



Medical Cannabis & Parkinson's Disease

James Beck, PhD

Chief Scientific Officer

Better Lives. Together.

The Parkinson's Foundation is the nation's largest community for people living with PD.

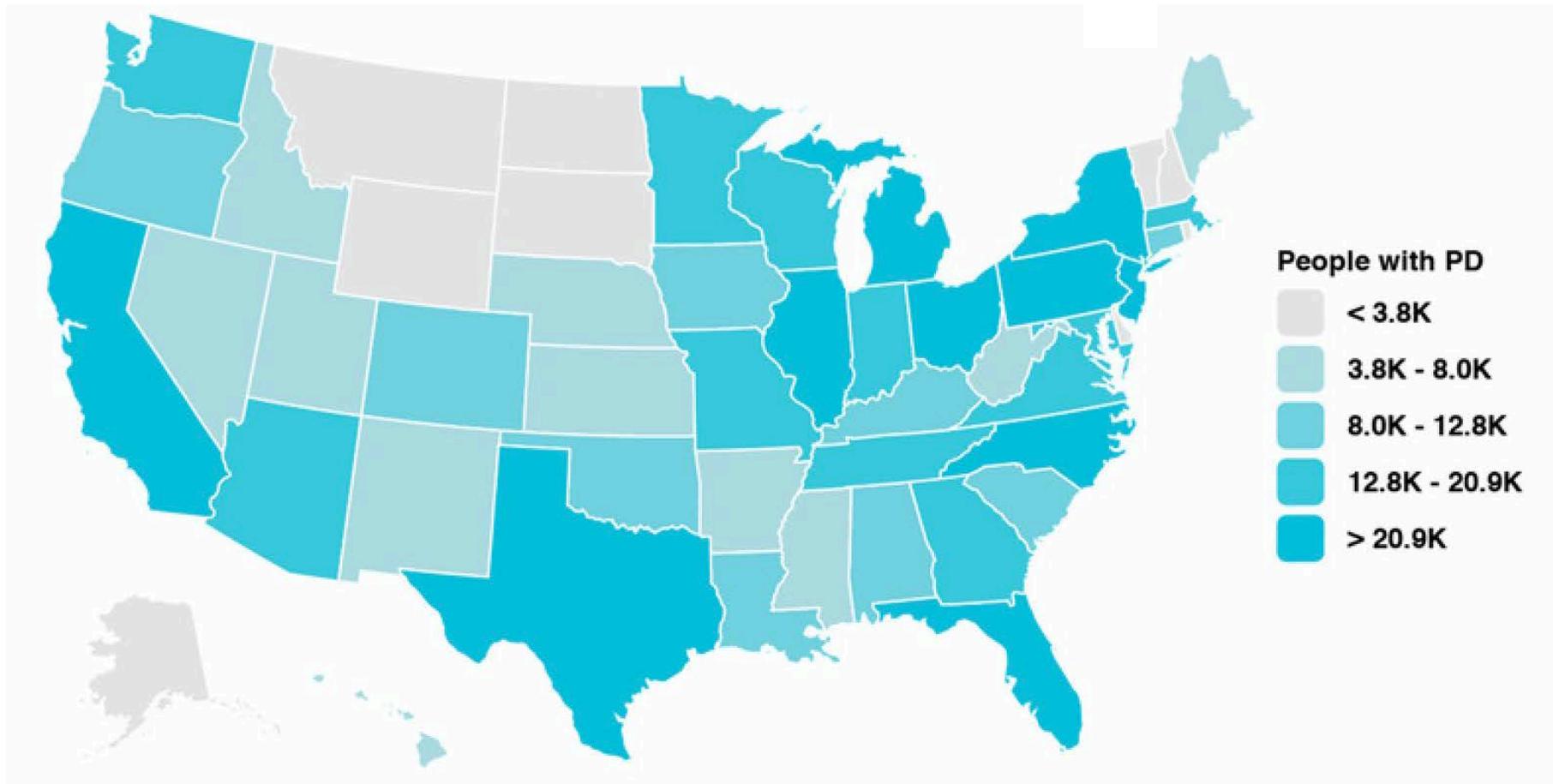
We work to make life better for people with Parkinson's disease by improving **care** and advancing **research** toward a cure.

In everything we do, we build on the energy, experience and passion of our global Parkinson's community.





Nearly 1 Million Americans Live with PD



[Parkinson.org/statistics](https://www.parkinson.org/statistics)

Marras et al. 2018

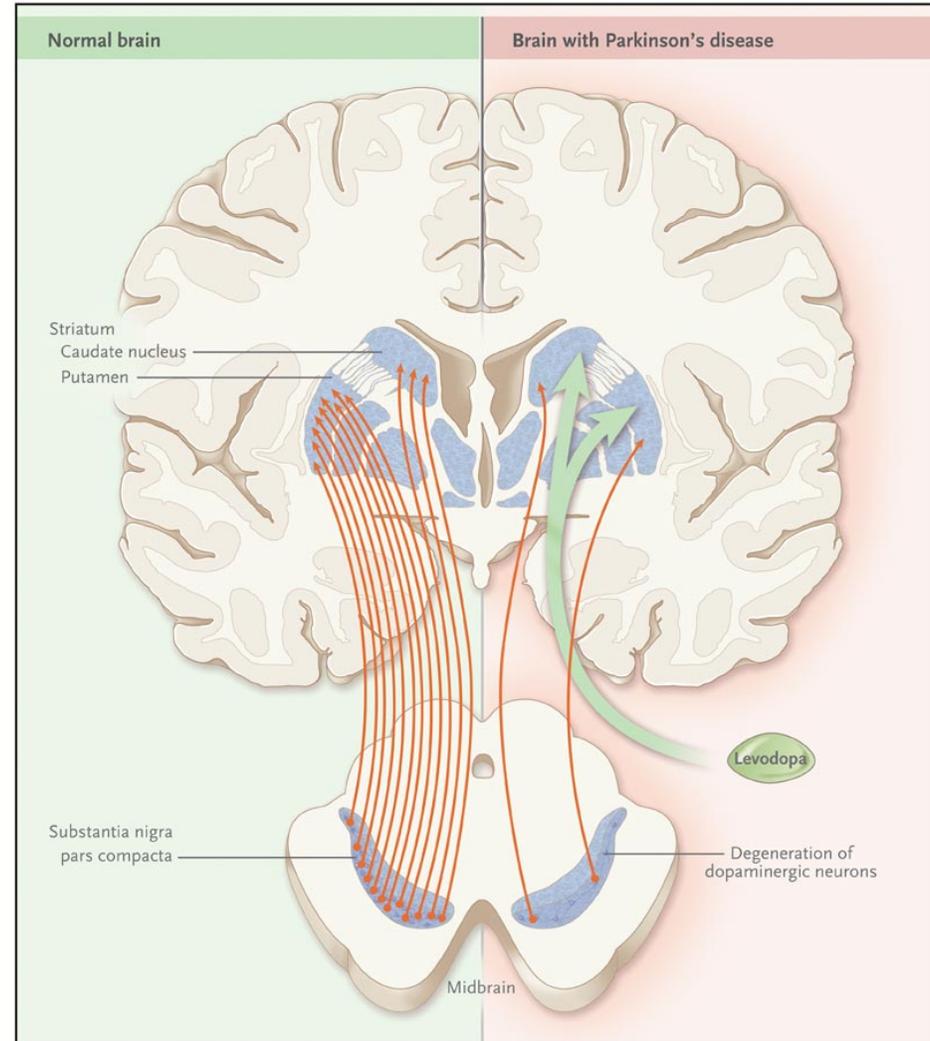


What is Parkinson's Disease?

Loss of dopamine neurons lead to clinical presentation of motor symptoms:

- Flexed Posture
- Tremor at Rest
- Bradykinesia
- Rigidity

Many addressed by approved therapies



PD has Many Other Symptoms...

- **Sleep**
 - Restless Leg Syndrome
 - REM Sleep Behavior Disorder
- **Cognitive**
 - Mild Impairment
 - Dementia
- **Autonomic**
 - GI Motility
 - Perspiration
 - Heart/Blood Pressure
- **Mood**
 - Depression
 - Anxiety
- **Sensory**
 - Pain (shoulder)
 - Hyposmia
- **Fatigue/weakness**
- **Sleep**

Simuni & Sethi 2009

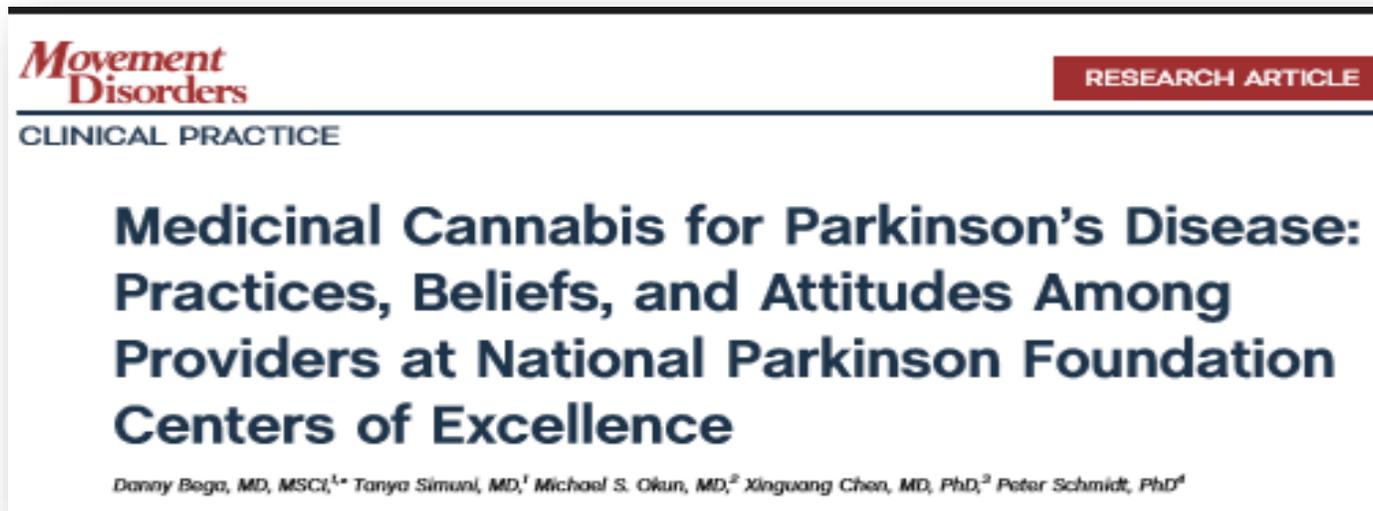
These PD symptoms – not well addressed by approved therapies

Cannabis is Sought After as a Treatment

95% of PD neurologists surveyed report being asked for medical Cannabis

Survey of movement disorders specialists

- 56 responders (63%) across 14 states & 5 countries



Movement Disorders **RESEARCH ARTICLE**

CLINICAL PRACTICE

Medicinal Cannabis for Parkinson's Disease: Practices, Beliefs, and Attitudes Among Providers at National Parkinson Foundation Centers of Excellence

Danny Bega, MD, MSc,^{1*} Tanya Simuni, MD,¹ Michael S. Okun, MD,² Xinguang Chen, MD, PhD,² Peter Schmidt, PhD¹

Bega et al. 2016

Medical Cannabis & PD Conference

- March 6-7, 2019 in Denver, CO
- Gathered Key Stakeholders
 - PD Patient Community
 - Neurologists: specializing in PD, MS, Epilepsy
 - Basic Scientists
 - Pharmacist, Nurse
 - Industry
 - National and Local PD Organizations



Help Us Make a Difference

We need your help - more than ever - in helping us raise awareness to beat Parkinson's disease and

Parkinson's Foundation Hosts Its First-Ever Medical Marijuana and Parkinson's Disease Conference

NEW YORK AND MIAMI— December 4, 2018—The Parkinson's Foundation will host its first-ever conference focused on medical marijuana and Parkinson's disease (PD) in Denver, CO, March 6-7, 2019.

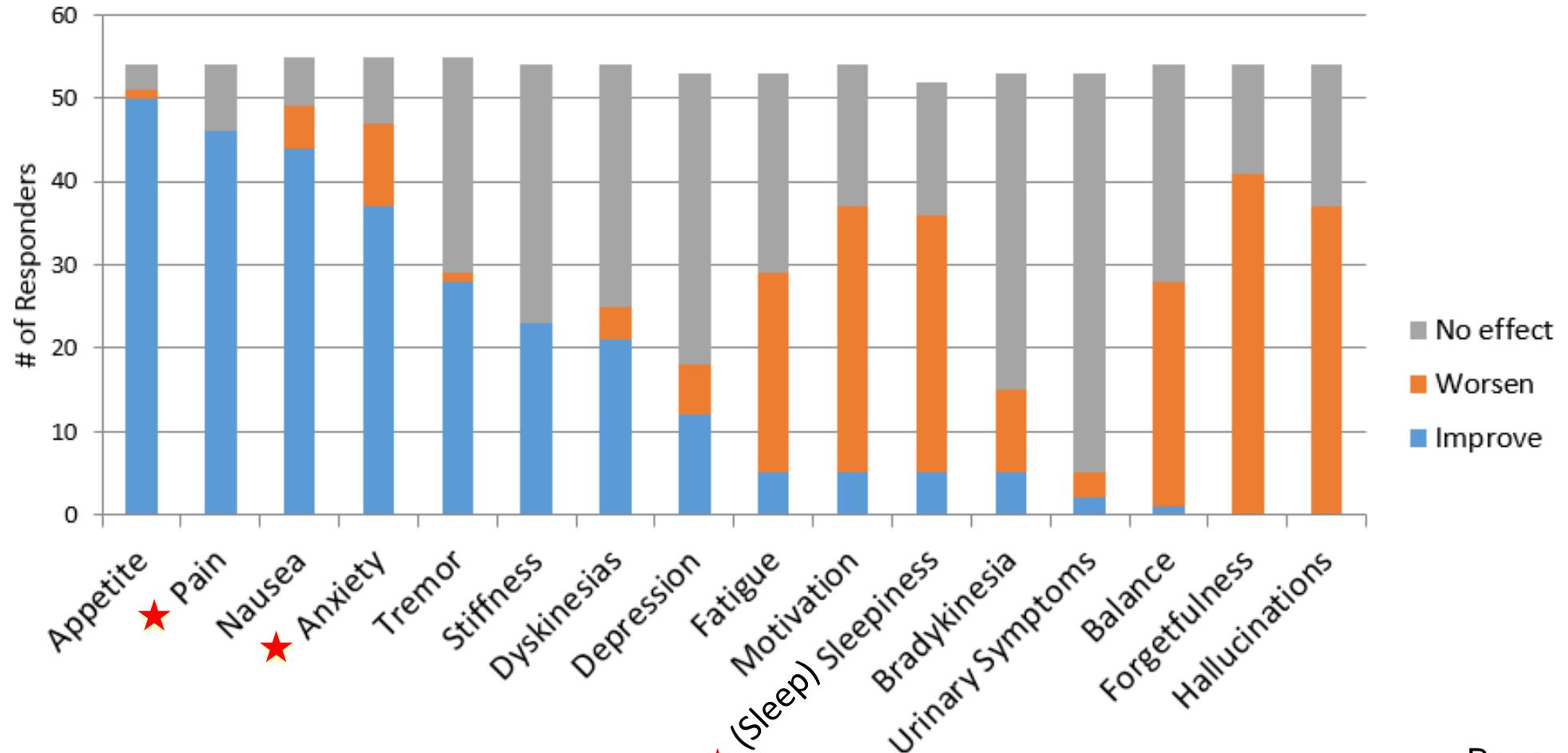
"The Parkinson's Foundation is bringing together experts from across the globe to discuss the implications and recommendations of medical marijuana use for people with Parkinson's," said James Beck, PhD, chief scientific officer of the Parkinson's Foundation. "Now that medical marijuana is legal in 33 states and in many other countries, people are equating access to efficacy. It is imperative that we address the clinical implications of medical marijuana use among people with PD."

- Goal: To discuss the evidence for use of medical Cannabis in PD, including gaps in knowledge, potential health effects and safety concerns in an effort to establish a consensus to guide the patient community and future research efforts.

- Cannabis unlikely to alleviate motor aspects of PD (tremor, etc)
- Maybe helpful for specific non-motor symptoms, e.g., sleep, anxiety
- **More research is needed to understand the utility of Cannabis for Parkinson's disease**

Potential Efficacy is Specific to Certain Symptoms

Expected Effect of Cannabis By Symptom



★ = Patient Community Priority

Bega, et al. 2016

Side Effects Exacerbated in PD

Adverse events associated with cannabis-based medicines.

Side effect	Most common	Common	Rare
Drowsiness/fatigue	✓		
Dizziness	✓		
Dry mouth	✓		
Cough, phlegm, bronchitis (Smoking only)	✓		
Anxiety	✓		
Nausea	✓		
Cognitive effects	✓		
Euphoria		✓	
Blurred vision		✓	
Headache		✓	
Orthostatic hypotension			✓
Toxic psychosis/paranoia			✓
Depression			✓
Ataxia/dyscoordination			✓
Tachycardia (after titration)			✓
Cannabis hyperemesis			✓
Diarrhea			✓
	Also PD Symptoms		

Also: people with neurodegenerative diseases may be more prone to certain side effects and may not be well represented by AEs reported in other studies or observed in healthy people in the community.

MacCallum & Russo 2018

Inhalation

- Most rapid but not always practical for public (smoking) or portable (vaporizing machines)
- Consistent dosing difficult with plant material

Oral Formulations

- Delayed effect but convenient delivery mechanism (MacCallum & Russo 2018)
- Lack of standardization (Vandry et al. 2015)
- Gastroparesis may complicate absorption & prevalent in 70-90% of those with PD (Pfeiffer et al. 2015)

Regarding Cannabis, People with PD Concerned About:

- Impact on mental acumen
- Lack of standards for dosing/testing/manufacturing
- Potential serious side effects, e.g. cardiac
- What products to use for what application?
- Is there sufficient research for safety?

Issues to Address for Cannabis

- Objective safety & tolerability assessments at various stages of PD and symptoms (cognitive, etc).
- More research on Cannabis in neurodegenerative diseases like PD
- Evidence-based exploration of specific strain/dose/route/pharmacokinetics for treating targeted symptoms
- Ready access to Cannabis for research



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