

# Cognition and Mood and How to Manage Them

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# Overview of cognitive impairment in Parkinson's

# Cognitive impairment in Parkinson's

## Mild

- gradual decline in select cognitive abilities
- deficits are not sufficient to interfere significantly with functional independence, but difficulties on complex tasks may be present

## Severe

- impairment in two or more cognitive domains
- decline from baseline with deficits that impair daily function



## **Cognitive functions/domains**


- **Executive** – organization, planning, multitasking
- **Processing speed** – how rapidly information is processed
- **Attention** – ability to focus on a task or thought
- **Memory** – ability to store and retrieve new information
- **Visuospatial** – conception of spatial relationships
- **Language** – ability to comprehend and express meaning, usually in words

# Impact of cognitive impairment on daily function

- Memory loss
  - Repeating same comment or question
  - Difficulty learning new information
- Difficulty performing familiar tasks
  - No longer able to use remote control, microwave, computer, etc.
  - Can't organize medications
- Language deficits
  - Forgetting simple words or using wrong or non-specific words, e.g., give me the 'thing'
  - Difficulty following directions or conversations
- Time and place disorientation
  - Getting lost, especially in familiar places
- Poor judgment
  - Irresponsibility, forgetting appointments, ignoring risks

## **Executive dysfunction and slowed mental processing speed**

- Deficits in initiation, sequencing, planning, and set shifting; impaired mental speed (bradyphrenia)
- Often the earliest detectable cognitive changes in Parkinson's



## **Attention Executive dysfunction Processing speed – Influence of task demands in Parkinson's**

- “Let’s have tea!” study (Rochester et al, Arch Phys Med Rehab, 2004)
  - Looked at how attentional demands during an everyday functional activity contributes to functional performance and gait disturbances
- Study
  - 20 mild to moderate people with Parkinson's, 10 Controls
  - Four Tasks
    - Simple walking: walk to kitchen
    - Dual-motor: walk and carry tray
    - Dual-cognitive: walk and recall a memory
    - Multiple motor-cognitive task: walk, carry tray and recall a memory
- Results
  - Increased task complexity → ↓ gait speed



# **Parkinson's and subcortical cognitive impairment**

- Early pronounced executive dysfunction, attentional deficits, and slowed processing speed
- Language and memory are usually largely intact compared to cortical dementias until later in Parkinson's progression
- Deviation from this pattern, e.g., 'cortical' deficits could indicate comorbidity e.g., Alzheimer's disease, cerebral vascular disease, or Lewy bodies in the cortex



# File Cabinet Example



# Memory Impairment Parkinson's vs. Alzheimer's: retrieval vs. encoding

Parkinson's memory impairment =  
poor retrieval

Alzheimer's memory impairment =  
impaired encoding

**Encoding**=process of putting info  
into memory

**Retrieval**=process of finding the  
info to remember

	Alzheimer's	Parkinson's
Recognition memory	↓↓	-
Free recall memory	↓↓	↓
Benefit for cueing	no	yes

# Evidence based treatments for cognitive issues in Parkinson's

# Treatments for mild (non-dementia) cognitive impairment in Parkinson's

Drug	Efficacy	Safety	Practice implications
Rivastigmine	Insufficient evidence	Acceptable risk without specialized monitoring	Investigational
Rasagiline	Insufficient evidence	Acceptable risk without specialized monitoring	Investigational
Transcranial direct current stimulation	Insufficient evidence	Insufficient evidence	Investigational
Cognitive rehabilitation	Insufficient evidence	Insufficient evidence	Investigational

# The Holy Grail – Disease modifying treatments



# Treatments for severe cognitive impairment (dementia) in Parkinson's

Drug	Efficacy	Safety	Practice implications
Rivastigmine	Efficacious	Acceptable risk without specialized monitoring	Clinically useful
Donepezil	Insufficient evidence	Acceptable risk without specialized monitoring	Possibly useful
Galantamine	Insufficient evidence	Acceptable risk without specialized monitoring	Possibly useful
Memantine	Insufficient evidence	Acceptable risk without specialized monitoring	Investigational

# Action Items: what you can do to help cognitive function



## Action items

- Reduce distractions
- Focus on one task at a time
- Talk to your doctor about depression
- Exercise
- Prioritize quality sleep
- Eat a healthy diet
- Do cognitive training/rehabilitation
- Increase/maintain consistent social interaction

# Overview of mood disorders in Parkinson's

# Depression in Parkinson's disease



- Depressed mood
- Diminished interest or pleasure
- Decreased appetite/weight loss
- Insomnia or hypersomnia
- Psychomotor agitation or retardation
- Decreased energy
- Worthlessness or inappropriate guilt
- Poor concentration or indecisiveness
- Recurrent thoughts of death or suicidal ideation

# Parkinson Foundation

- **Parkinson's Outcomes Project**, a longitudinal look at which treatments produce the best health outcomes in people with Parkinson's
- **The impact of depression on quality of life is almost twice that of the motor impairments**

# The longitudinal impact of depression on disability in Parkinson disease

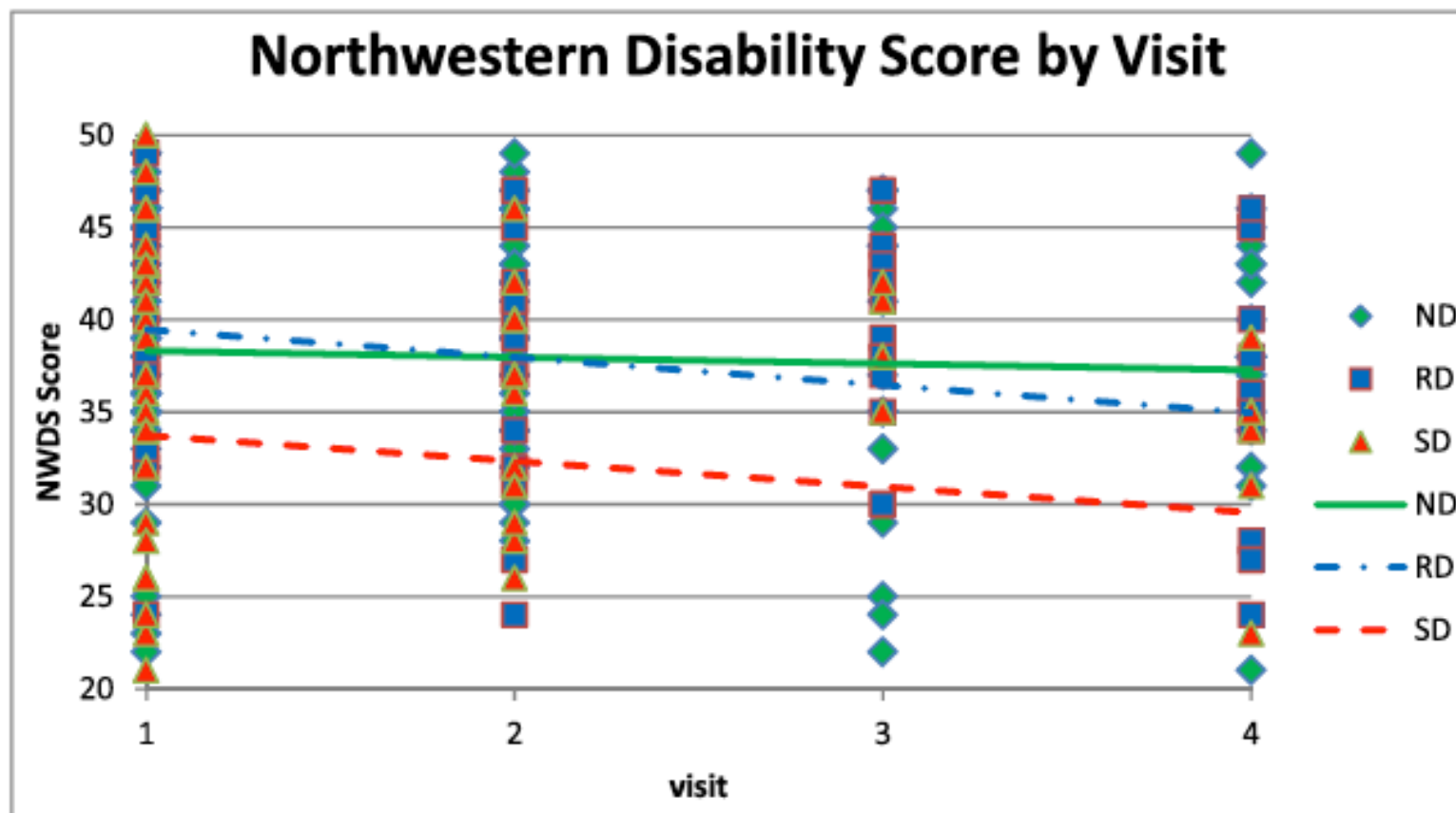
Gregory M. Pontone<sup>1,2</sup>, Catherine C. Bakker<sup>1,2</sup>, Shaojie Chen<sup>3</sup>, Zoltan Mari<sup>2,4</sup>, Laura Marsh<sup>1,2†,‡</sup>, Peter V. Rabins<sup>2,1</sup>, James R. Williams<sup>1§</sup> and Susan S Bassett<sup>1,2</sup>

**Objective:** This study examined the association between physical disability and DSM-IV-TR depression status across six years

**Methods:** 137 adults with idiopathic PD. A generalized linear mixed model with Northwestern Disability Scale score as dependent variable to determine the effect of baseline depression status on disability

**Results:** 43 depressed at baseline vs 94 without depression. Symptomatic depression predicted greater disability compared to both never depressed ( $p=0.0133$ ) and remitted depression ( $p=0.0009$ ) after controlling for sex, education, dopamine agonist use, and motor fluctuations.

# Longitudinal impact of depression on disability in Parkinson's (Pontone et al 2016)



ND=never depressed, RD=remitted depression, SD=symptomatically depressed

# Evidence based treatments for Parkinson's (Seppi K et al 2019)

Treatment		Efficacy	Safety	Practice Implications
MDS review designation (2019) – pharmacological interventions	venlafaxine	Efficacious	Acceptable risk with specialized monitoring	Clinically useful
	nortriptyline, desipramine	Likely efficacious	Acceptable risk without specialized monitoring†	Possibly useful
	SSRIs, others	Insufficient evidence	Acceptable risk with specialized monitoring	Possibly useful
Non-pharmacological interventions	rTMS, ECT - CBT	Insufficient evidence - likely efficacious	Insufficient evidence	Possibly useful



# Anxiety in Parkinson's

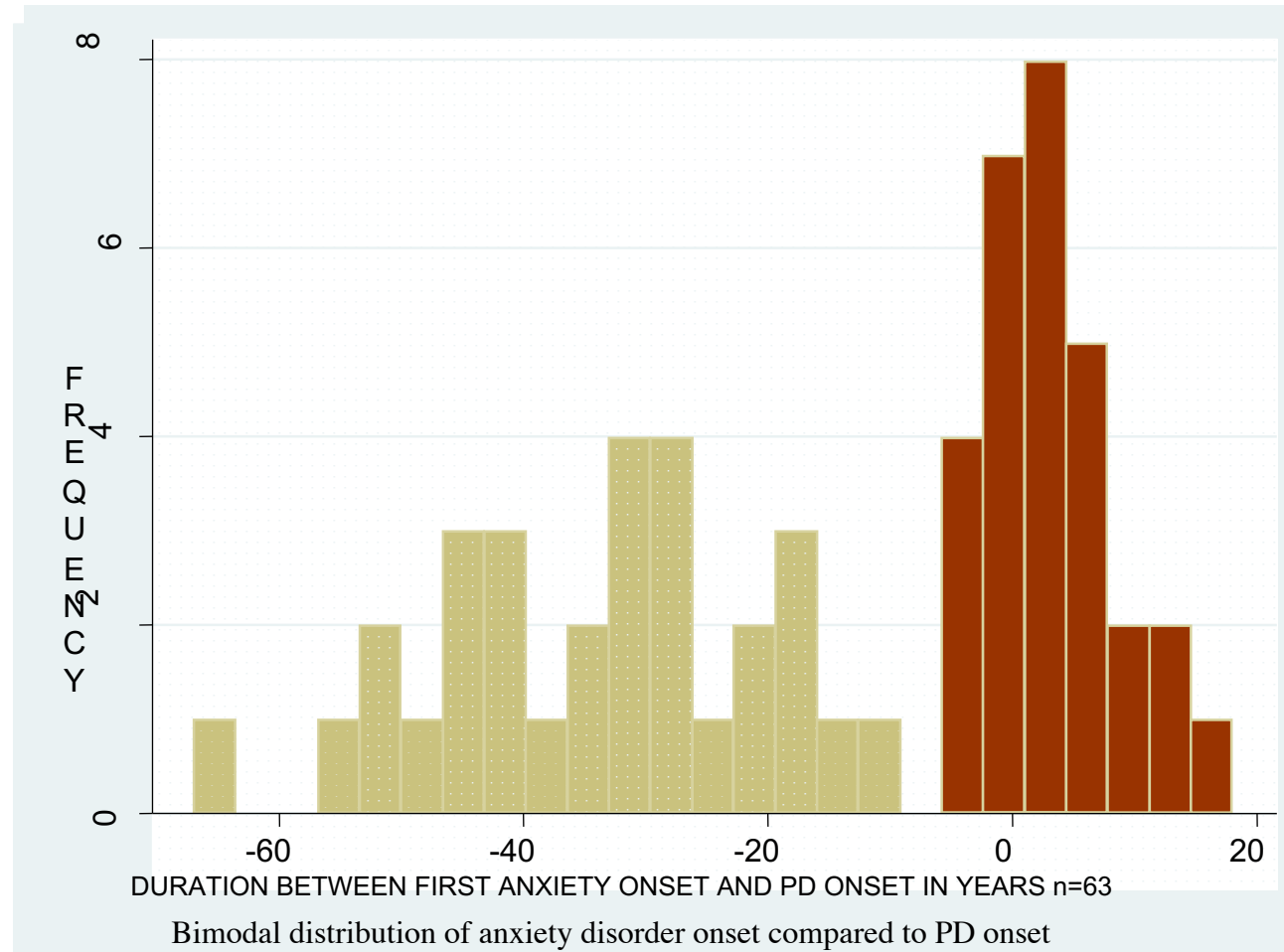


- Persistent worry or panic
- Ruminating and 'overthinking'
- Inability to relax
- Feeling restless or tense
- Difficulty concentrating or indecisive
- Muscle tension or aches
- Trembling
- Sweating
- Diarrhea or upset stomach

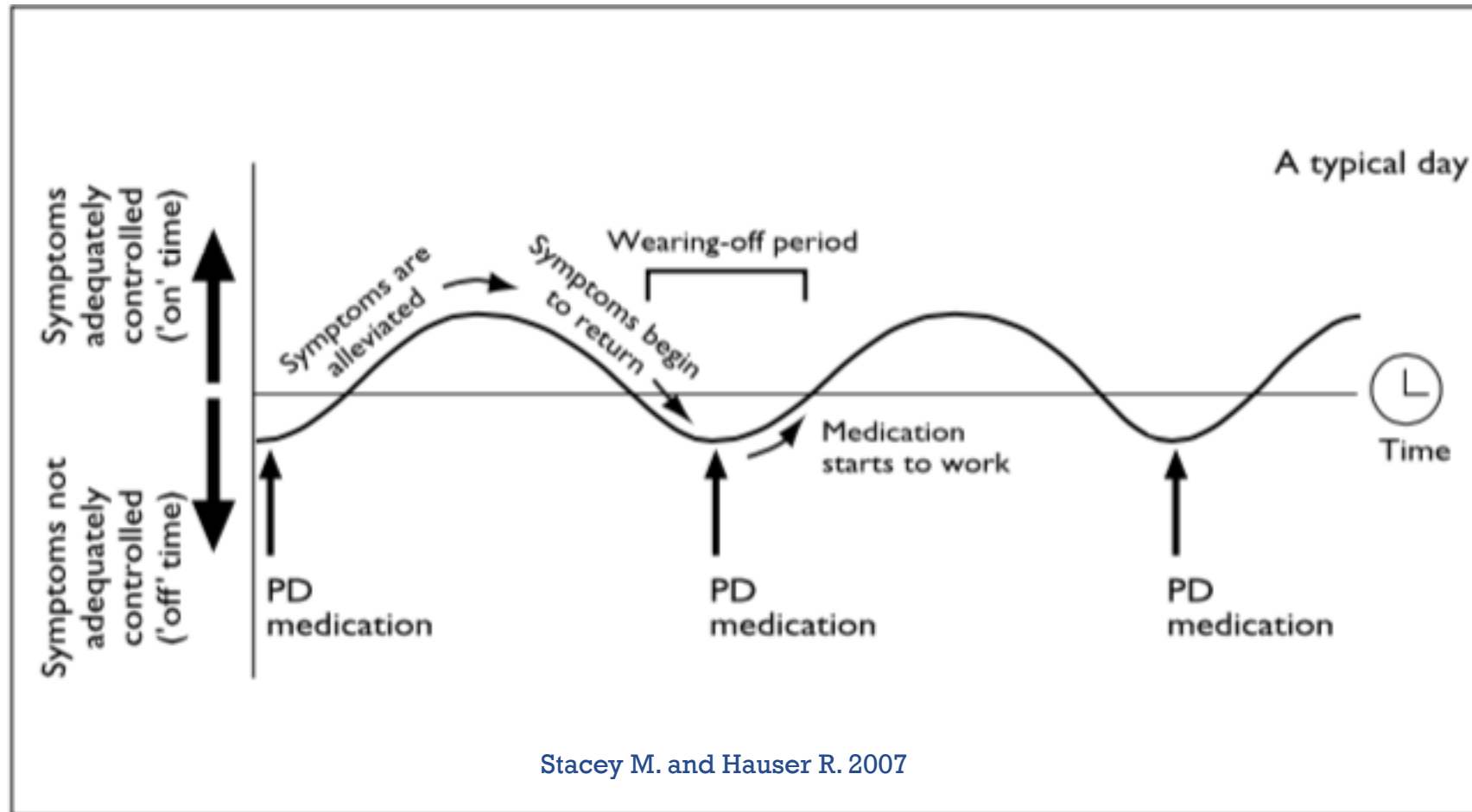
## **Prevalence of anxiety and anxiety disorders in Parkinson's**

- Up to 55% have clinically significant anxiety symptoms
- 31% have an anxiety disorder (e.g. DSM)

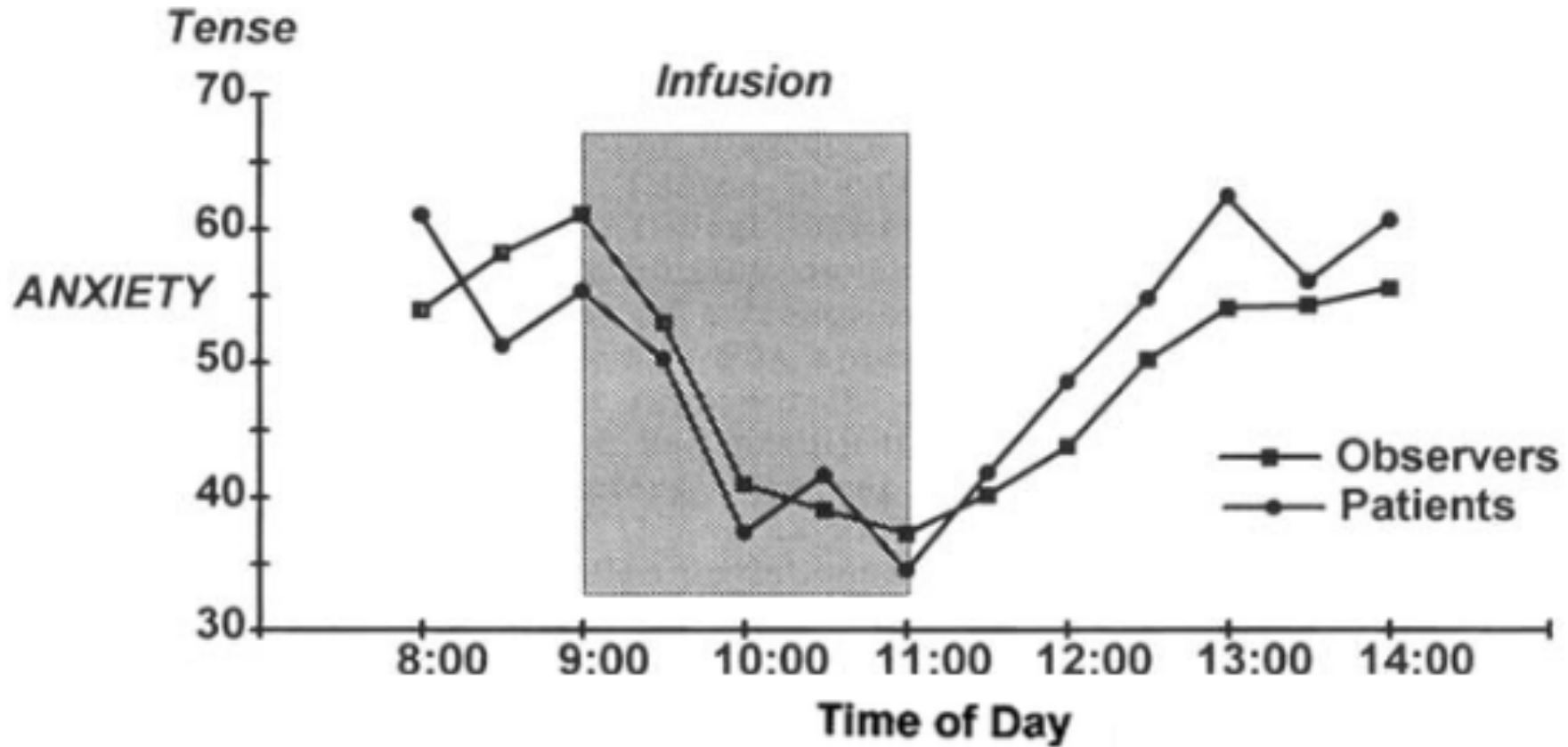
# First Anxiety Disorder Onset Relative to Parkinson's Onset



# Dopaminergic medication ON-OFF fluctuations in Parkinson's

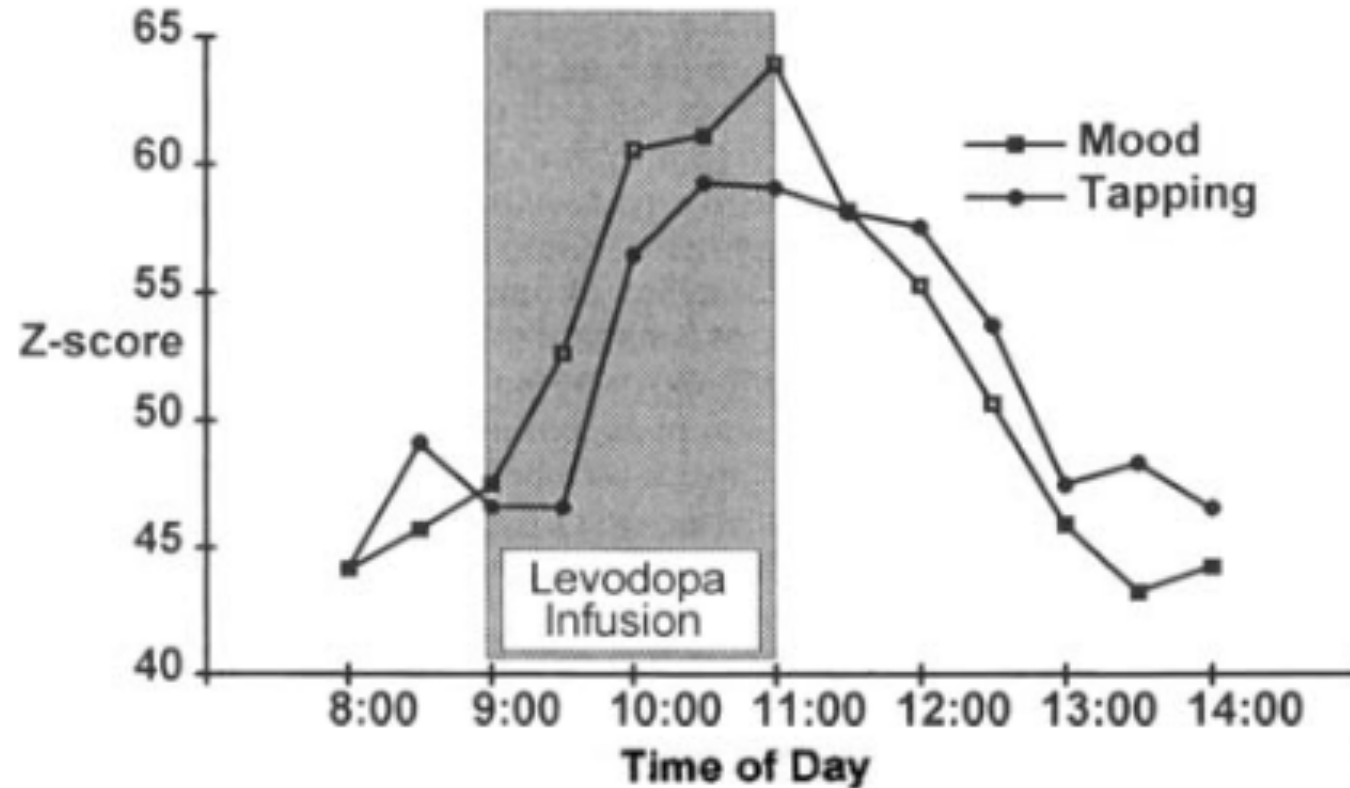


# Anxiety fluctuation with levodopa infusion



Maricle RA et al 1995

# Mood and motor fluctuation with levodopa infusion



**FIG. 3.** Relationship of mood change and motor change.

Maricle RA et al 1995

## **Treatment of anxiety in Parkinson's**

- Optimizing motor function and addressing motor fluctuations is likely important
- Insufficient evidence to support medications for anxiety in Parkinson's
- Cognitive Behavioral Therapy (CBT) for anxiety in Parkinson's – open label and case reports are supportive
- Mindfulness-based therapies are promising
- Neuromodulation is an emerging option, e.g., rTMS, tDCS, and DBS (none in Parkinson's have anxiety as primary outcome)



# Action Items: what you can do for depression and anxiety in Parkinson's

## **Action items - strategies for depression and anxiety in Parkinson's**

- **Stay connected:** Social isolation is the equivalent of smoking for mental health; it has both short and long term consequences
- **Stay engaged:** Participating in structured activities is exercise for the mind
- **Exercise:** Physical activity has been shown to benefit mental health by lifting mood and decreasing stress and tension
- **Sleep well:** Poor sleep is both a risk factor for and symptom of depression and anxiety

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