



# Parkinson's Disease: Controversies and Myth Busting

**Justin P Martello, MD**

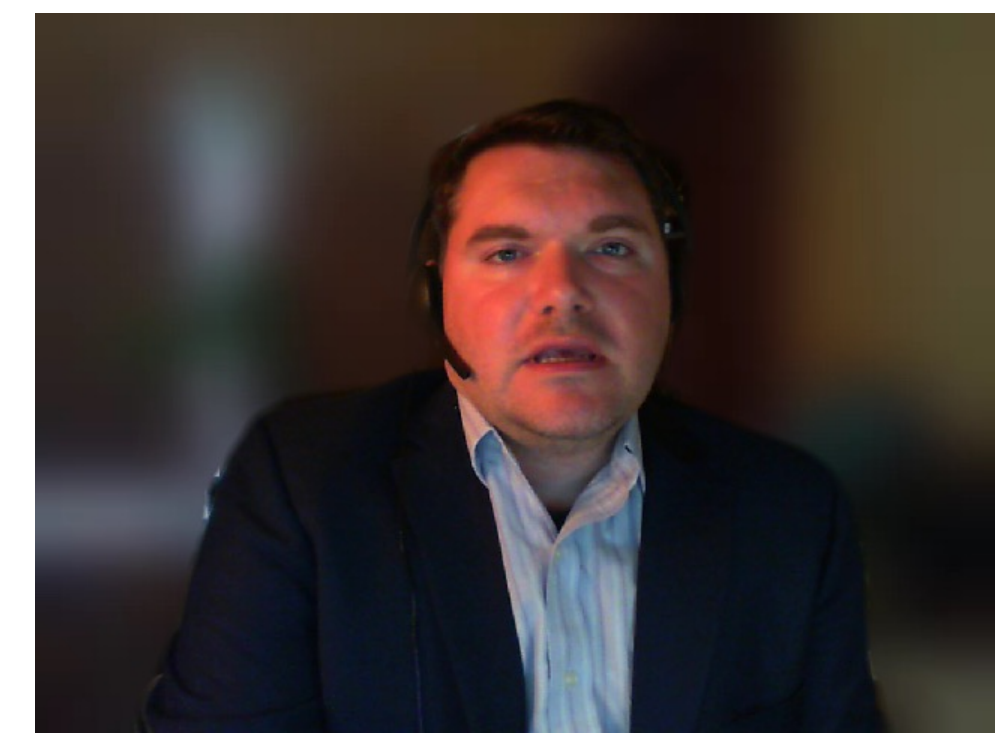
Movement Disorders Director

ChristianaCare Neurology Specialists, Newark, DE

Clinical Assistant Professor

Sydney Kimmel Medical College

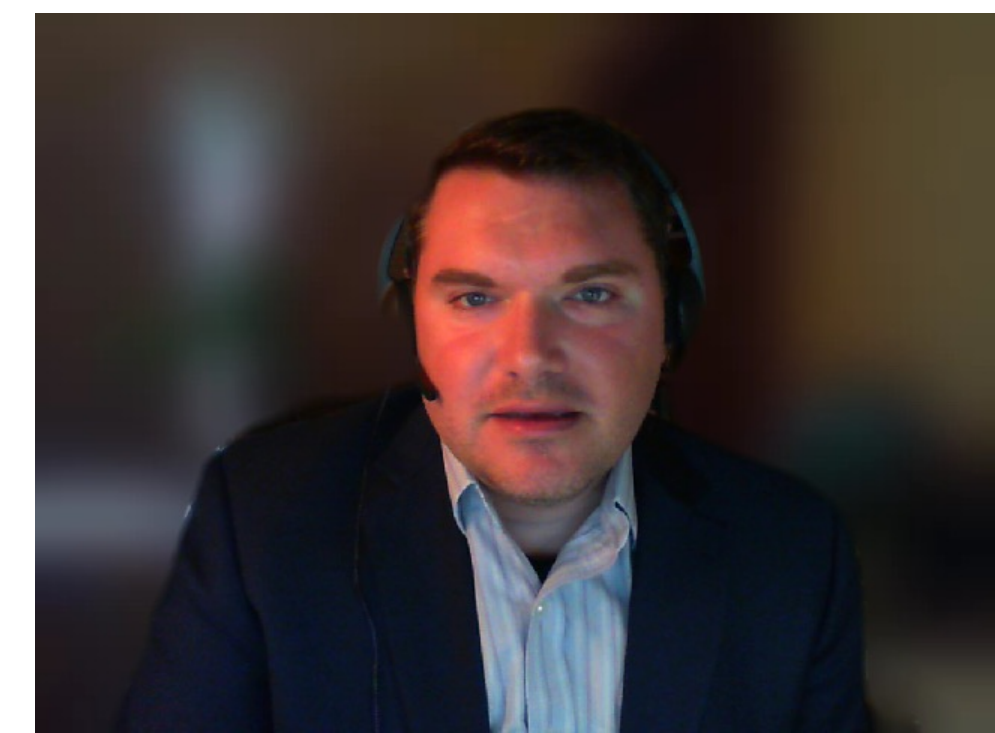
Thomas Jefferson University, Philadelphia, PA





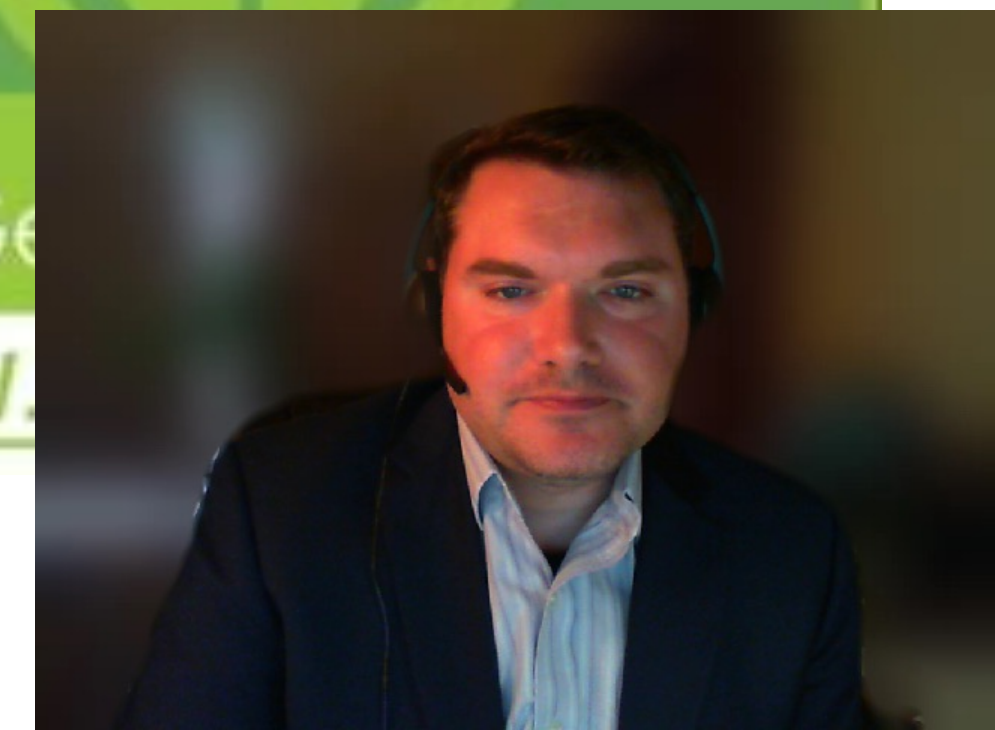
# Disclosures

- Paid speaker for Abbvie, Neurocrine, Sunovion
- Disclosures unrelated to topics discussed today



# Objectives

- **Cover both sides of Parkinson's Disease (PD) common controversies past and present**
- **Busting PD myths and misconceptions**
- **A word about COVID**





**Is PD more common now?**



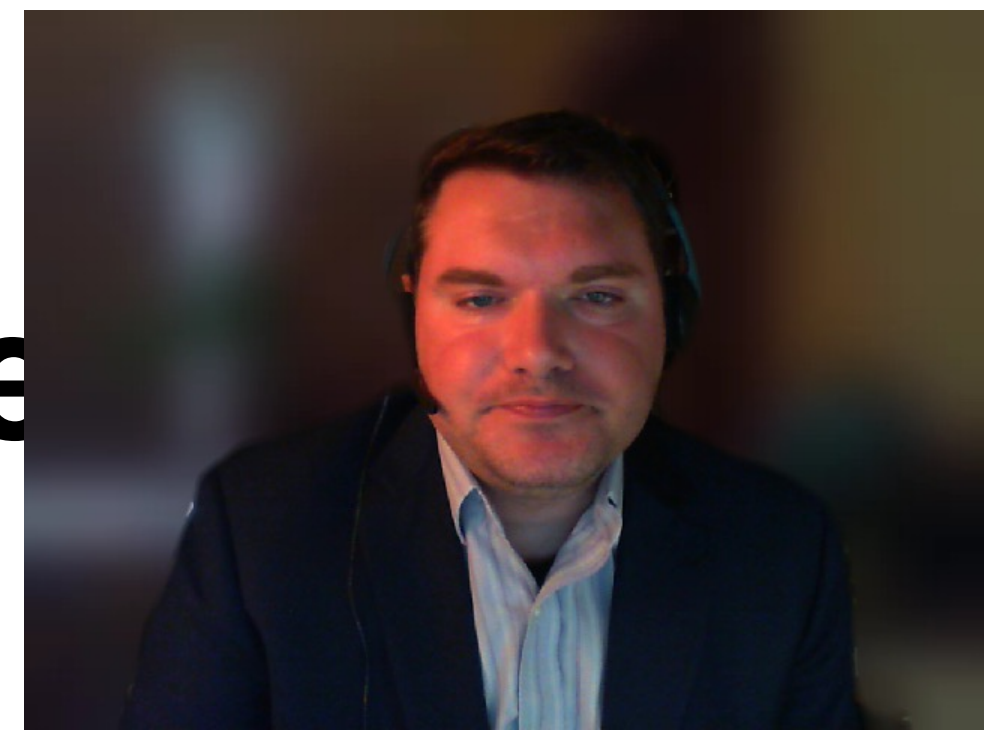
# PD Epidemiology

- **~1 million in USA: > multiple sclerosis, muscular dystrophy and ALS combined**
- **~60,000 new Americans with PD each year**
- **>10 million worldwide**
- **Men: Women 1.5: 1**
- ***NPF Data 2016***



# PD Epidemiology

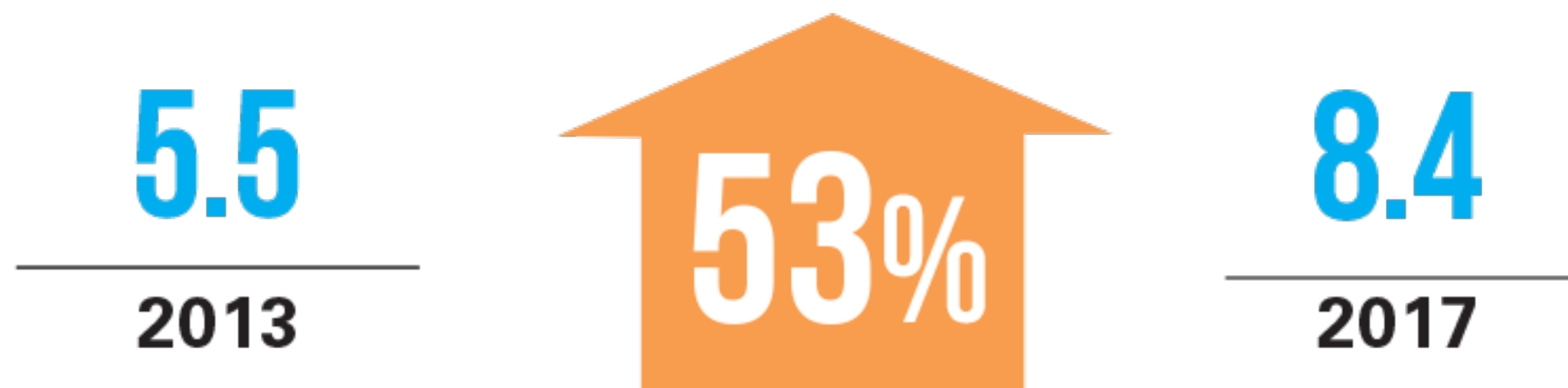
- **PD affects ~ 1-2/1000**
  - **1% over 60**
- **2011 University of Delaware Study: ~2000 in DE**
- **2017 NIH Study: ~3400 in DE (70% increase)**



# So are there more now?

- BCBS database (2013-2017)

EXHIBIT 1: PREVALENCE RATE OF PARKINSON'S DISEASE  
(PER 10,000 ADULTS, AGES 30-64)

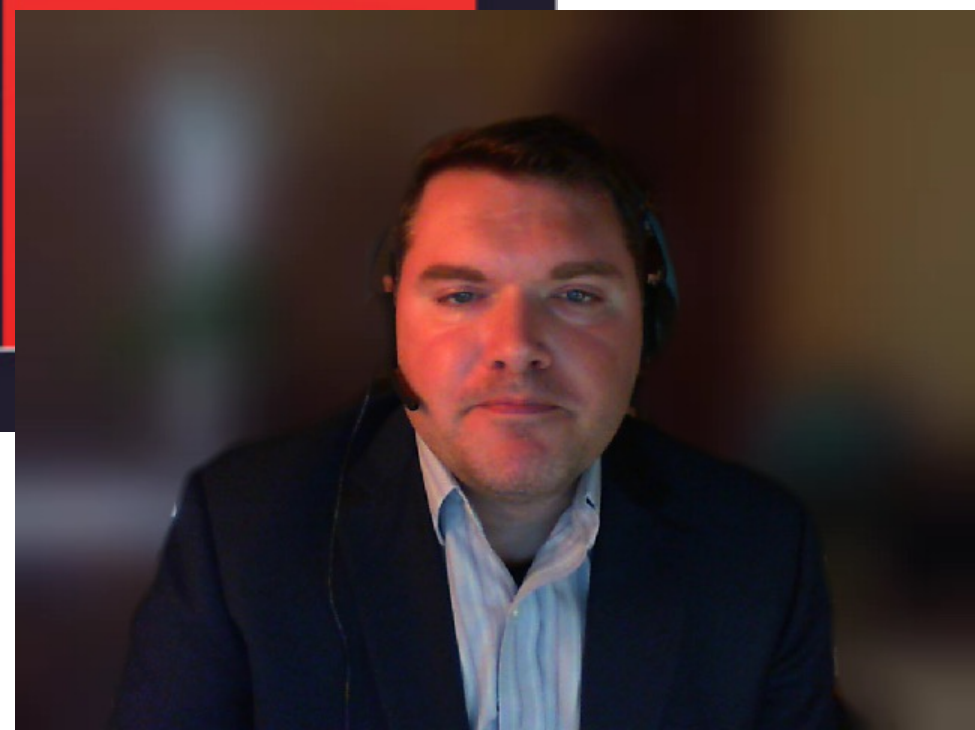
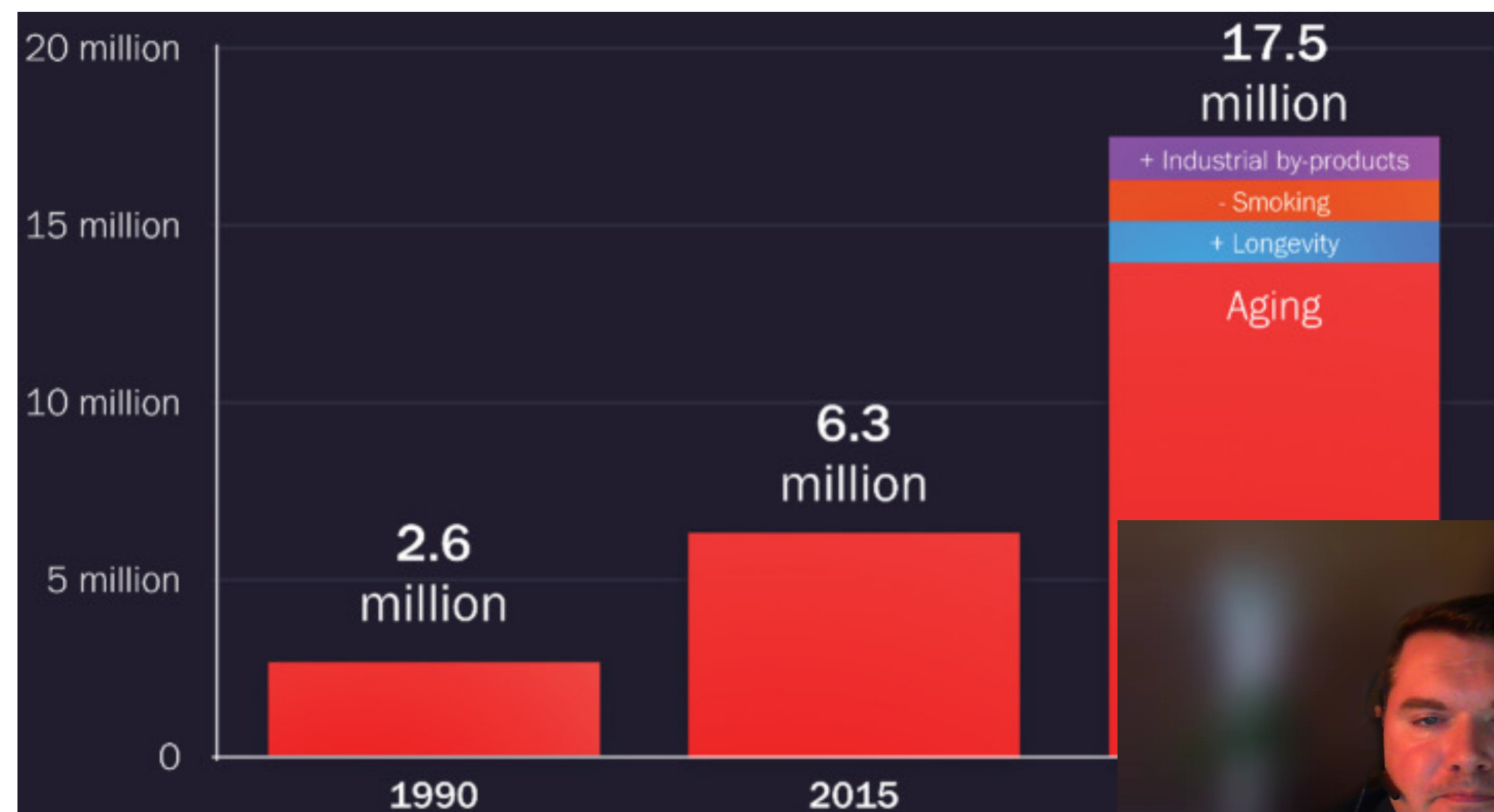


EARLY-ONSET  
(30-50 YEARS OF AGE)

1.2 to 2.5  
FROM 2013 - 2017

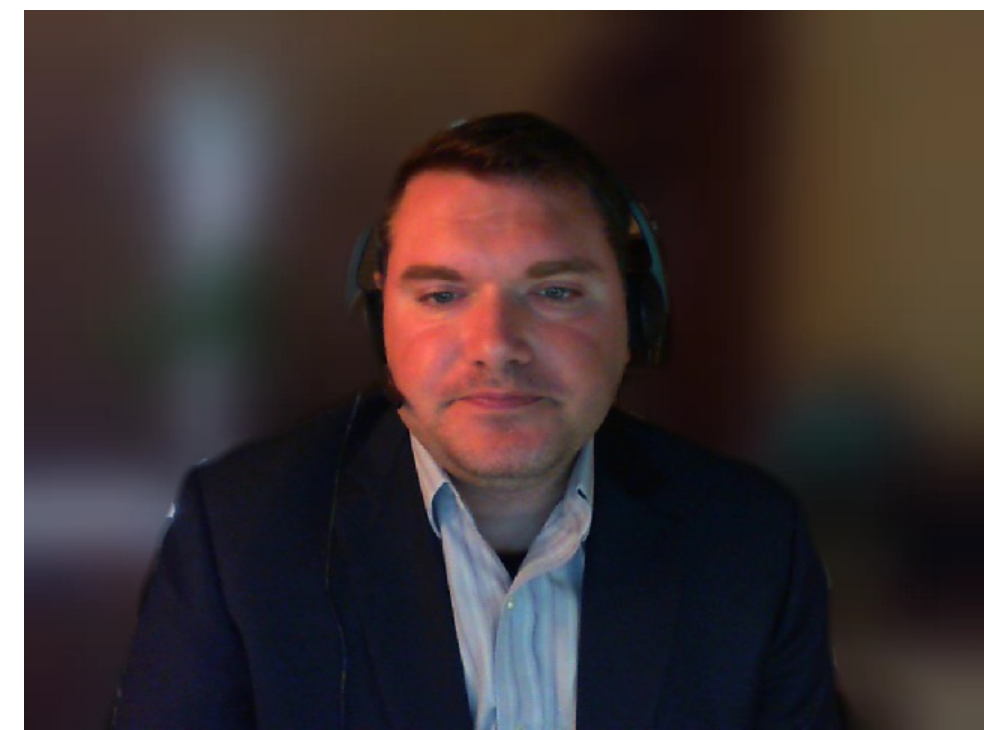
↑ 107%

- Neurological Disorders Collaborator Group (2017)





**“I have parkinsonism, and  
Parkinson’s Disease, and Lewy  
Body Dementia/disease?”**



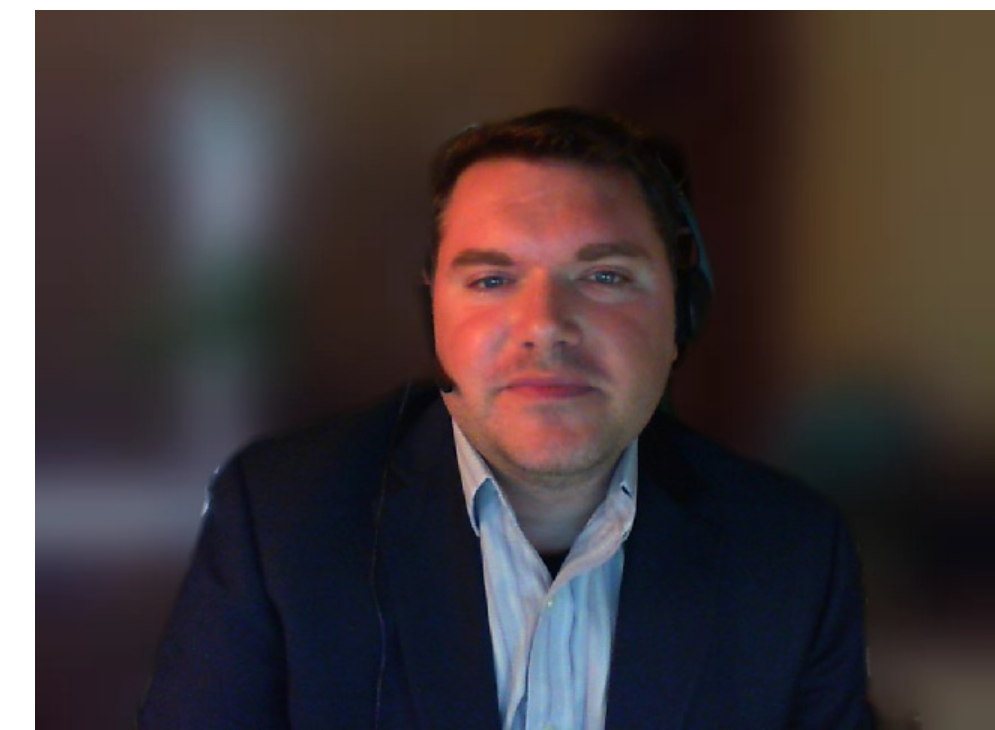




# Parkinsonism

- **Bradykinesia (slowness of movements)**
- **“Cogwheel” rigidity (specific type of stiffness)**
- **Resting tremor (“pill rolling”)**
  - *(absent in ~20-30% with PD)*
- **Balance impairment**
  - *(later in PD)*

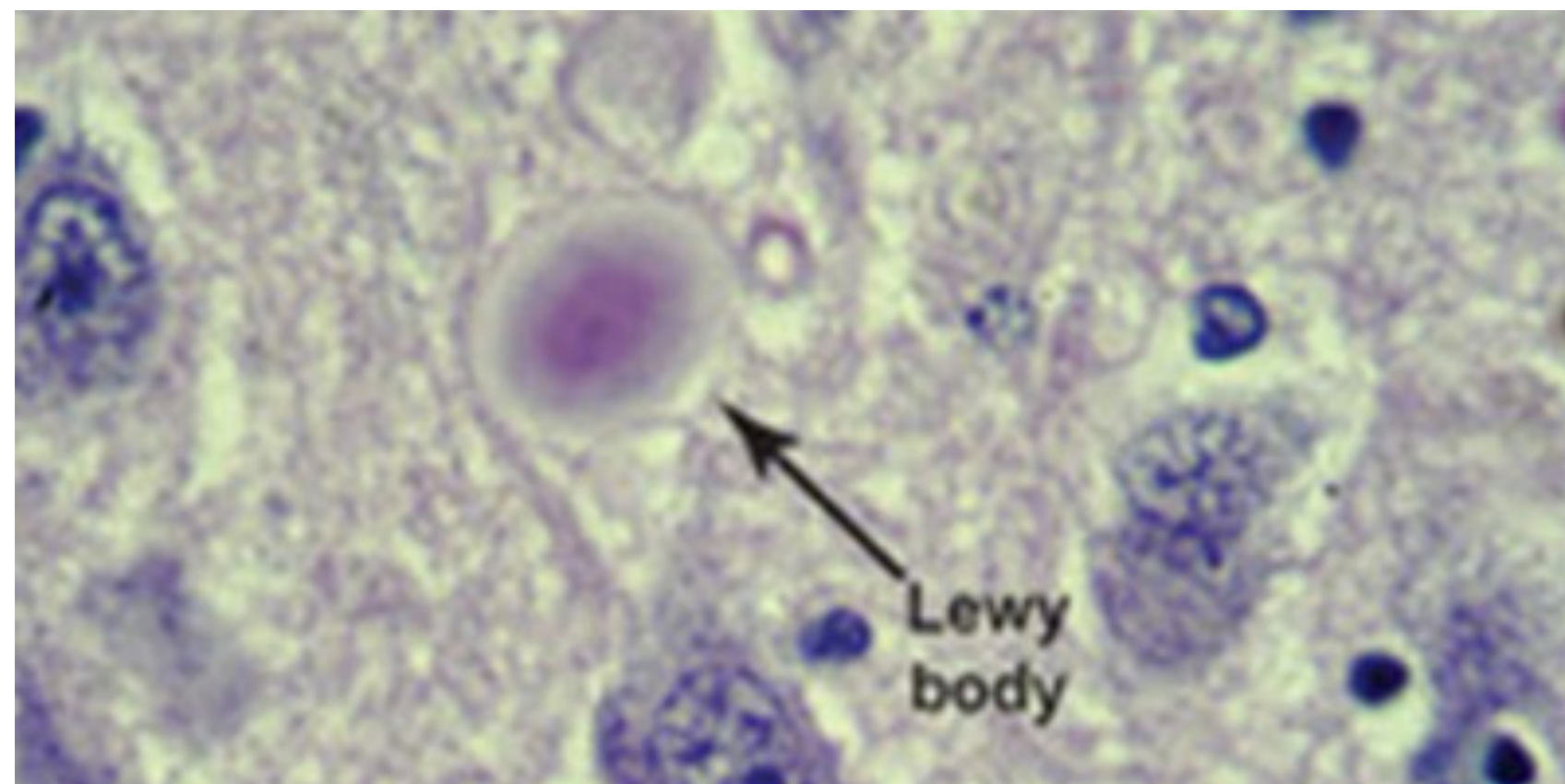
***Most people with parkinsonism have PD.***



# PD vs LBD

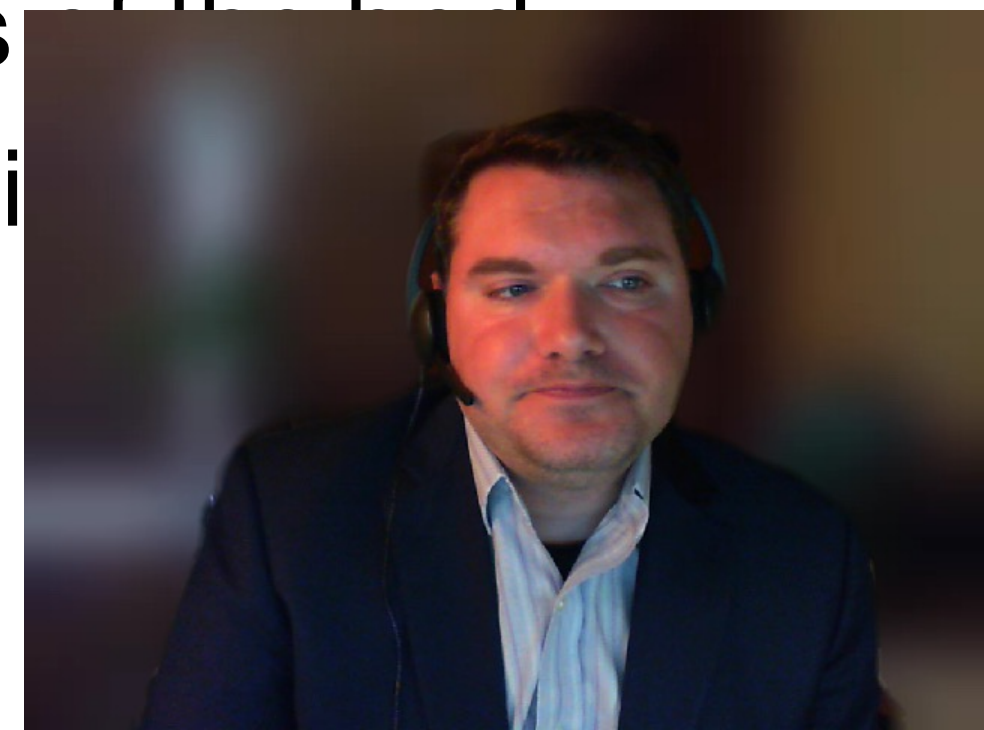
## PD

- May have early cognitive issues ( $\approx 15\%$  in PD)
- Both have more abnormal alpha-synuclein in lewy bodies



LBD= Faster progression  
w/more;

- gait and balance impairment,
  - autonomic dysfunction,
  - dementia,
  - fluctuations in attention and arousal,
  - Parkinsonism on both sides
- Psychosis (**VH/AH**, delusions, i  
**1 yr of motor symptoms**





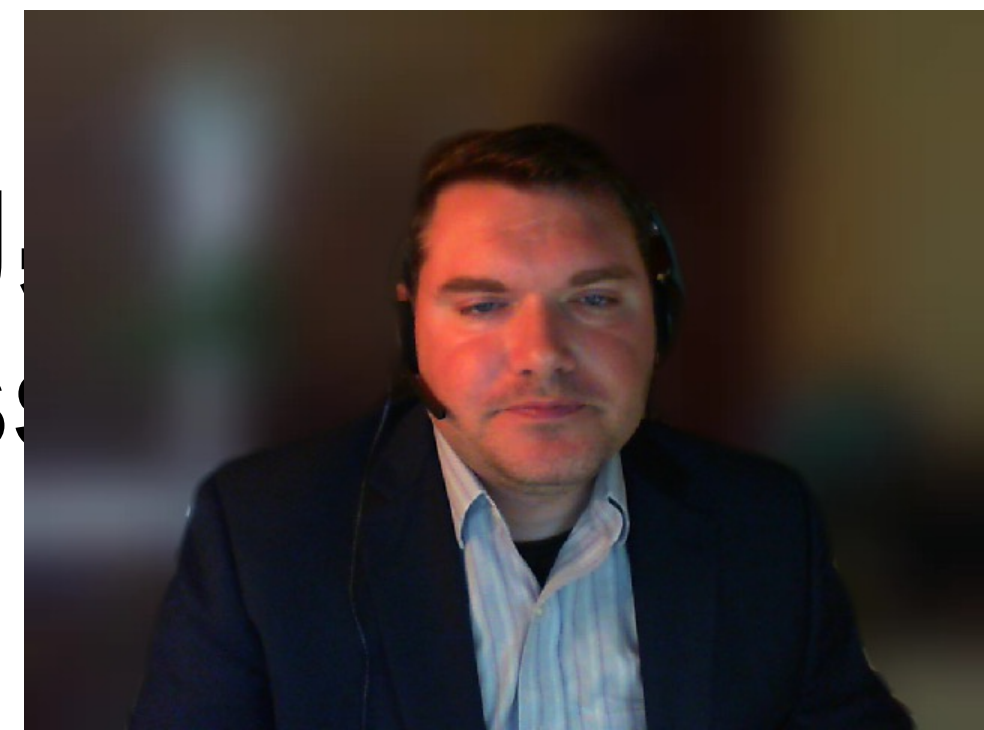
# Parkinsonism: Differential Diagnosis

## ■ Drug-induced

- Anti-psychotics
  - Typical and atypicals
- Antiemetics (except ondansetron)
- Amiodarone
- Dopamine depleters
  - Reserpine
  - Tetrabenazine
- Valproic acid
- Calcium channel blockers
- Lithium

## ■ Toxins

- MPTP
- CO
- Manganese
- Carbon disulfide
- Cyanide
- Methanol
- Farming, welding, factories/businesses

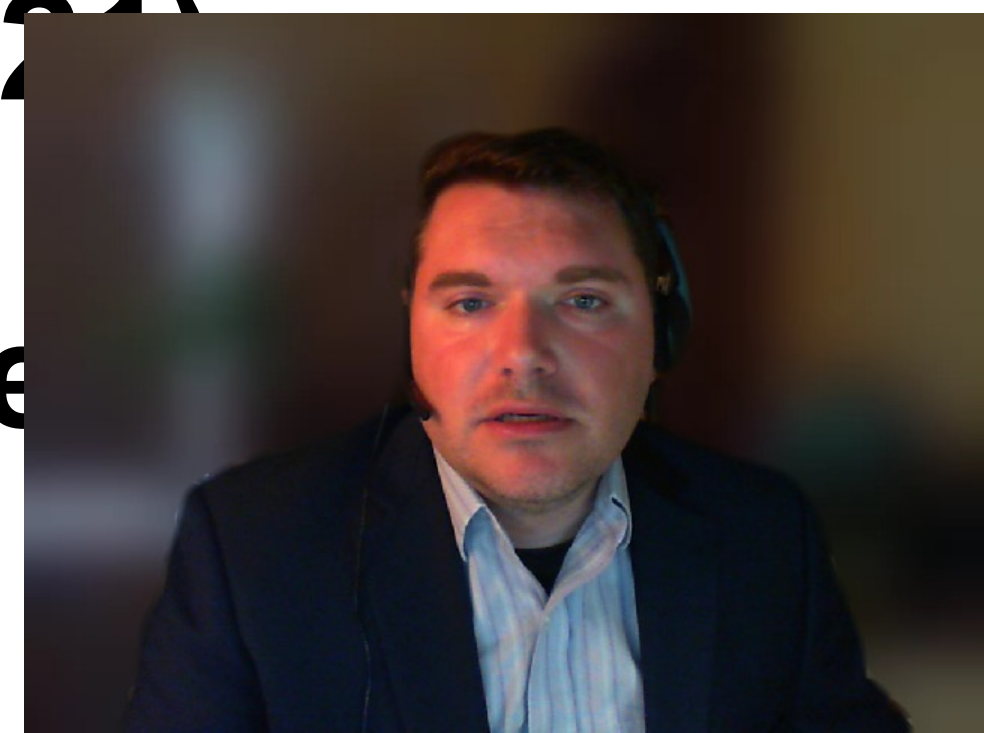




# Parkinsonism: Differential Diagnosis

## Degenerative diseases

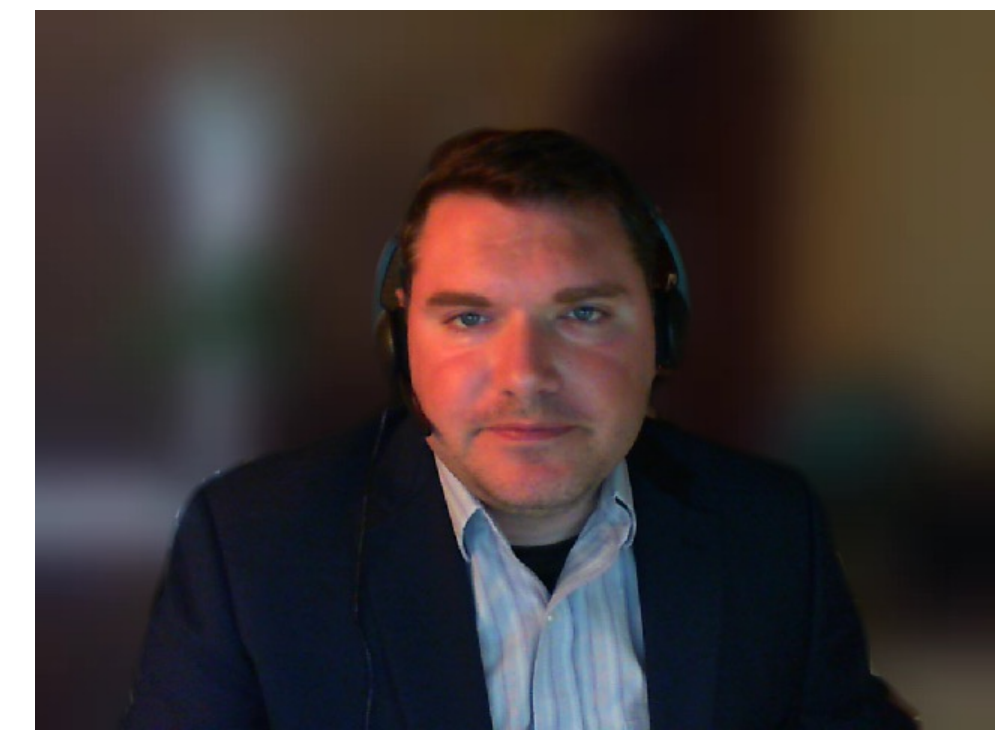
- **Progressive supranuclear palsy (PSP)**
- **Multiple system atrophy (MSA)**
- **Corticobasal syndrome (CBD)**
- **Lewy Body Dementia (LBD)**
- **Alzheimer's disease**
  - Middle to latter stages
- **Frontotemporal dementia (FTD)**
- **Neurodegeneration with brain iron accumulation (NBIA) (e.g. PKAN)**
- **X-linked dystonia-parkinsonism (Lubag)**
- **Rapidly progressive dystonia-parkinsonism**
- **Neuroacanthocytosis**
- **SCAs (1,2,3, 6,12,17,21)**
- **Fahr's syndrome**
- **Huntington's disease**
- **Wilson's disease**





# Parkinsonism: Differential Diagnosis

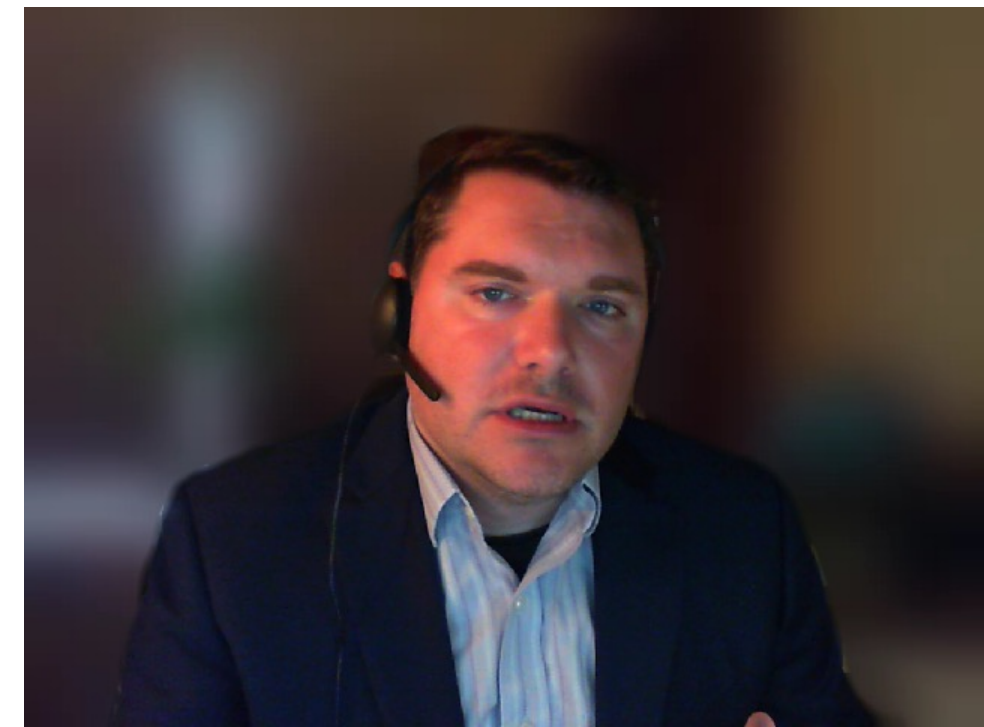
- **Vascular parkinsonism**
- **Hydrocephalus**
- **Post-traumatic**
- **Structural lesion**
- **Hemiatrophy-hemiparkinsonism**
- **Alcohol withdrawal**
- **“Normal” aging**
- **Psychogenic**
- **Others**





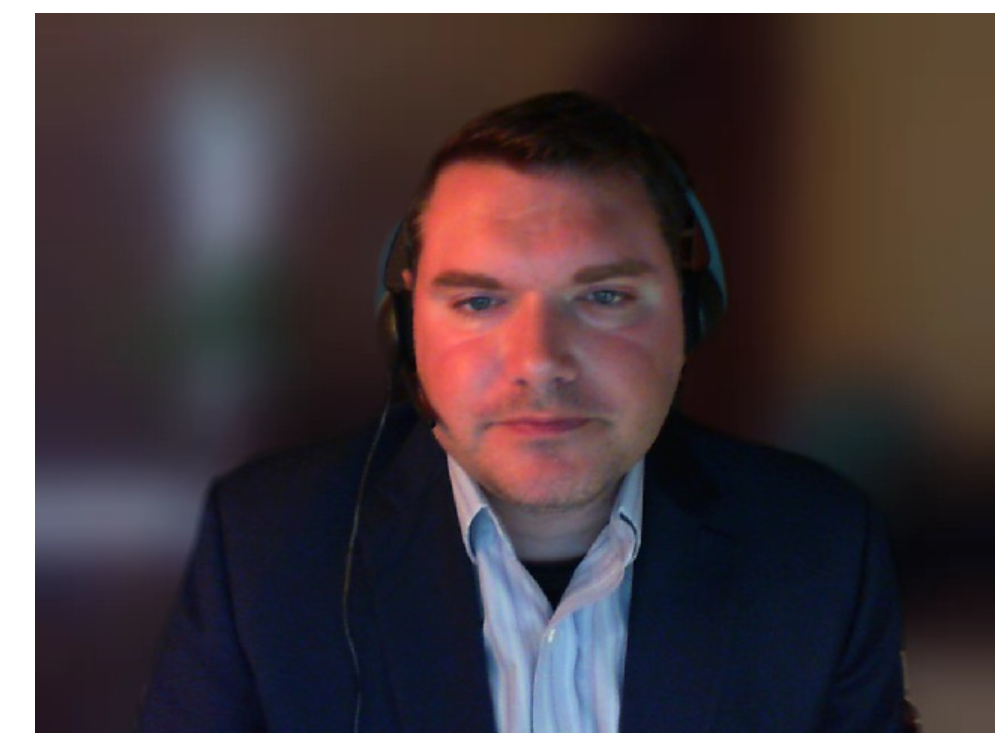
## Normal “Aging”

- **NEJM 1996 Bennnett, et. al.**
- **Overall prevalence of parkinsonism**
  - **65-74 yo = 14.9%**
  - **75-84 yo = 29.5%**
  - **>85 yo = 52.4%**





# How do you diagnose PD?



# Ancillary Testing

- **CT or MRI is not necessary in “typical” (most) cases of PD**
- **DA transporter imaging (DaT scan)**
  - **FDA indication to distinguish PD tremor from ET**
  - **Cannot be used for disease severity or prognosis**
  - **Drug-induced parkinsonism, vascular parkinsonism, NPH, psychogenic**
  - **DaT scan cannot distinguish PD from the other four parkinsonian syndromes (PSP, MSA, CBD, LBD)**
  - **Specificity/Sensitivity around 90%**
  - **Insurance issues...**
- **Skin biopsy for alpha-synuclein (for PD, MSA, LBD)**
  - **100%? Specific, 95% sensitive**
  - **Cheap/covered**
  - **Procedure**





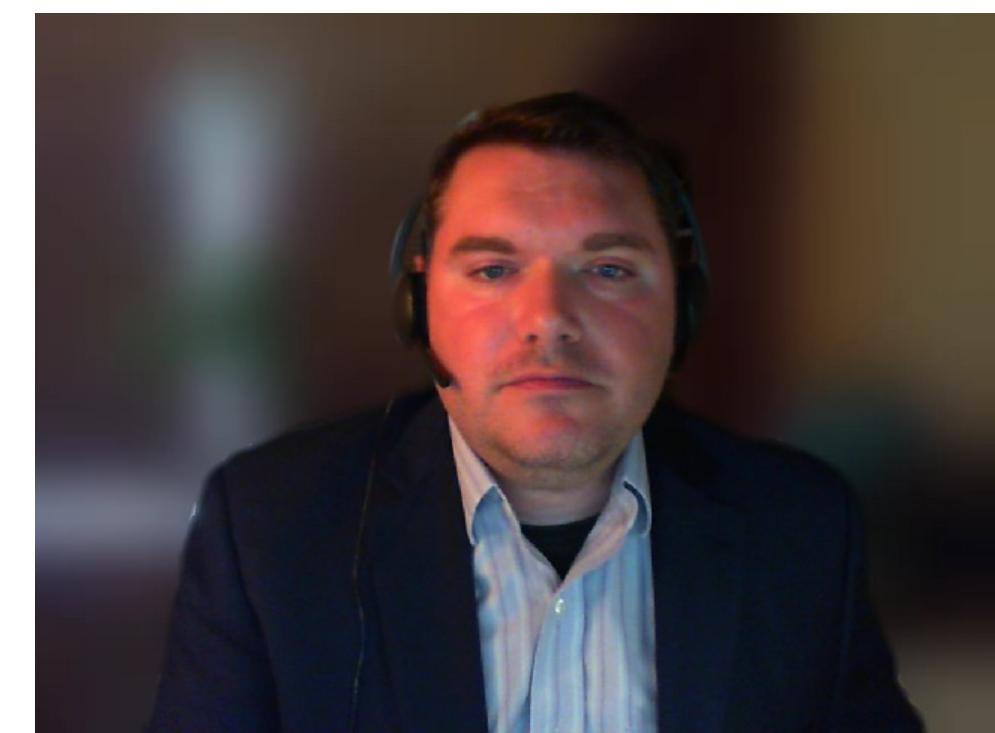
# Ancillary “Testing”

- **Levodopa trial (up to 200mg TID)**
- **Watchful waiting...**





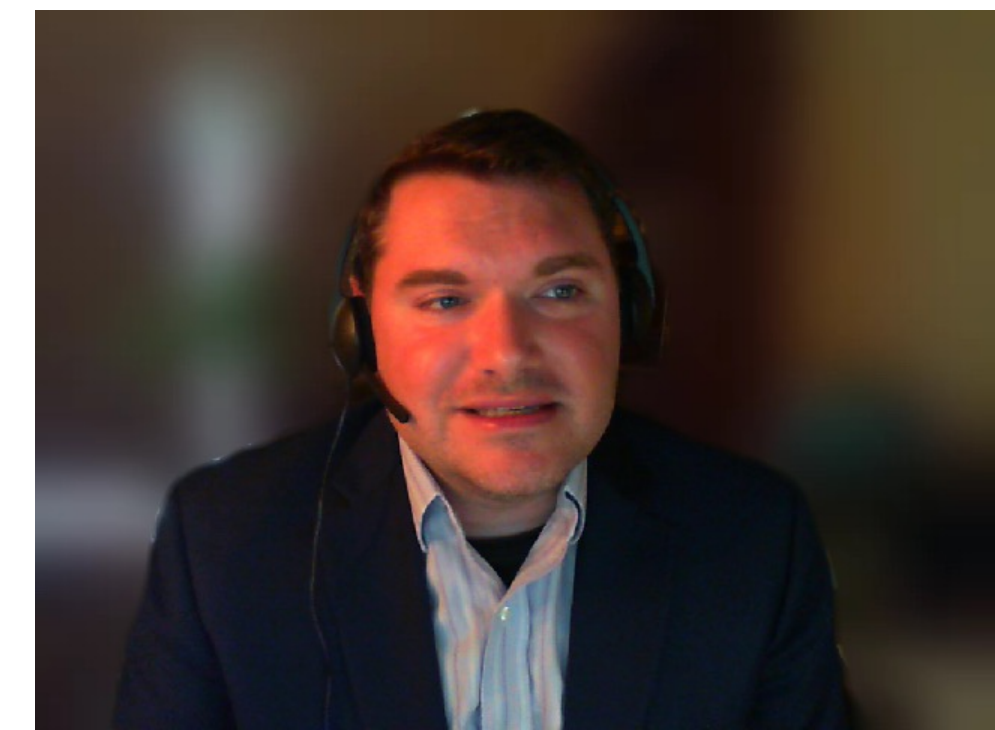
**All PWWPs (persons with  
Parkinson's Disease) are the  
same!**





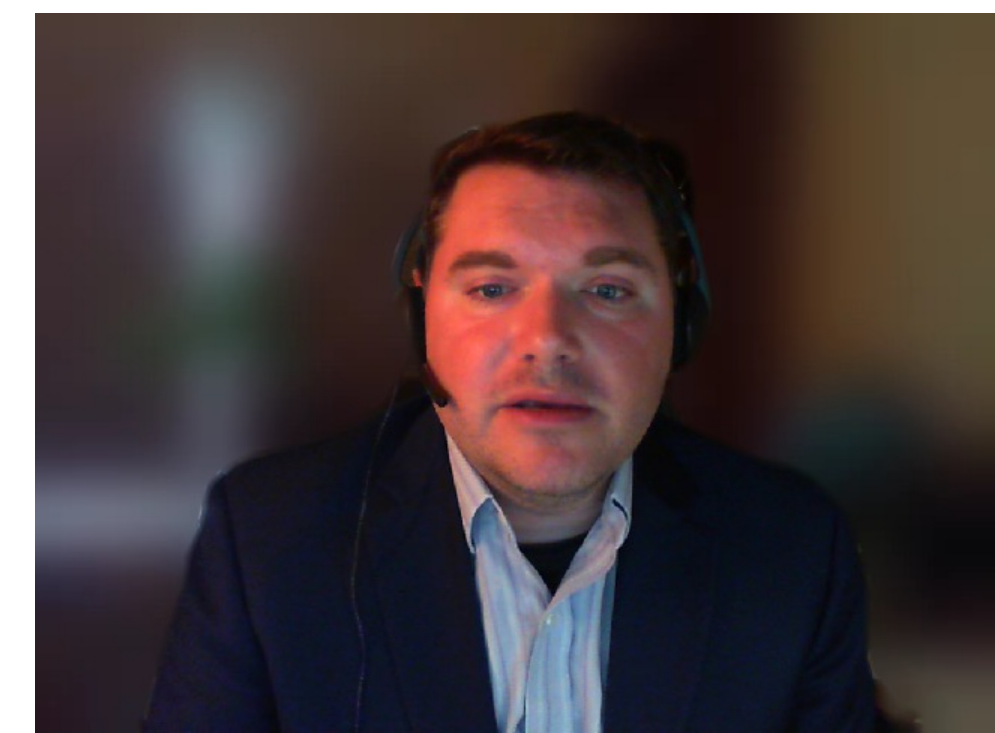
# PD Subtypes

- 1. Young onset PD (YOPD): 20-40yo**
- 2. Late onset PD (LOPD): >70yo**
- 3. Tremor dominant (mostly tremor)**
- 4. Postural instability gait disturbance (PIGD)**
  - **Akinetic-rigid (slow-stiff)**
- 5. Mixed**
- 6. Others??? Spectrum?**





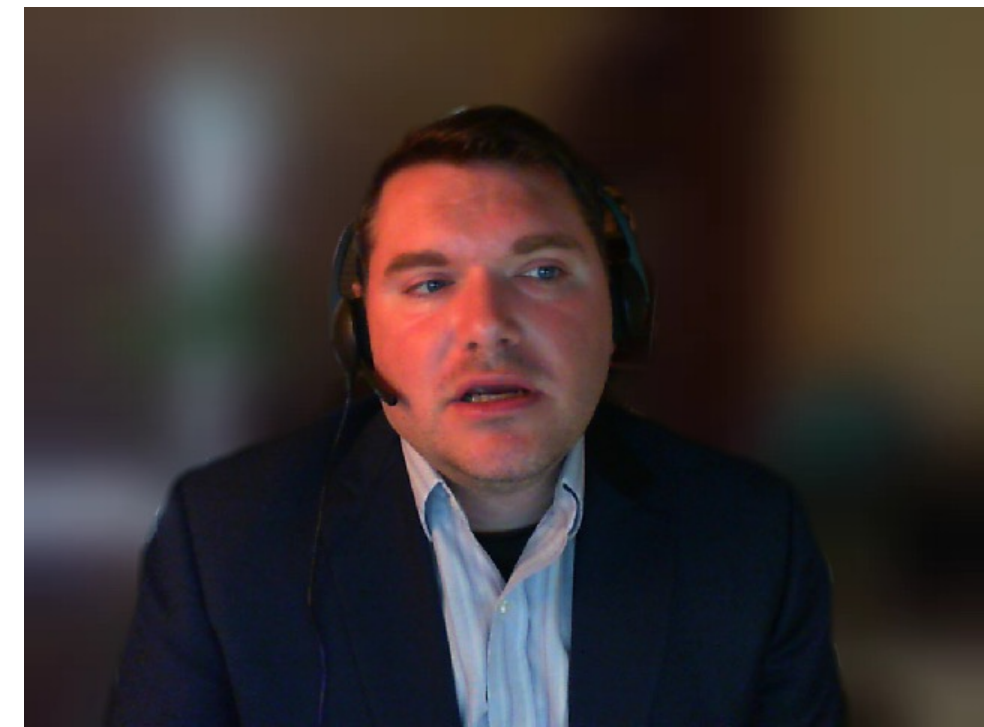
# What causes PD?





# PD Etiologies

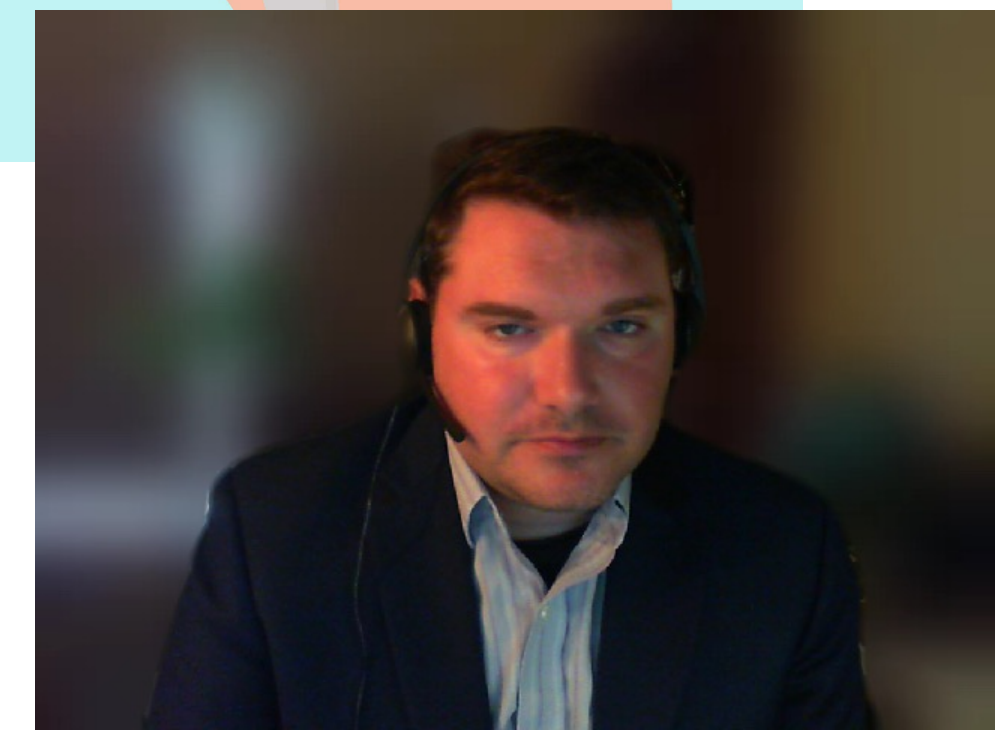
- **Environmental Exposure**
- **Gut theory**
- **Genetics (10-15% of PD)**



# Environment: Job exposure

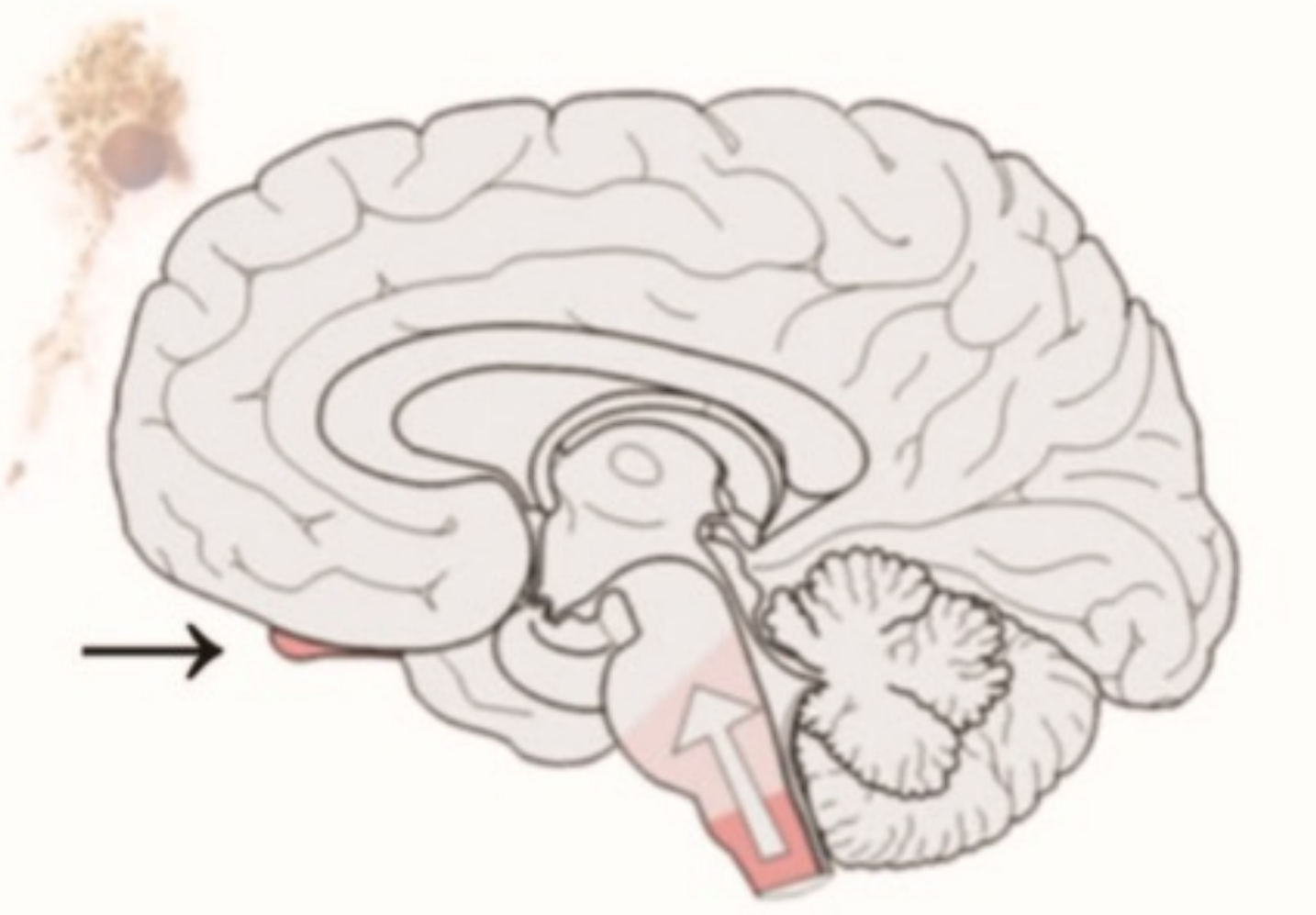


# Environment: Common

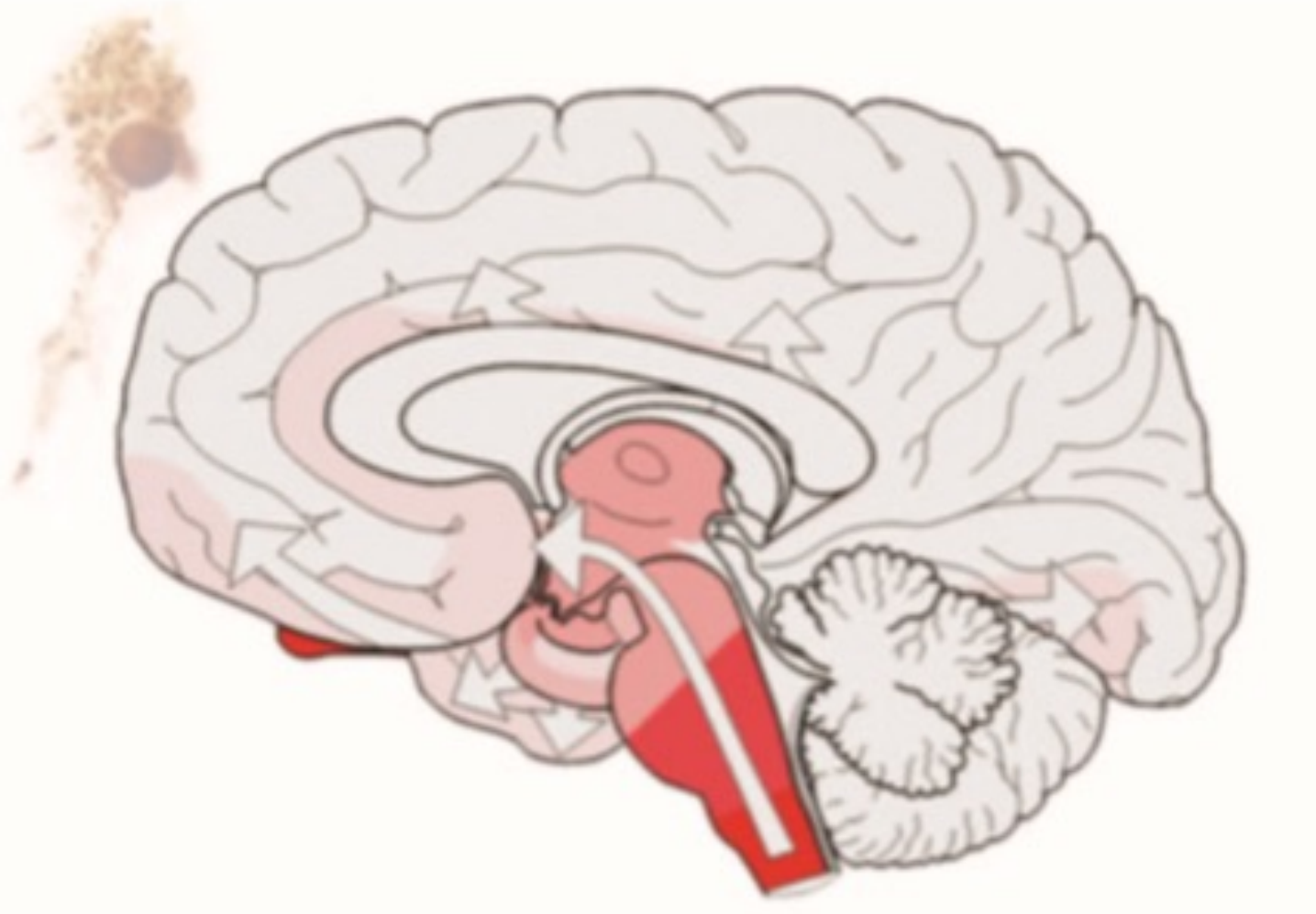


# Braak Theory

**Figure 3** Staging of  $\alpha$ -synuclein pathology thought to be associated with the evolution of PD, based on work by Braak et al.<sup>5</sup>



Braak Parkinson's disease stages 1 & 2  
**PRECLINICAL**



Braak Parkinson's disease stages 3 & 4  
**CLINICAL PARKINSON'S DISEASE**

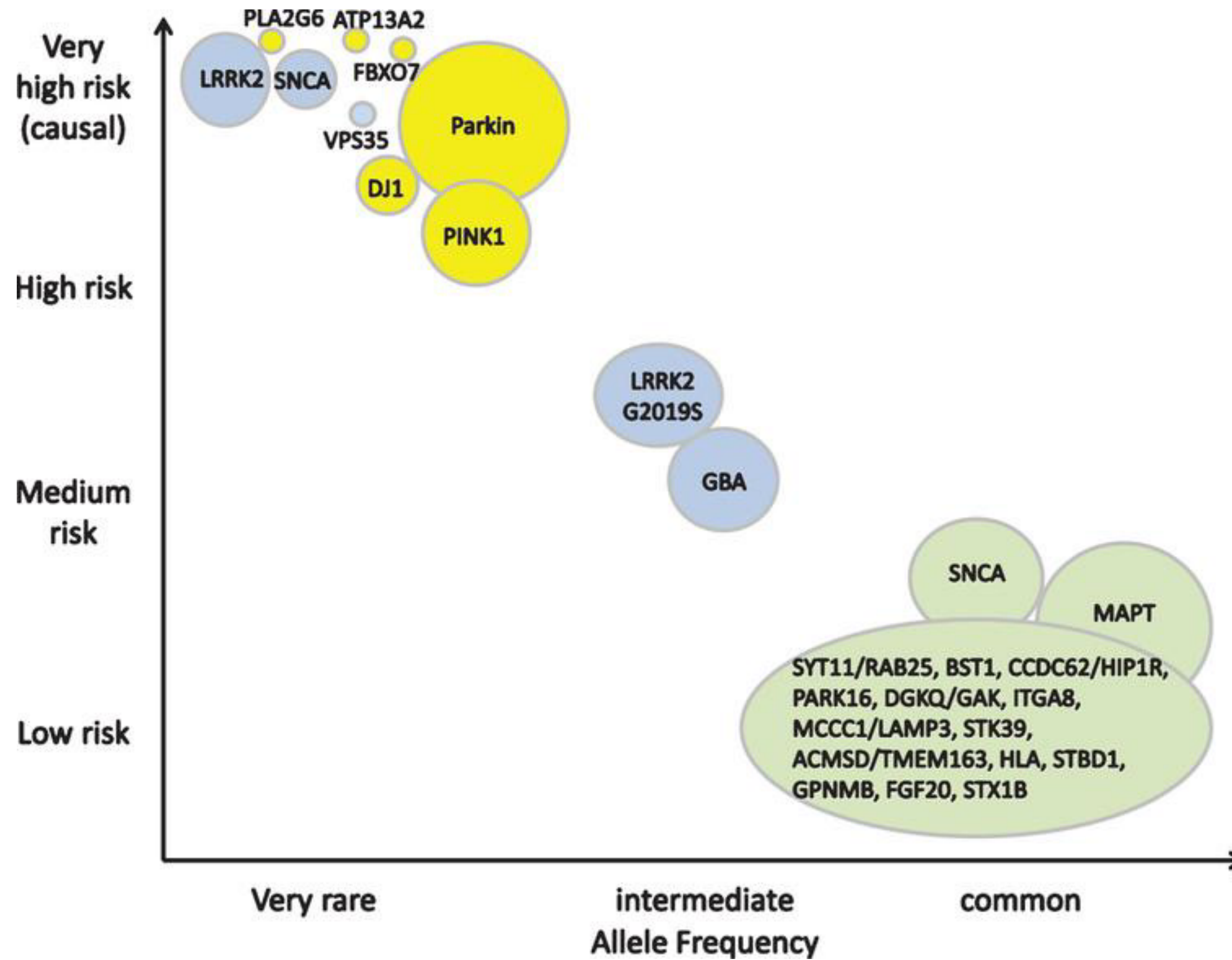


Braak Parkinson's disease stages 5 & 6  
**COGNITIVE IMPAIRMENT**





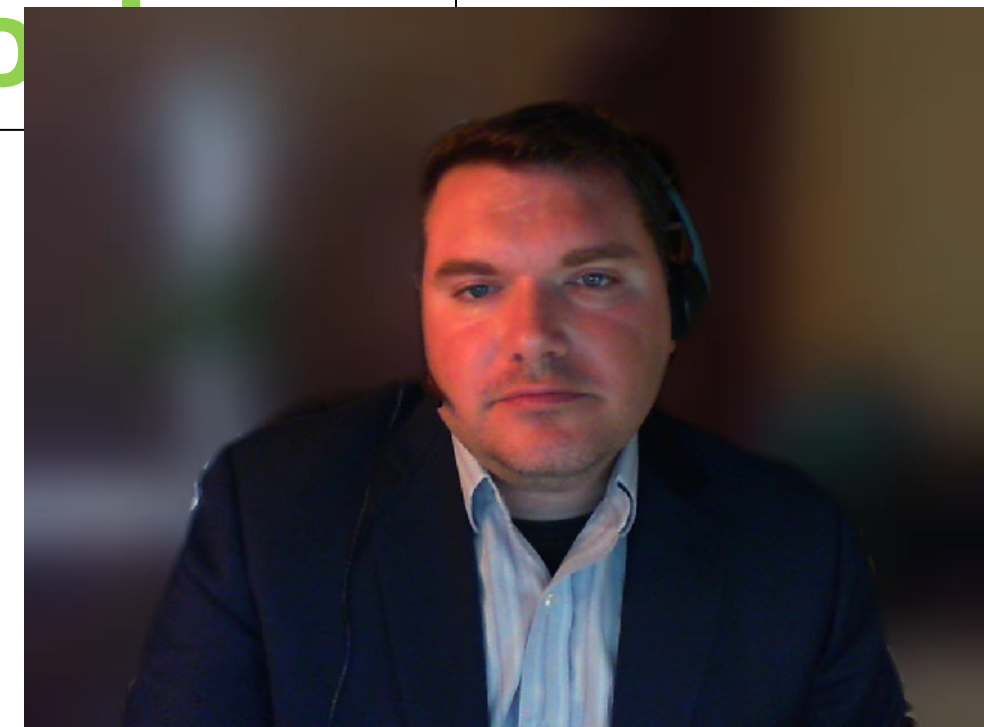
# PD Genetics



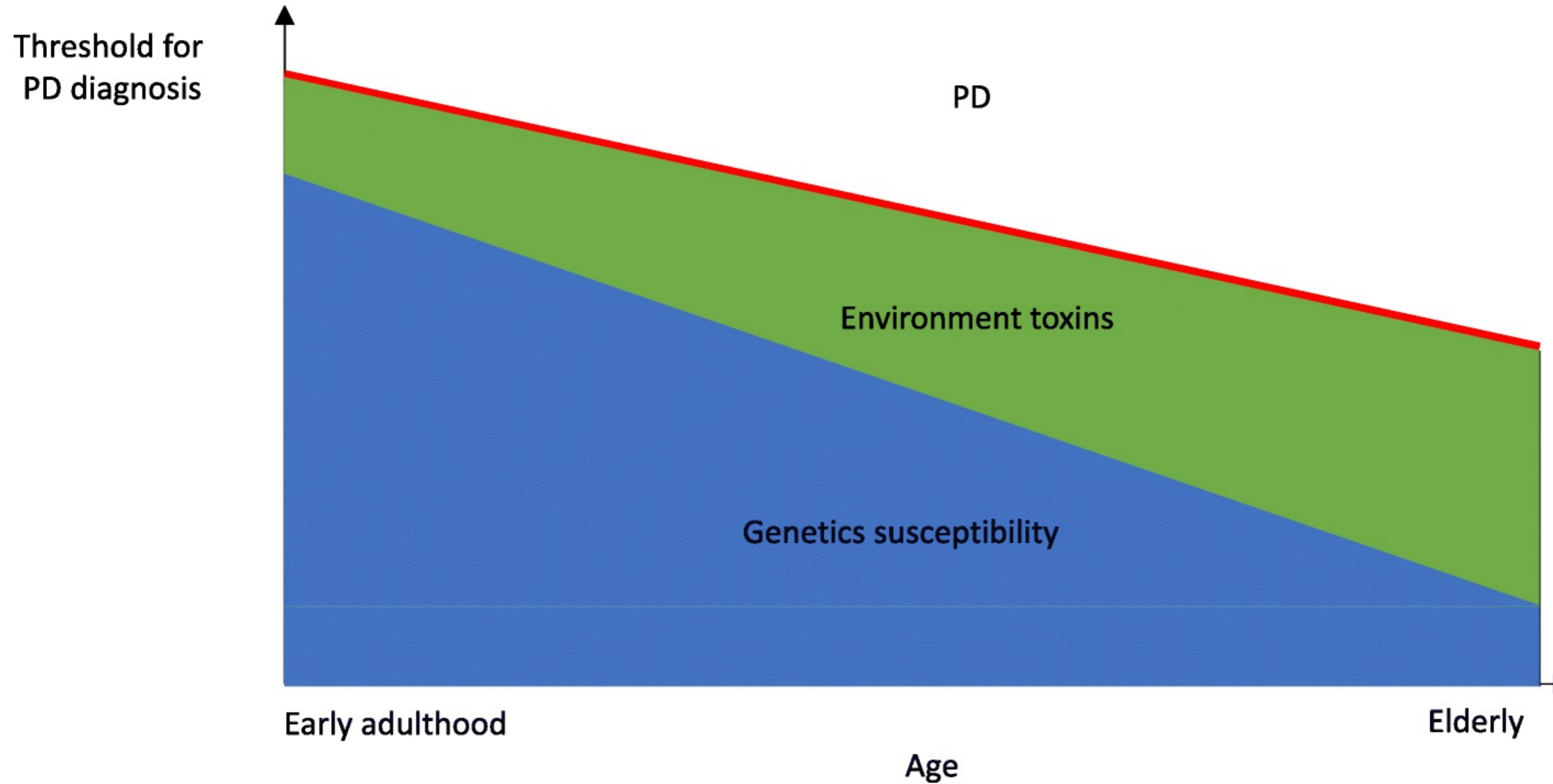
**Dominant**

**Recessive**

**Risk level**

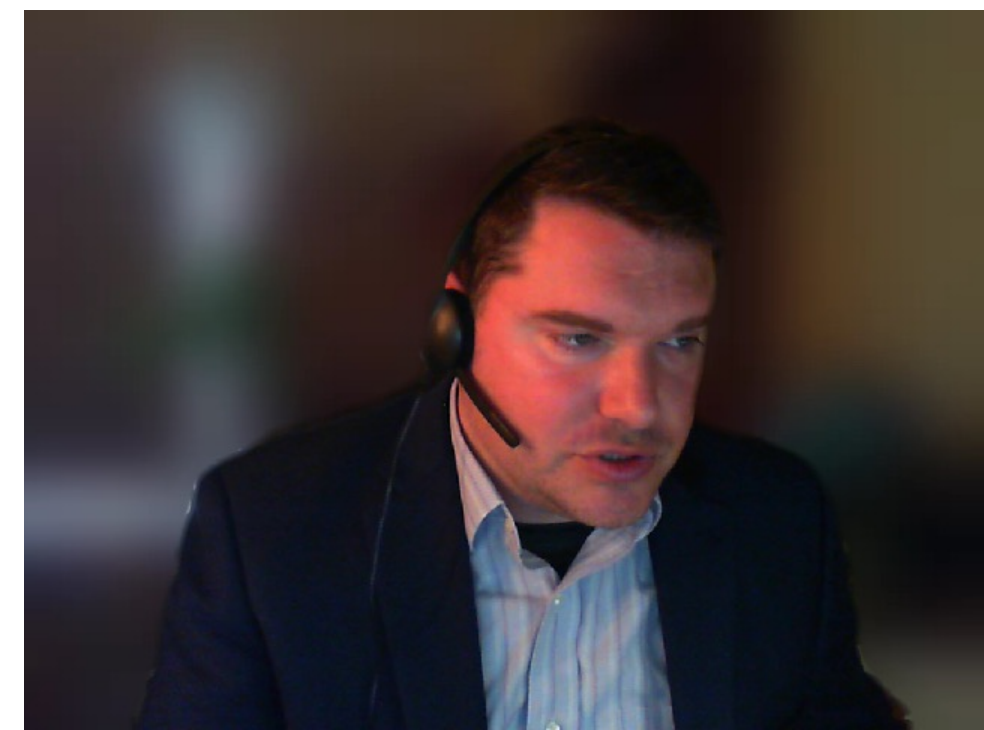


# Genetics vs Environment





**Why is my friend taking...?**



# Medications

## 1. MAO-B Inhibitors

- Rasagaline (Azilect)
- Selegeline (Eldepryl, Zelapar)
- Safinamide (Xadago)

## 2. Dopamine Agonists

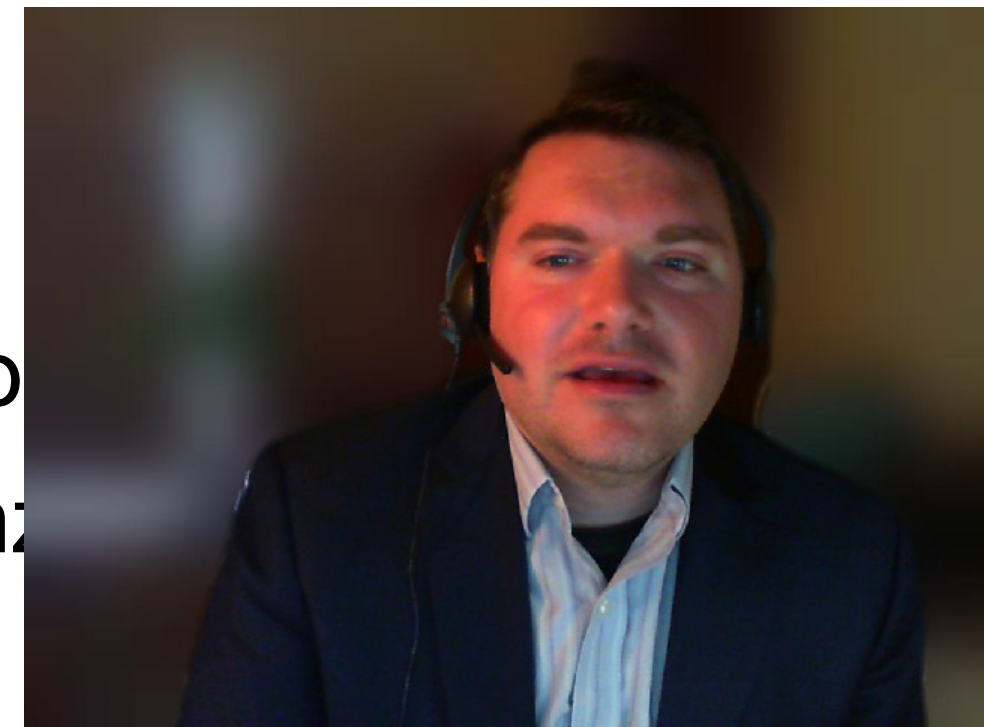
- Ropinirole (ReQuip)
- Pramipexole (Mirapex)
- Rotigotine (Neupro patch)
- Apomorphine (IM Apokyn, SL Kynmobi)

## 3. COMT Inhibitors

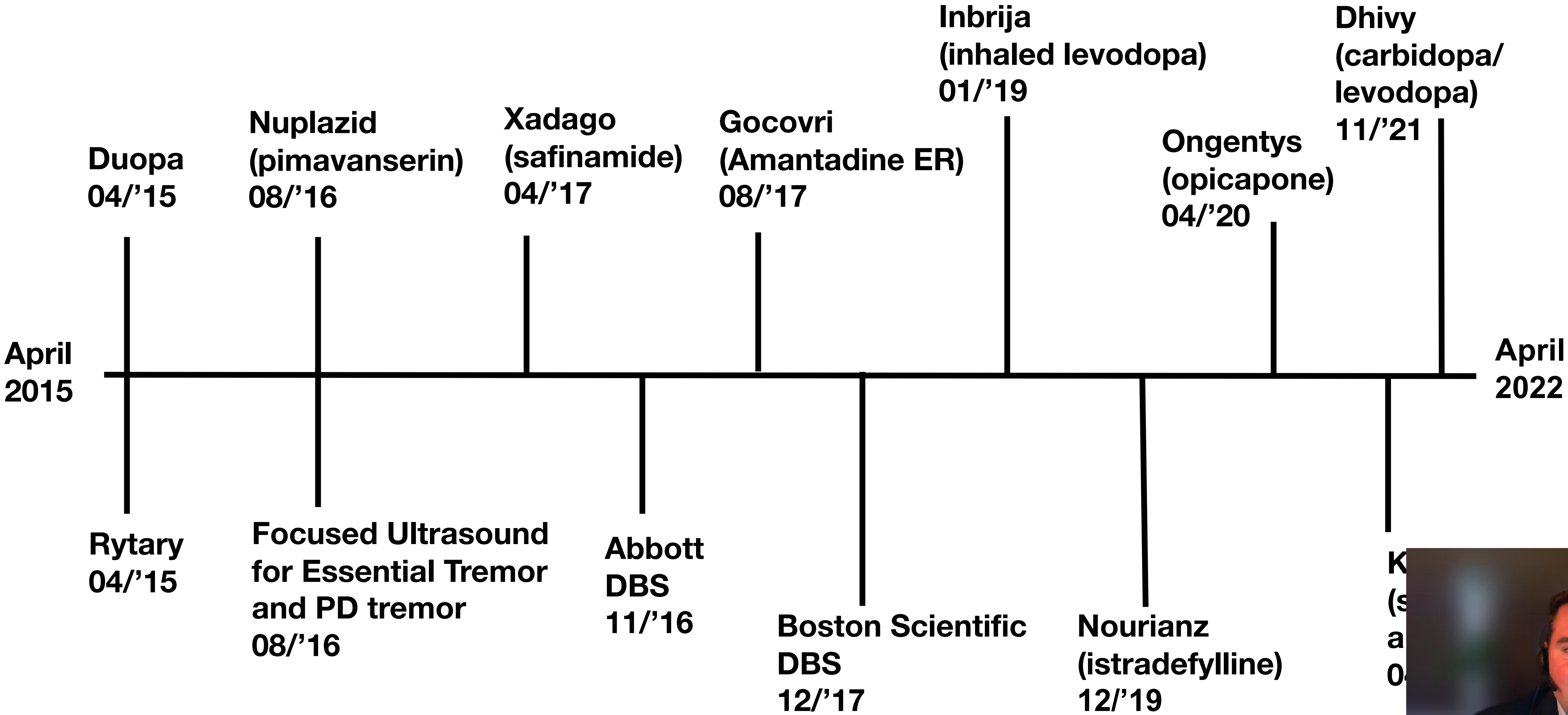
- Entacapone (Comtan)
- Opicapone (Ongentys)

## 4. **Levodopa (Carbidopa/Levodopa)**- Sinemet IR/CR/SL, Stalevo, Rytary, Duopa, Inb

## 5. Others: Amantadine IR/CR (Gocovri,) trihexiphenidyl (Artane,) istradefylline (Nourianz)



# Therapy Updates since 2015



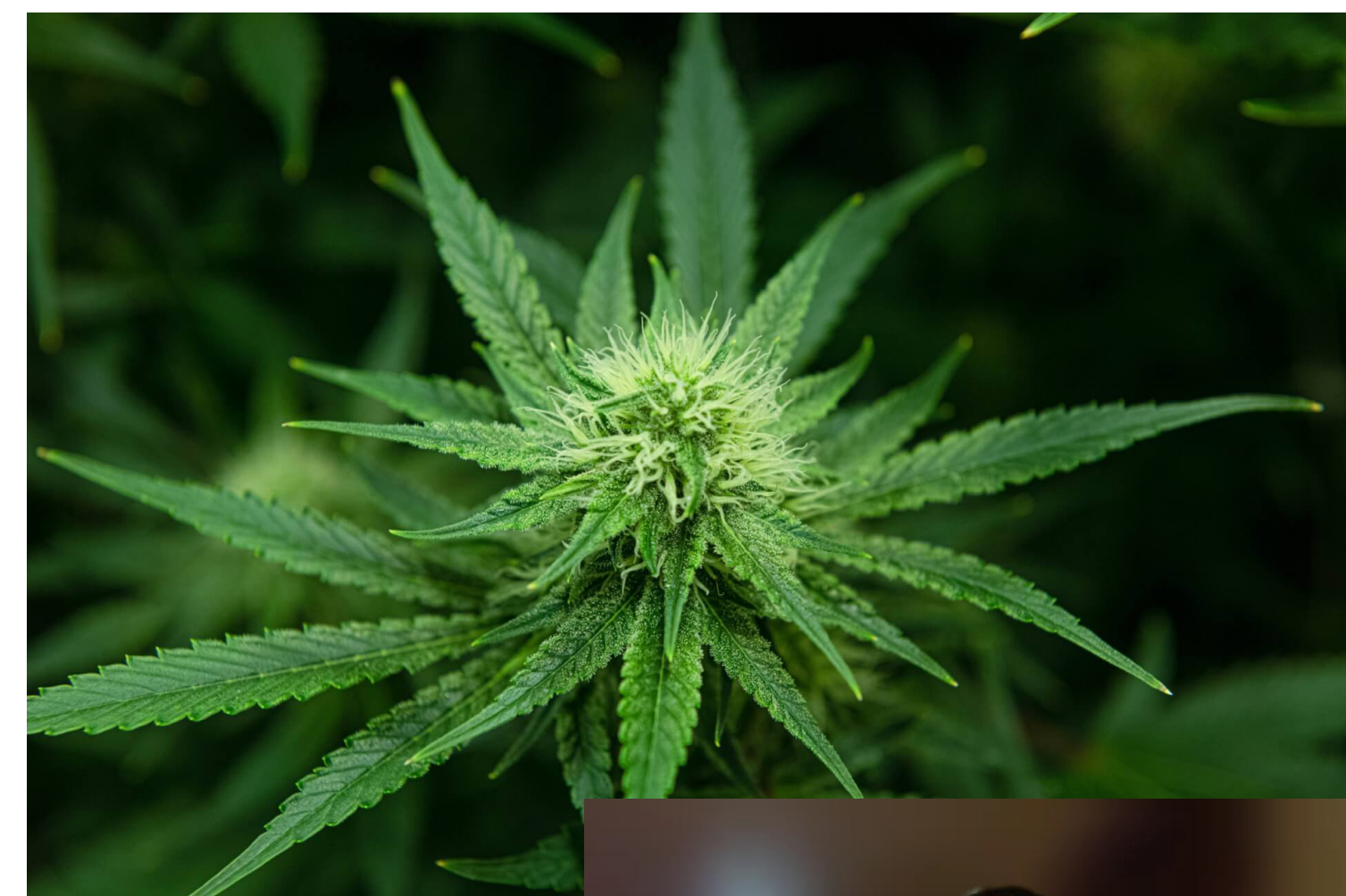
# Advanced Therapy Management





# Medical Marijuana and PD

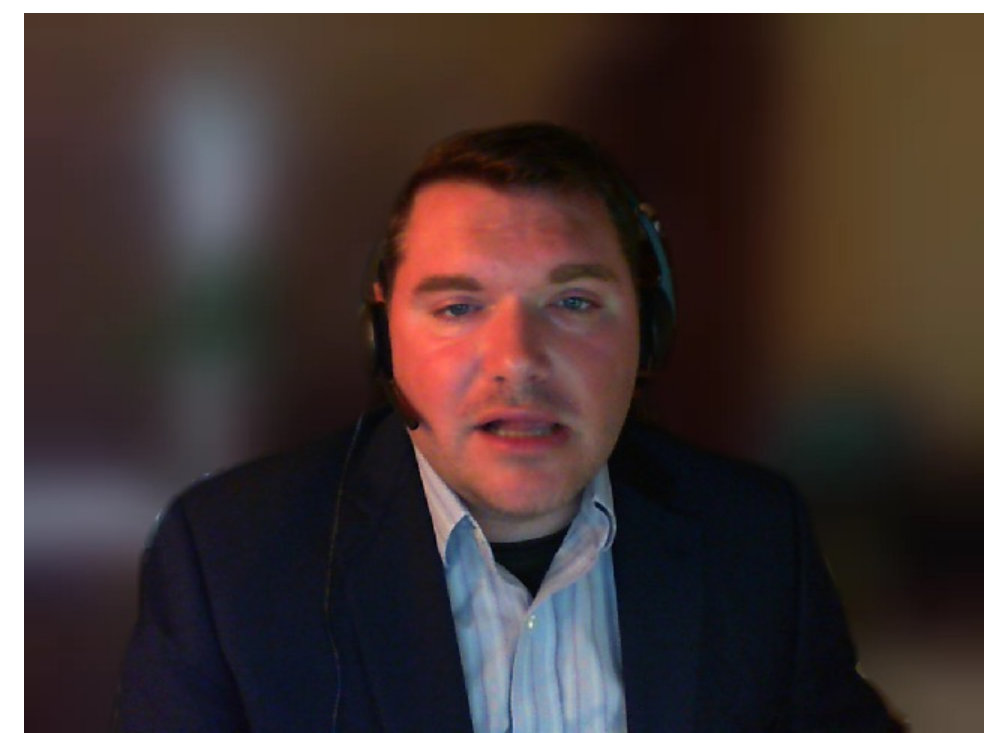
- FDA approved in PD with painful spasms
- **Not an exact science...**
- No long-term risk data... dementia?
- **Not a miracle cure**
- Insurance does not cover;  $\approx$  \$60-80/wk





PD

MYMMS





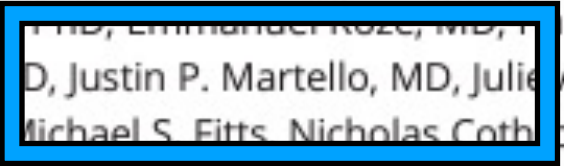


# PD Myth #1

1. DO  START LEVODOPA!
- a) Risk of complications  with
    - i. Time since symptom onset
    - ii. High (>1000mg) doses
  - b) Dyskinesia “problem?”
  - c) It’s about quality of life NOW

## Dopaminergic Therapy for Motor Symptoms in Early Parkinson Disease Practice Guideline Summary

A Report of the AAN Guideline Subcommittee

Tamara Pringsheim, MD, Gregory S. Day, MD, MSc, Don B. Smith, MD, Alex Rae-Grant, MD, Nicole Licking, DO, Melissa J. Armstrong, MD, Rob M.A. de Bie, MD, PhD, Emmanuel Roche, MD, PhD, Janis M. Miyasaki, MD, Robert A. Hauser, MD, MBA, Alberto J. Espay, MD, Justin P. Martello, MD, Julie A. Gurwell, PhD, PA-C, Lori Billinghamurst, MD, MSc, Kelly Sullivan, PhD,  Michael S. Fitts, Nicholas Cothran, MD, PhD, Deborah A. Hall, MD, PhD, Miriam Rafferty, DPT, PhD, Lynn Hagerbrant, Tara Hastings, MA, Mary Dolan O'Brien, MLIS, Heather Silsbee, Gary Gronseth, MD, and Anthony E. Lang, MD, on behalf of the Guideline Subcommittee of the AAN

**Correspondence**  
American Academy of  
Neurology  
guidelines@aan.com

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# PD Myth #2

## 2. DISEASE I AGENTS

- a) NO MED shown to slow progression
- b) EXERCISE the only current therapy to slow progression
  - i.  $\geq 150$ min/wk
  - ii. Strength training = Cardio
  - iii. Whatever is enjoyable!



# PD Myth #3

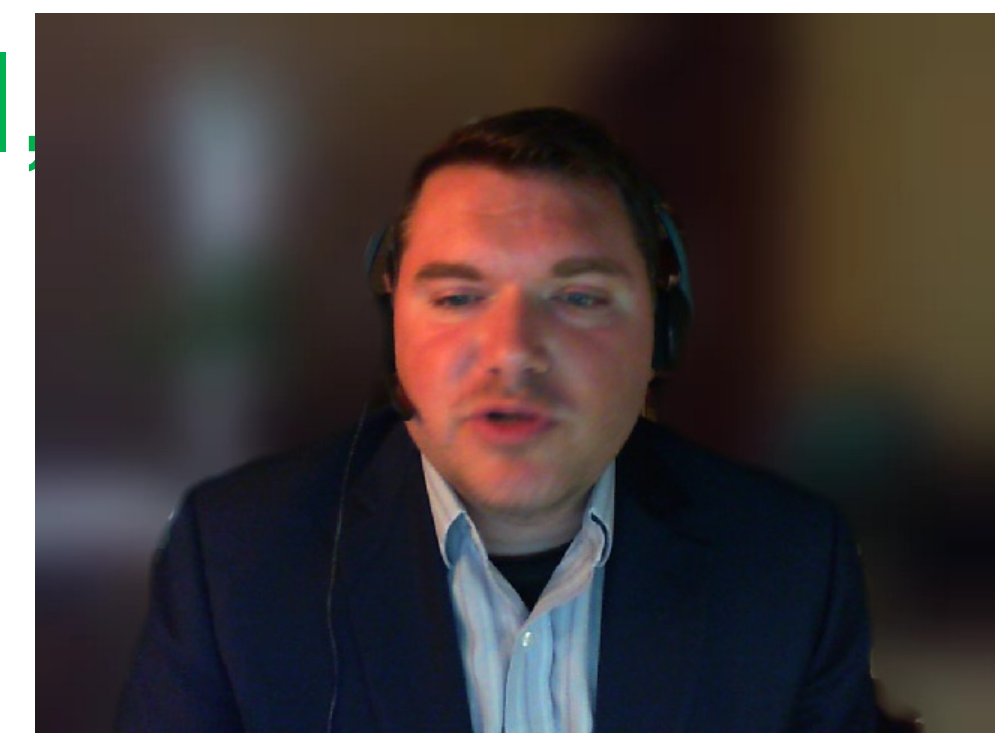


3. PD CAN



WORSEN

- a) Almost always a linear progression
- b) Falls, dysphagia, hospitalizations, anesthesia CAN precipitate worsening and establish new baseline function
- c) Always look for other acute medical problems (e.g. UTI, metabolic derangements, etc.)





**GO OUT AND MOVE!!!**



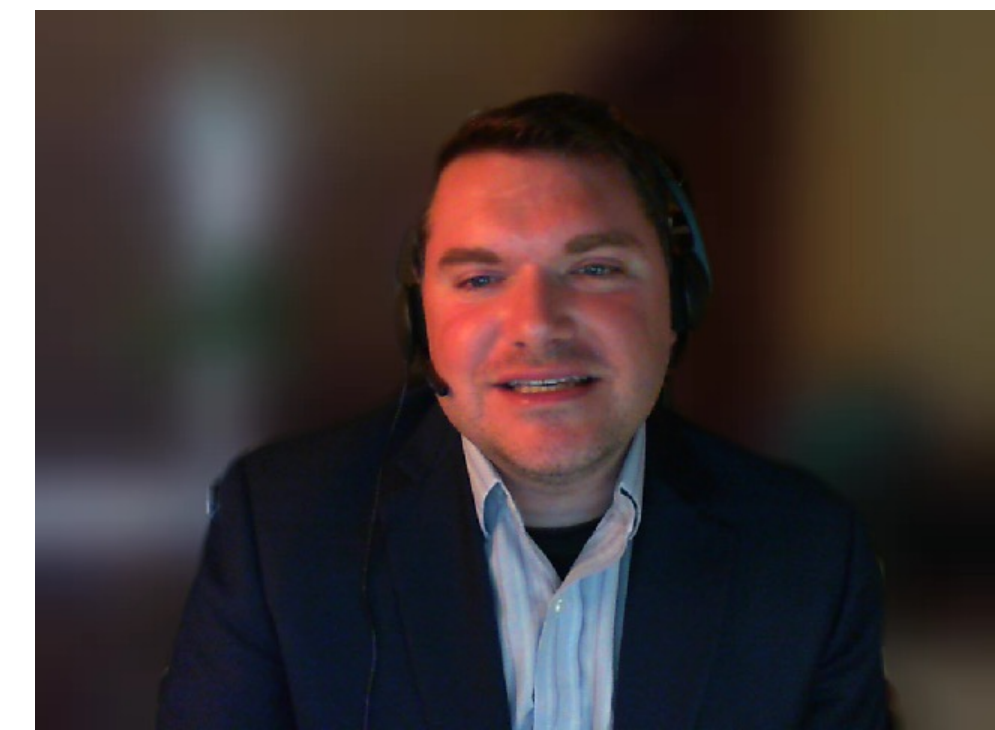
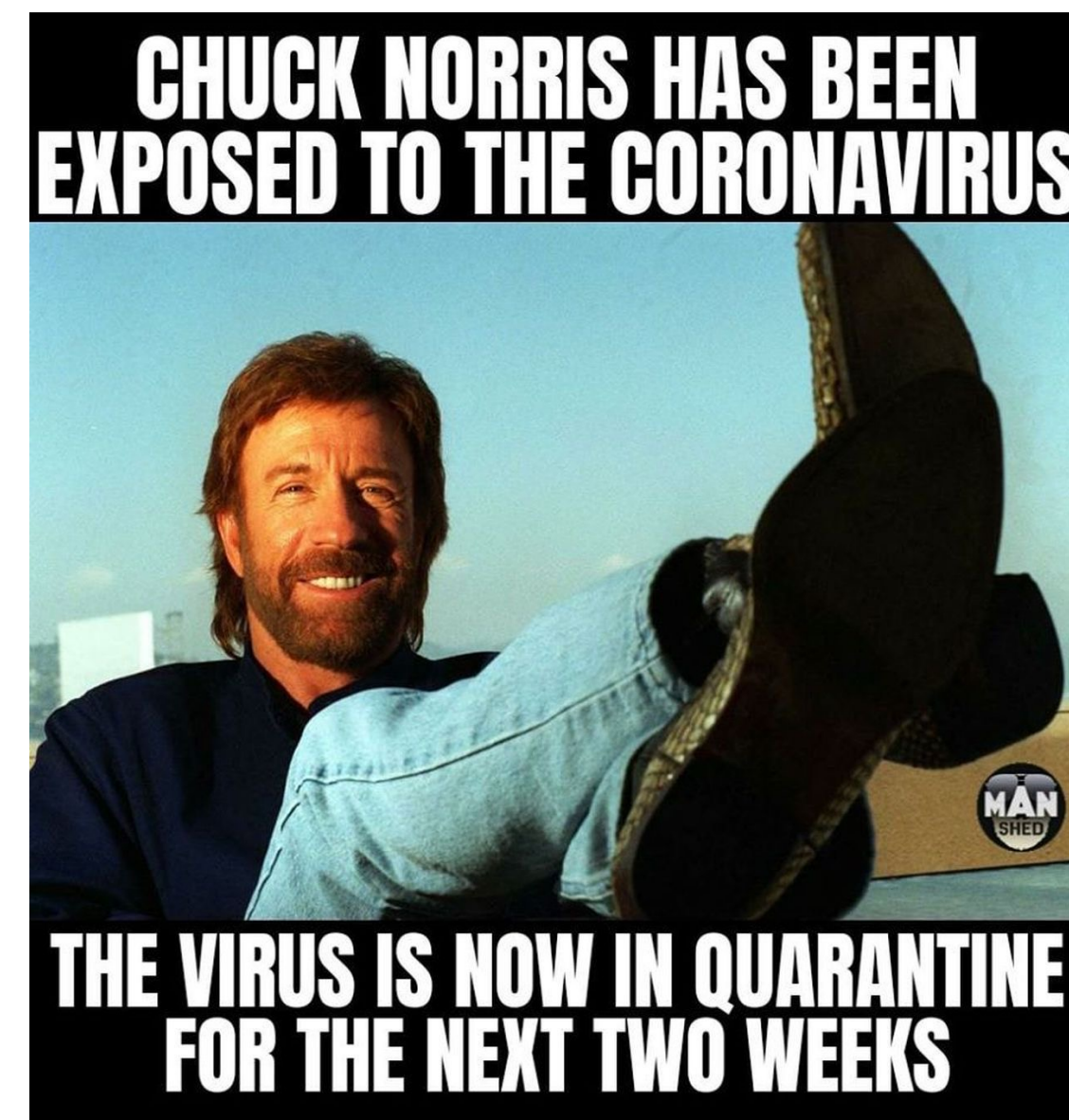
# COVID and PD

## GO OUT

- No increased risk with PD
- After boosted, 0.01% mortality in >65yo in 12/'21
- Greater mortality risk:
  - Car accident (100x)
  - Gun shot (50x)
  - Drowning (10x)
  - Fire/smoke (7x)
  - Choking (4x)
- N95s protective and accessible

## STAY HOME

- Pandemic not over
- PD much worse with infections
- Vaccines don't prevent infection
- Can be productive at home





**“Life is like riding a bicycle,  
in order to keep your balance,  
you must keep moving.”**

*–Albert Einstein*

