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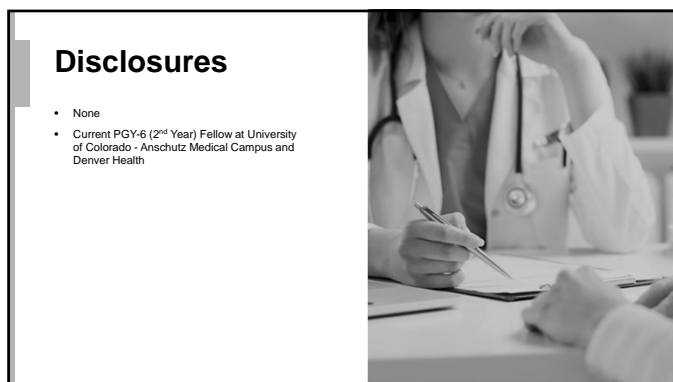
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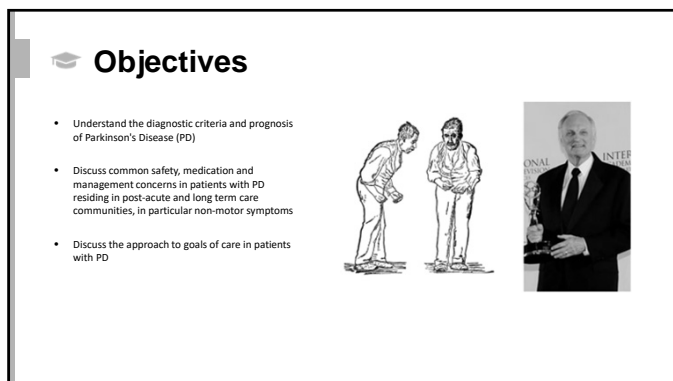
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## Parkinson's – A Clinical Diagnosis

- Presence of Bradykinesia and at least one of the following:
  - Rigidity
  - Rest Tremor
  - Postural instability
- Supportive features include
  - Decreased arm swing, micrographia, hypophonia, shortened stride length
  - Prodromal signs: RBD, anosmia, constipation, orthostatic hypotension
  - **DaT Scan – not necessary**
- Red flags for an atypical parkinsonism
  - Early, recurrent falls
  - Poor response to medication
  - Rapid progression
  - Severe early autonomic features
  - Cerebellar features
- **No concurrent exposure to neuroleptic drugs**

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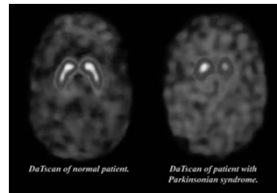
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## The “DaT”tails

- SPECT scan that measures the presynaptic dopamine transporter protein
- Reduced in PD
- FDA approval for differentiating PD from ET
- Clinically more useful in Idiopathic PD vs Drug-induced
- Certain drugs must be halted prior to scan (up to 1 week prior)



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## Prognosis

- Meta-analysis found that people typically live 6.9 to 14.3 years after diagnosis but there was significant heterogeneity (some reporting at least 20 years post-diagnosis)
- Cause of death on death certificates are similar to causes of non-PD patients
  - Death occurs often before the advanced stages of PD for other reasons
  - If patients do pass from PD-related symptoms, most commonly it is aspiration pneumonia

Parkinson Disease Subtype and Estimated Frequency	Disease Presentation	Response of Motor Symptoms to Dopaminergic Medication	Disease Progression
Mild motor predominant 49%-53%	<ul style="list-style-type: none"> <li>• Young at onset</li> <li>• Mild motor symptoms</li> </ul>	Good	Slow
Intermediate 35%-39%	<ul style="list-style-type: none"> <li>• Intermediate age at onset</li> <li>• Moderate motor symptoms</li> <li>• Moderate nonmotor symptoms</li> </ul>	Moderate to good	Moderate
Diffuse malignant 9%-16%	<ul style="list-style-type: none"> <li>• Variable age at onset</li> <li>• Rapid eye movement sleep behavior disorder</li> <li>• Mild cognitive impairment</li> <li>• Orthostatic hypotension</li> <li>• Severe motor symptoms</li> <li>• Early gait problems</li> </ul>	Resistant	Rapid

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## Long-Term Care – Literature Review

- 20% to 48% of patients with PD will spend time in long-term care
- Age typically 70-80 years old
- Mean stay of 2-3 years
- 50% wheelchair bound
- Reports of more off time, less dyskinesias
- Only 23% of PD patients were on levodopa
- 37% were on dopamine-blocking agents
- 40-50% reported with dementia
- 2-3% with hallucinations and delusions\*

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## Improving Outcomes

- Continued neurologic follow-up
  - Lower risk of hip fracture
  - Lower adjusted likelihood of death
- Small study of 49 patients where LTC staff underwent PD-specific curriculum, then measured 1 year outcomes:
  - Improved motor function and quality of life
  - Decreased falls, depression and fatigue

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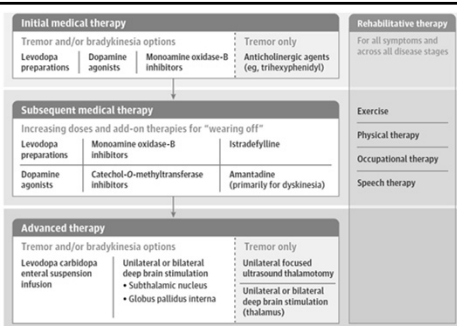
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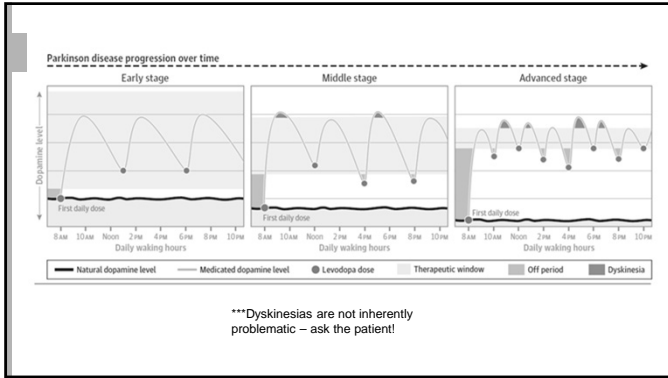
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### Advanced Therapeutics

March 22, 2023

AbbVie Provides Regulatory Update on ABBV-951 (Foscarbidopa/Foslevodopa) New Drug Application

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### Non-motor symptoms of Parkinson's

The diagram uses an iceberg metaphor to show symptoms of Parkinson's. The visible tip represents 'MOTOR SYMPTOMS': Rigidity, Bradykinesia, Tremor, and Gait Imbalance. The submerged part represents 'NON-MOTOR SYMPTOMS': Dementia, Psychosis, Drooling, Runny nose, Constipation, Insomnia, Nausea/Vomiting, Fatigue, Pain, Decreased sense of smell, Urinary frequency, Depression/Anxiety, Apathy, Sexual dysfunction, and Orthostatic hypotension. Restless Leg Syndrome is also listed at the bottom right.

Photo from APDA

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## Parkinson's Disease Dementia

- Over 75% of PWP for 15 years or more have MCI or dementia
- Characterized by decline in executive function and visuospatial domains more so than working memory and language
- Hallucinations are common – well formed, complex, animals or people
- Acetylcholinesterase (AChE) inhibitors do help!  
Rivastigmine approved for PDD and DLB



Photo from Vice.com

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## PDD and Psychosis: MDS Recommendations

TABLE 6. Interventions to treat psychosis in PD

Drug	Efficacy	Safety <sup>a</sup>	Practice implications
Clozapine	Efficacious	Acceptable risk with specialized monitoring	Clinically useful
<b>Olanzapine</b>	<i>Not efficacious</i>	Unacceptable risk	<i>Not useful</i>
+ Haloperidone, risperidone, aripiprazole			
Quetiapine	Insufficient evidence	Acceptable risk without specialized monitoring	<i>Possibly useful<sup>b</sup></i>
<b>Pimavanserin</b>	Efficacious	Acceptable risk without specialized monitoring <sup>c</sup>	Clinically useful

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## Constipation and Urination

### Constipation

- Very common, prodromal symptom
- Slow motility
- Probiotics likely efficacious
- Some caution on bulking agents if patient does not hydrate

### Urination

- Typically overactive bladder: nocturia, frequency, urgency
- Strong caution in using antimuscarinics
- Beta-3-adrenergics have less CNS effect  
Mirabegron only one studied in PD
- Botulinum toxin injections

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## Dysphagia

- Evaluation indicated at first visit!
- Ask about post-swallowing cough or gurgle, choking, unintentional weight loss, food retention sensation, **pneumonia**
- Any of the above -> SLP evaluation and swallow study
- Patients often unaware!  
20% of PD patients will have swallowing abnormalities without complaint of difficulty subjectively




Image from: <https://www.southhealth.org/health-library/87225>

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## Orthostatic Hypotension

- Experience by over a third of PD patients
- Neurogenic, but beware concomitant BP meds and hypovolemia confounding
- Includes notable post-prandial hypotension
- Patient may have difficulty describing – consider profound fatigue/sleepiness after meals, unexplained falls/syncope
- Diagnosis:
  - Measure BP and HR while lying, sit up then wait 3 min then repeat, stand up then wait 3 min then repeat
  - Argument between 20 pt or 30 pt systolic drop without HR increase response.
- Treatment
  - Non-pharmacologic: hydration, behavioral changes, small meals, compression stockings and abdominal binders, review dopaminergic therapy
  - Medication
    - Midodrine
    - Fludrocortisone (must be taking in enough water and salt)
  - If supine HTN occurs, consider short acting anti-HTN medications

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## Palliative Care



- Provide early and often – consider at time of diagnosis
- Improves QOL, decreases symptom burden and reduces hospital deaths
- Non-motor symptom burden increases
  - Pain
  - Depression, anxiety
- Discuss ACP yearly (though avoid immediately after diagnosis)
- Provides caregiver support
- Consider the surprise question
- "PD challenges personhood"
  - Independence
  - Appearance
  - Social relationships
  - Identity
- Socializing is critical – isolation affects QOL and mortality
- Consider spiritualism and religion

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