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### FINANCIAL DISCLOSURES

Commercial Research Support: AbbVie, Inc.

Consultant: AbbVie, Inc., Voyager Therapeutics, BlueRock Therapeutics, Clintrex, Revivo Therapeutics, Inc., Sanofi-Adventis Research and Development, Appello, Avrobio, Inc., Grey Matter Technologies, Theravance Inc.

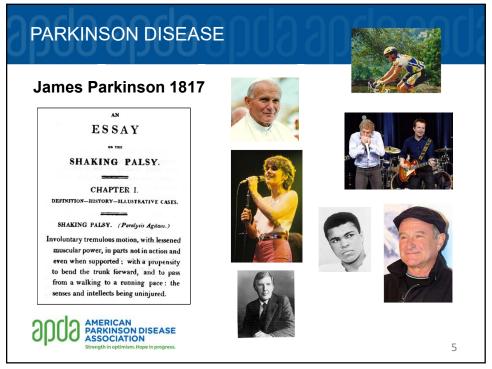
**Speakers Bureaus: none** 

**Equity:** none









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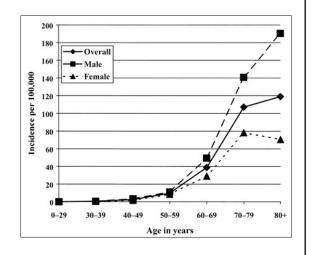
### AGE AND PARKINSON DISEASE

### The Good News:

We are living longer. Most Americans alive today can expect to live to at least 80 years.

### **Not So Good News:**

The older we get, the more likely we are to get Parkinson Disease.



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## CLASSICAL FEATURES OF PARKINSON DISEASE

- Rest Tremor
- Bradykinesia
- Rigidity
- Postural Imbalance















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### SYMPTOMS OF PARKINSON DISEASE

"Pre-PD"

- Hyposmia loss of the sense of smell
- REM Behavior Disorder – "acting out dreams"
- Constipation

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# SYMPTOMS OF PARKINSON DISEASE

"Pre-PD"

- Hyposmia loss of the sense of smell
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**Early PD** 

- Tremor
- Bradykinesia
- Rigidity
- Fatigue

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### SYMPTOMS OF PARKINSON DISEASE **Early PD Advanced PD** "Pre-PD" Hyposmia – Tremor Impaired loss of the balance Bradykinesia sense of smell Wearing off Rigidity REM Behavior **Dyskinesia** Fatigue Disorder -Memory "acting out problems dreams" Hallucinations Constipation 10





### EARLY PD: ESTABLISHING A DIAGNOSIS

- The most common initial symptom of PD is a resting tremor
- Other early symptoms can be slow walking and impaired fine coordination
- PD is a clinical diagnosis, made based on history and physical examination
- Consultation with a movement disorder expert is recommended to confirm the diagnosis
- Imaging tests (DaTscan<sup>™</sup>) can be useful when the diagnosis is uncertain

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### TREATMENT OF EARLY PD

- Early PD does not always require medications.
   Many patients can wait months, or sometimes years, before starting medication for PD
- The decision of when to start medication, and what medication to use, is individual and depends on the severity of the symptoms and their impact on lifestyle
- Everyone with early PD should have an exercise and wellness program, even if they are not on medication





### MEDICATIONS FOR EARLY PD

- MAO Inhibitors
  - Rasagiline (Azilect®)
  - Selegiline
- · Dopamine agonists
  - Ropinirole (Requip®)
  - Pramipexole (Mirapex<sup>®</sup>)
  - Rotigotine (patch) (Neupro®)
- Carbidopa/Levodopa (Sinemet®)
  - 25/100 tablets

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### **EXERCISE AND WELLNESS FOR EARLY PD**

- An exercise program is critical for success in living with PD
- Many different forms of exercise have shown benefit
- · Exercise only works if you do it
- Diet in early PD should be balanced, with colorful fruits and vegetables and fiber
- Stay well hydrated, especially in hot weather or with exercise





### ADVANCED PD: WEARING OFF

- "Wearing off" means loss of medication effect at the end of the dose interval
- Most often seen with carbidopa/levodopa
- 50% of patients will have wearing off after 5 years of treatment
- This problem tends to worsen over time it starts out mild, but can become very troublesome



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### MANAGING WEARING OFF

- Change the timing of medication
- Extended release medications
  - Rytary<sup>®</sup> (carbidopa/levodopa)
  - Ropinirole ER, Pramipexole ER
- Enzyme inhibitors
  - Entacapone (Comtan<sup>®</sup>, Stalevo<sup>®</sup>)
  - Rasagiline
  - Safinamide (Xadago<sup>®</sup>)
- Rapid treatments
  - Apomorphine injection (Apokyn<sup>®</sup>)
  - Inhaled levodopa (Inbrija<sup>™</sup>)
- Role of diet
  - In some people, dietary protein can interfere with absorption of levodopa





### ADVANCED PD: DYSKINESIA

- Chorea (dance-like) movements, usually seen when medication levels are high
- Mild dyskinesia does not need treatment, but severe dyskinesia can be disabling
- Medication timing is important
- · Main treatment for dyskinesia is amantadine
- · Standard amantadine
- Extended release amantadine (Gocovri<sup>™</sup>)



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### ADVANCED PD: BEYOND MEDICATIONS

- Deep Brain Stimulation
  - Useful for all the symptoms of PD. Especially helpful for tremor and dyskinesia
- Levodopa gel intestinal infusion (Duopa®)
  - Useful for wearing off which cannot be controlled with regular medications
- Focused Ultrasound lesioning
- Useful mostly for tremor







### ADVANCED PD: MEMORY PROBLEMS

- · Mild memory problems are common in PD
- Up to 30% of PD patients may develop more severe problems with memory
- First step in treating memory problems is to identify contributing factors
  - Medications especially trihexyphenidyl
  - Infections urinary, pulmonary
  - Sleep apnea
- May respond to treatment with rivastigmine or similar drugs which enhance acetylcholine

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### **ADVANCED PD: HALLUCINATIONS**

- A common problem in advanced PD
- May be aggravated by dopamine medications.
   Reducing these (especially dopamine agonists) is usually the first step
- Pimavanserin (Nuplazid®) is FDA approved for treatment of hallucinations in PD
- Quetiapine is also used, although does not have specific FDA approval
- Avoid haloperidol and similar drugs, see the APDA website for a list of drugs to be avoided





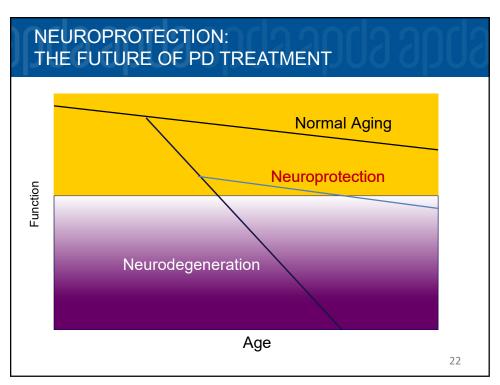
### APDA HEALTHCARE COMMUNICATION GRAPH

- Website tool to keep track of troublesome symptoms to share with your doctor.
- Soon to be available as an **App** for your smartphone!



Located on the APDA website: https://www.apdaparkinson.org/healthgraph

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### **CONCLUDING POINTS**

- The symptoms of PD change continually, and you must adapt your strategy accordingly
- Exercise, balanced diet and hydration are important at every stage of PD
- In early PD, when to start medication is often the most significant issue
- In advanced PD, strategies need to fit the specific symptoms
- Periodic consultation with a movement disorders expert can be very valuable

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# David G. Standaert, MD, PhD John N. Whitaker Professor and Chair of Neurology The University of Alabama Birmingham School of Medicine Chair, APDA Scientific Advisory Board AMERICAN PARKINSON DISEASE ASSOCIATION Strength in optimism. Hope in progress. Support for this program provided by: ACORDA 24







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