Clinical pearls for Parkinson's Disease and Related Movement Disorders

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Sat April 5, 2025, GP Study Day

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THIS IS MODERN MEDICINE

Case:

63 yo right handed taxi driver

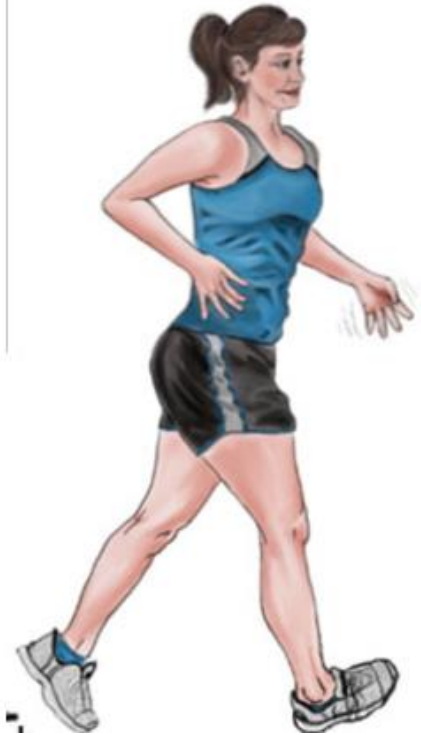
Tremor in right hand x 2 months, painful right shoulder. Embarrassed by tremor. Wife says he is used to walk faster than her, but she is overtaking him now. More tired than usual. Good balance. Poor smell since Covid pandemic. Constipation. Vivid dreams, yells/kicks out in sleep x 20 years. Still driving. No dopamine blocking medications.

Examination: Normal face and voice. Gait shows moderate reduced right armswing, and overflow tremor. Resting tremor, increases with mental stress. Bradykinetic finger and hand taps. Right arm tone increased compared with left.

Is this Parkinson's disease?

Would you treat him?

Parkinsonism



Bradykinesia (slow/reduced movement)
Tremor
Rigidity (stiffness)
Imbalance

2 of 4

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#1 Causes of Parkinsonism

Primary (neurodegenerative)

- **Parkinson's disease (PD)***
- Dementia with Lewy bodies (DLB)
- Multiple system atrophy (MSA)
- Corticobasal degeneration (CBD)
- Progressive supranuclear palsy (PSP)
- Frontotemporal dementia with parkinsonism
- chromosome 17 (FTDP-17)
- Huntington's disease
- Creutzfeldt-Jakob disease

Secondary

- **Medications***
- Frontal gait disorder
  - Normal pressure hydrocephalus
  - Leukoariosis
- Wilson's disease
- Others

#1 Causes of Parkinsonism

Primary (neurodegenerative)

2. Most likely diagnosis

- **Parkinson's disease (PD)***
- Dementia with Lewy bodies (DLB)
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Secondary

1. Any dopamine blocking drugs?

- **Medications***
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  - Normal pressure hydrocephalus
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- Wilson's disease
- Others

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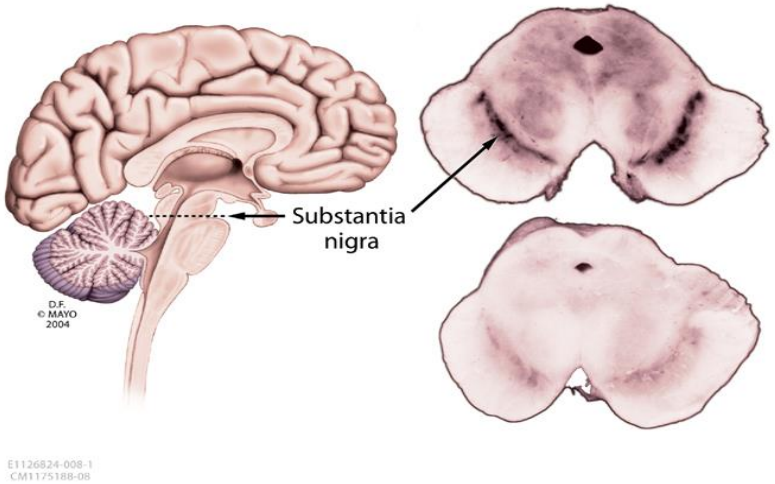
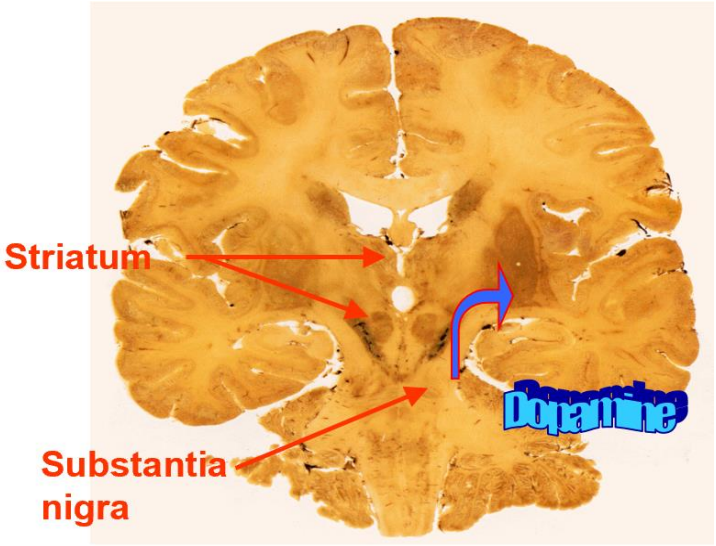
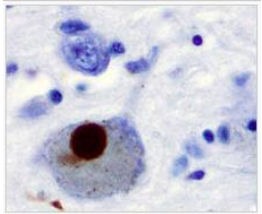
#2 Parkinson's disease – loss of dopamine





Loss of dopamine neurons in substantia nigra.

Hallmark is Lewy body pathology



A Lewy body (stained brown) in a brain cell of the substantia nigra in Parkinson's disease. The brown colour is positive immunohistochemistry staining for alpha-synuclein.

"Nigrostriatal degeneration"
Dopamine deficiency underlies many PD symptoms
Basal ganglia role in movement + mood

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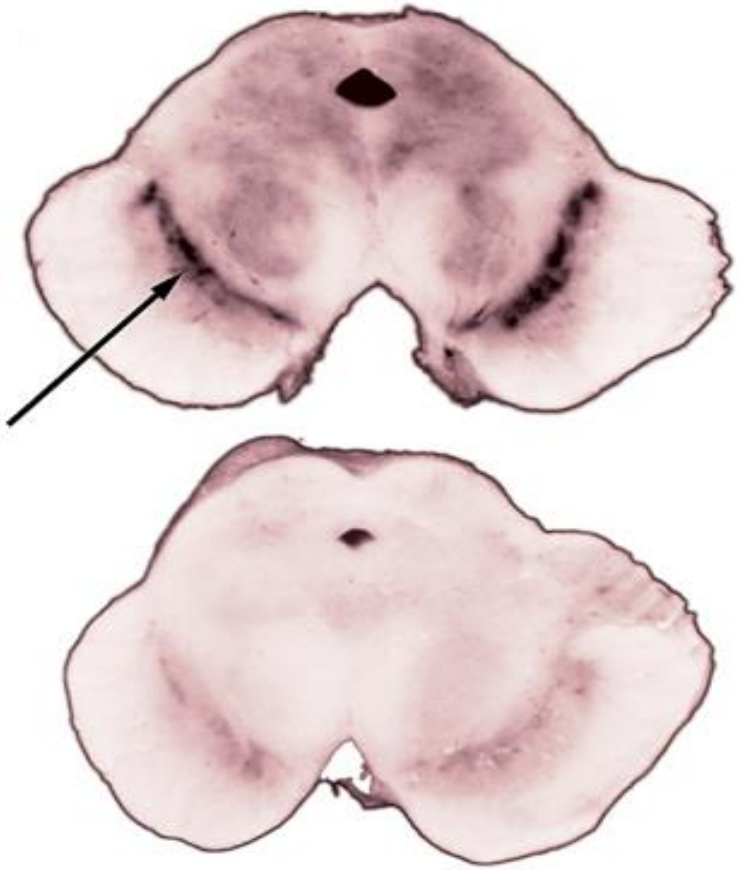
#2 Parkinson's disease – loss of dopamine



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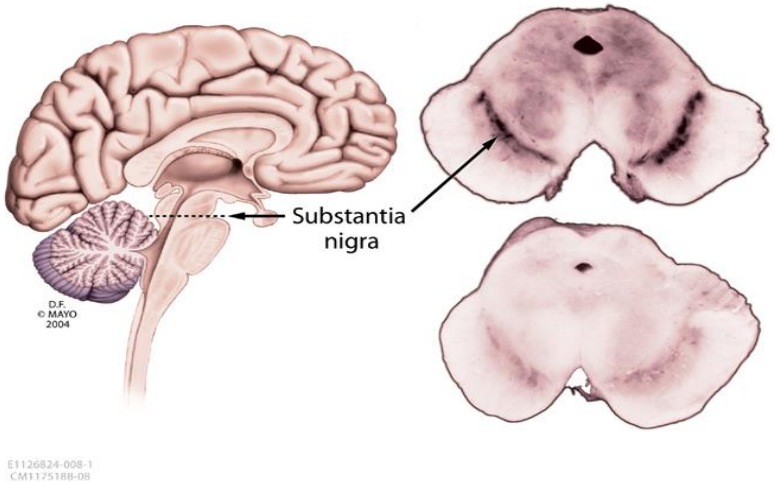

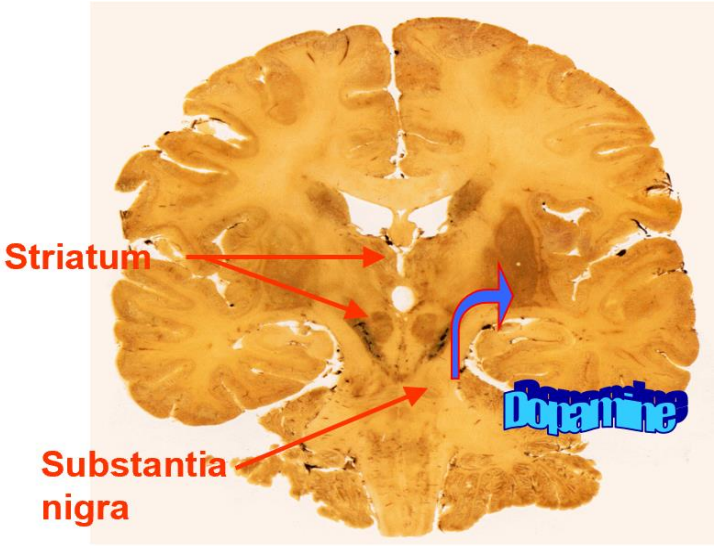

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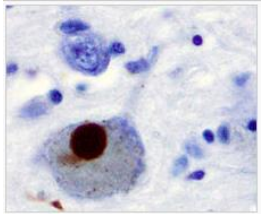

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"Nigrostriatal degeneration"
Dopamine deficiency underlies many PD symptoms
Basal ganglia role in movement + mood

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#3 Loss of dopamine underlies many PD symptoms

MOTOR

- **Bradykinesia (slowness)**
- **Tremor**
- **Rigidity (stiffness)**
- **Imbalance**

#4 Parkinson's disease is not just a movement disorder

#5 Motor and non-motor symptoms

MOTOR

- Tremor
- Rigidity
- Bradykinesia
- Gait difficulty

SECONDARY MOTOR

- Hypokinetic speech
- Facial masking
- Decreased blinking
- Drooling
- Micrographia

* May occur decades before motor signs

NON-MOTOR

Cognitive

- Bradyphrenia
- Cognitive impairment
- Dementia (late)

Psychiatric

- Depression, Anxiety, Apathy
- Hallucinations / Psychosis

Autonomic

- Orthostatic hypotension
- Impotence
- Constipation*
- Urinary frequency

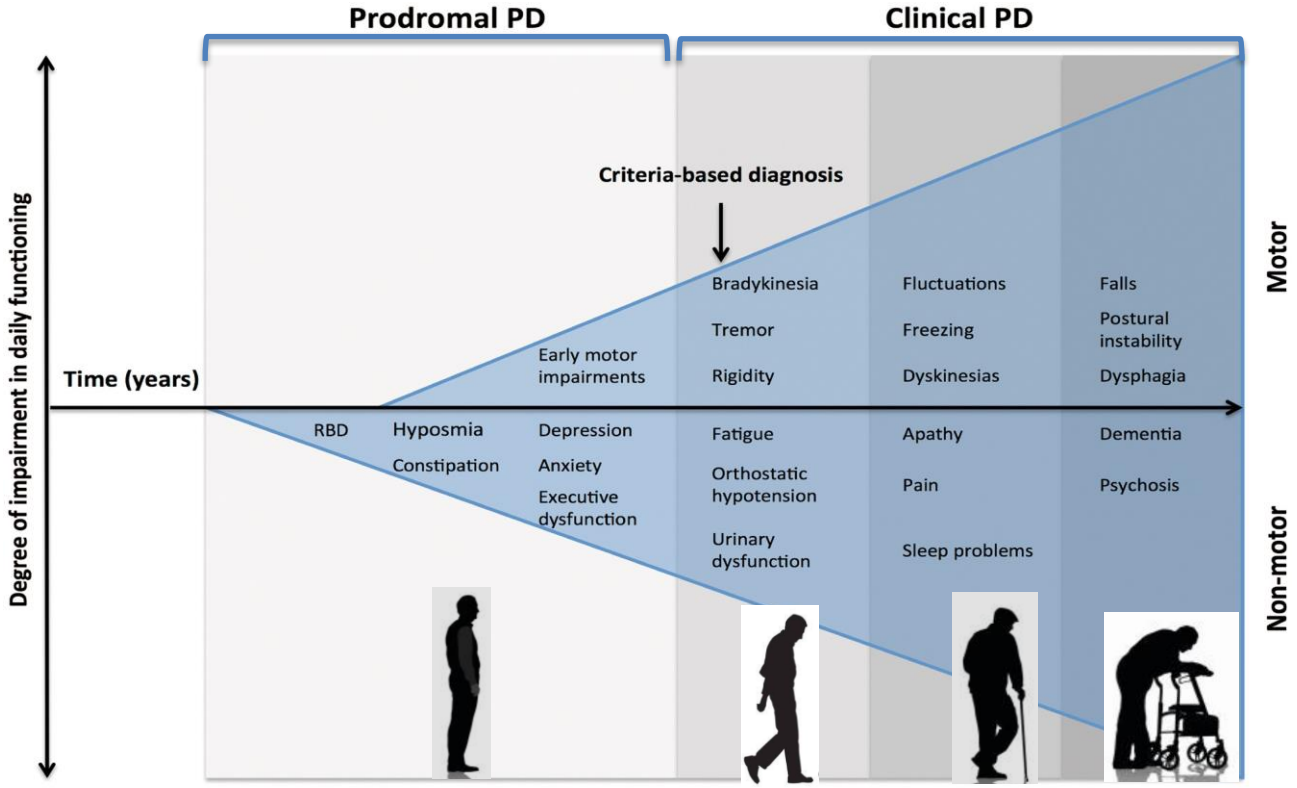
Sleep disorders

- REM sleep behavior disorder*
- Restless legs, periodic limb movements of sleep
- Obstructive sleep apnea

Sensory

- Pain
- Numbness or tingling
- Decreased sense of smell*
- Fatigue

#6 Clinical timeline of Parkinson's disease progression



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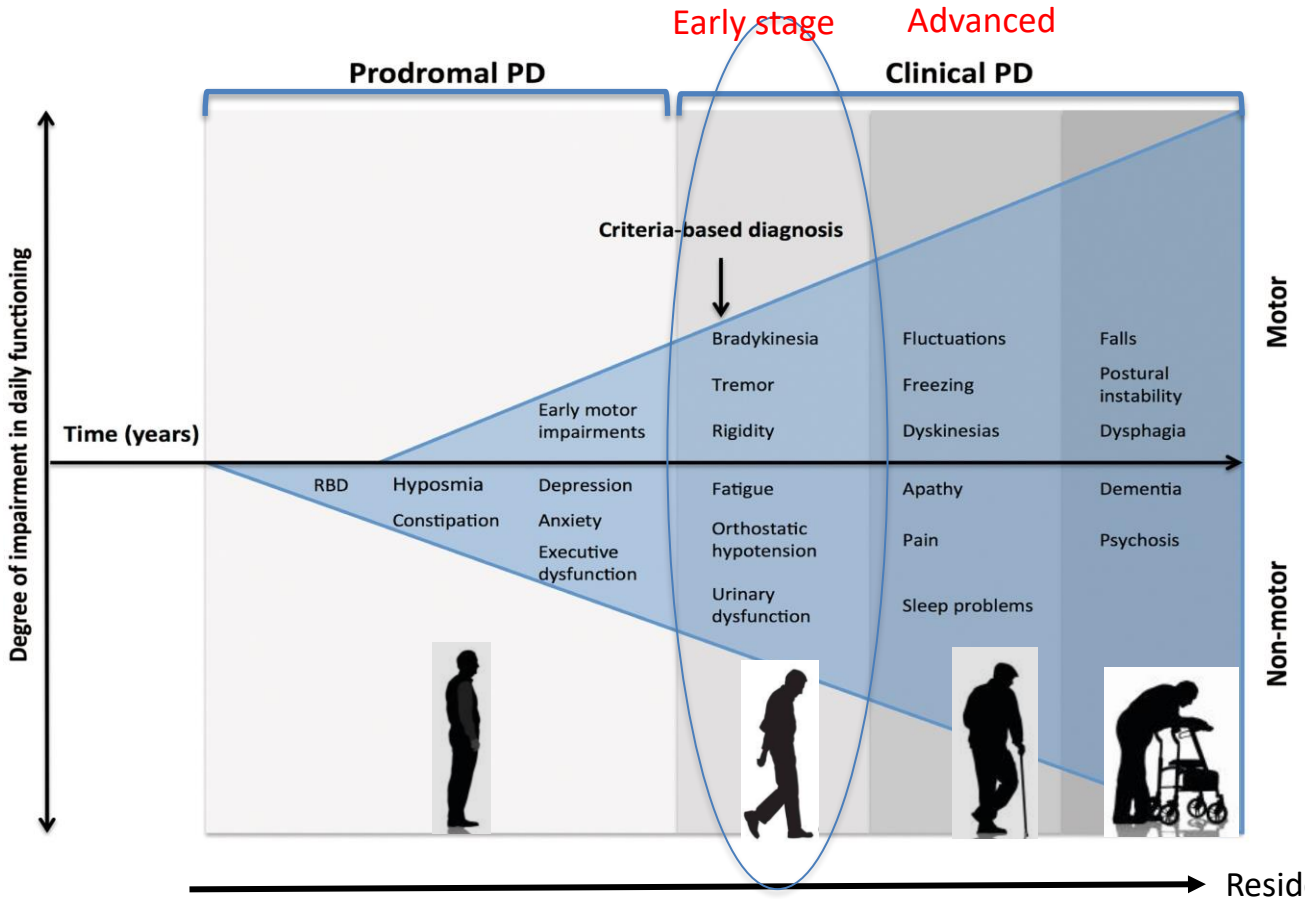

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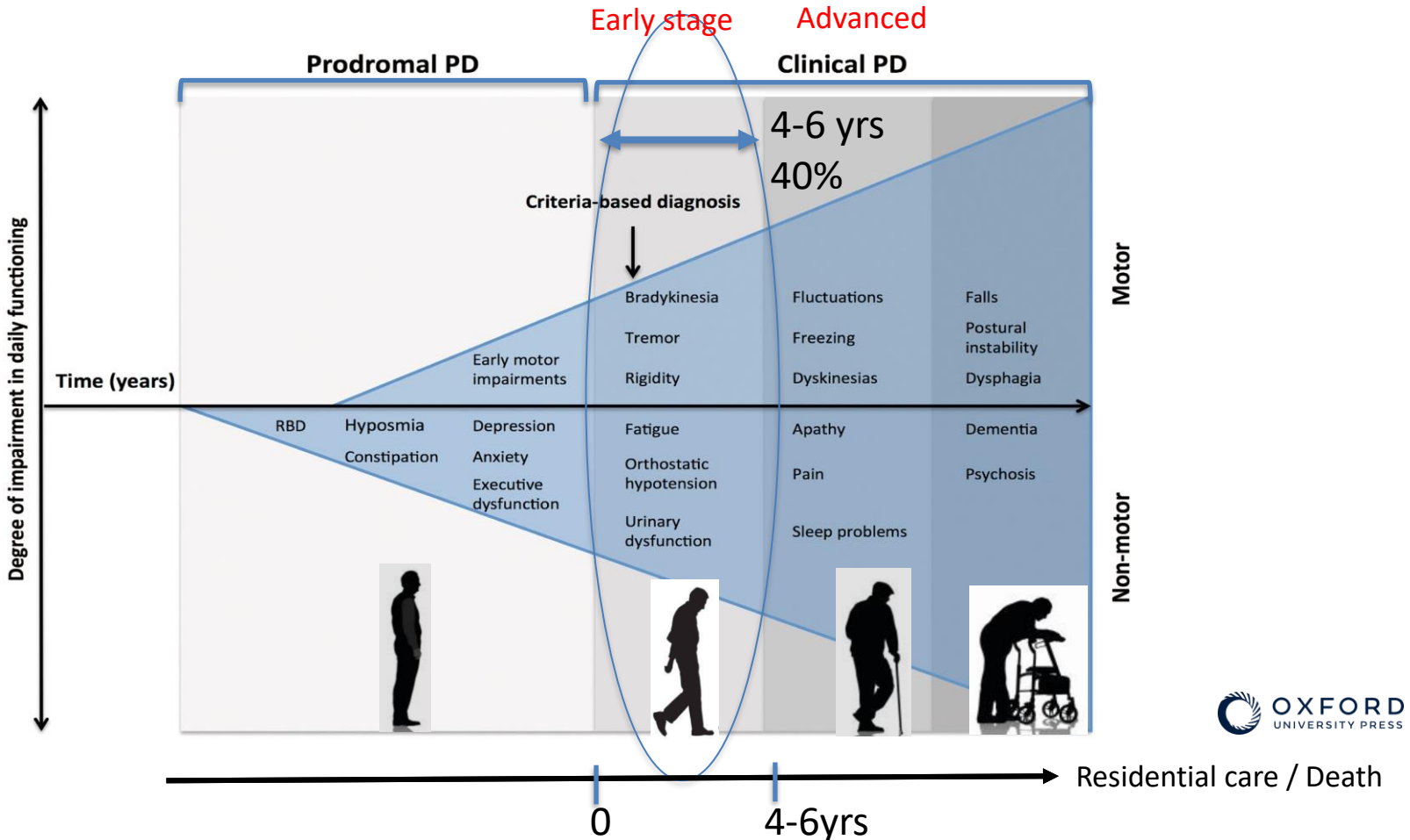

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Outpatient waiting lists

31/3/2025

Please select a hospital: All hospitals

Please select a specialty: Neurology

Filter

▶ Specialties explained

Wait time	People
0 to 3 months	6154
3 to 6 months	4709
6 to 9 months	3185
9 to 12 months	2570
12 to 15 months	1615
15 to 18 months	1209
18+ months	2437

#7 Treating Parkinson's disease

Medications Exercise

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Levodopa first-line treatment

- Therapeutic
- Diagnostic
- May benefit parkinsonian conditions other than PD

- MAOb inhibitors (rasagiline, selegiline)
- Dopamine agonists (pramipexole, ropinirole, rotigotine patch)
- Amantadine
- COMT inhibitors (entacapone, opicapone)

#6 Replacing dopamine improves PD symptoms

MOTOR

- Tremor
- Rigidity
- Bradykinesia
- Gait difficulty

SECONDARY MOTOR

- Hypokinetic speech
- Facial masking
- Decreased blinking
- Drooling
- Micrographia

May respond to levodopa

NON-MOTOR

Cognitive

- Bradyphrenia
- Cognitive impairment
- Dementia (late)

Psychiatric

- Depression, Anxiety, Apathy
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Autonomic

- Orthostatic hypotension
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Sensory

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#7 Levodopa trial

Sinemet 25/100 (carbidopa/levodopa)

Starting dose 1/2 tab TDS (or 12.5/50 TDS) (1 hour before meals)

Increase dose every 1-2 weeks until benefit

25/100	1 tab	TDS
25/100	1.5 tabs	TDS
25/100	2 tabs	TDS
25/100	2.5 tabs	TDS

Patient picks lowest effective dose

Reassess patient in 2 months

#8 Trouble-shooting Levodopa issues

Nausea? – take with crackers/plain toast

Severe nausea? – start ¼ tablet, increase by ¼ tablet increments

Lightheaded? – ensure standing SBP > 90mmHg, drink 1 glass water with meds

No response? Levodopa full challenge

#8 Exercise is (the only) neuroprotective treatment

- Animal PD models: Exercise slows progression
- Human studies: Moderate-high intensity exercise appears to have a neuroprotective effect

Advice:

- Aerobic exercise (ideally moderate-high intensity, most days, 30 mins+)
- Balance training
- Stretching program / improve postures

Ahlskog JE. Does vigorous exercise have a neuroprotective effect in Parkinson disease? Neurology. 2011 Jul 19;77(3.
Corcos DM et al. Advice to People with Parkinson's in My Clinic: Exercise. J.Parkinsons Dis. 2024;14(3):609-617

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Examination: Normal face and voice. Gait shows moderate reduced right armswing, and overflow tremor. Resting tremor, increases with mental stress. Bradykinetic finger and hand taps, with reduced amplitude of taps. Right arm tone increased compared with left.

Ils this Parkinson's disease? Yes, most likely

Would you treat him?

Treating the patient – Outcome 1

Levodopa 25/100 prescribed
Patient self-uptitrated to 25/100 1.5 TDS.

2 months later:
Tremor lessened, shoulder pain improved, faster gait speed, less tired. Brighter and less moody. Still acting out dreams. Constipation a bit worse.

Exam: Improved. Gait shows mild reduced right armswing, hint of overflow tremor. Mild decrement finger and hand taps. Minor rigidity right arm.

Responded to levodopa – confirms likely Parkinson disease
Exercise program / physiotherapy
Education
Parkinson foundations/charity supports
LTI scheme

Treating the patient – Outcome 2

Levodopa 25/100 prescribed and patient uptitrated to 25/100 1 TDS.

2 months later:
Minimal subjective and objective clinical improvement

Taking medication on an empty stomach?
Titrate up to maximum 2.5 or 3 tabs TDS

2 months later:
Subjective and objective improvement at 2 tabs TDS.
Continue TDS
Long duration response in early PD

#9 Clues this is not Parkinson's disease

Poor response to levodopa
Dementia (early or prominent)
Early falls
Severe autonomic symptoms (low BP, bladder)
Rapidly worsening course
Dopamine antagonist medications
Vertical gaze palsy
Cerebellar signs
Wide-based gait

Take home points

1. Suspect Parkinson's disease?
2. Start dopamine replacement (Levodopa trial) for therapeutic and diagnostic response
3. Start exercise program/physiotherapy
4. Refer to Neurology

Time is precious!

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Thank You

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