i>	Initiate counseling; consider drug therapy with selective serotonin reuptake inhibitors or tricyclic antidepressants (because of side effect profile, use tricyclic antidepressants with caution).
<i>Dysphagia</i>	Perform a swallowing evaluation and refer the patient to a speech language therapist specialist; increase "on" time (the period when symptoms are decreased), and encourage patients to eat during this time; patient should eat soft foods.
<i>Orthostatic Hypotension</i>	Discontinue antihypertensive medication; the head of the patient's bed should be elevated, and patient's should rise slowly from a prone position; consider support stockings and fludrocortisone (Florinef).
<i>Psychosis, hallucinations or delirium</i>	Decrease or discontinue anticholinergics, dopamine agonists, amantadine, and selegiline; decrease levodopa; consider low-dose quetiapine.
<i>Sleep disturbance</i>	Daytime somnolence and sleep attacks; discontinue dopamine agonists, general methods to improve sleep hygiene. Nighttime awakenings because of bradykinesia; consider a bedtime dose of long-acting Sinemet or Madopar, adjuvant entacapone (Comtan), or a dopamine agonist. Rapid eye movement sleep behaviour disorder; decrease or discontinue night time use of antiparkinsonian drugs, (consider ropinirole for restless leg syndrome).
<i>Urinary urgency</i>	Reduce evening fluid intake; Confirm aetiology of urgency before using an anticholinergic agent such as oxybutynin (Ditropan).