

# Parkinson's Disease

## Non Motor

## Symptoms

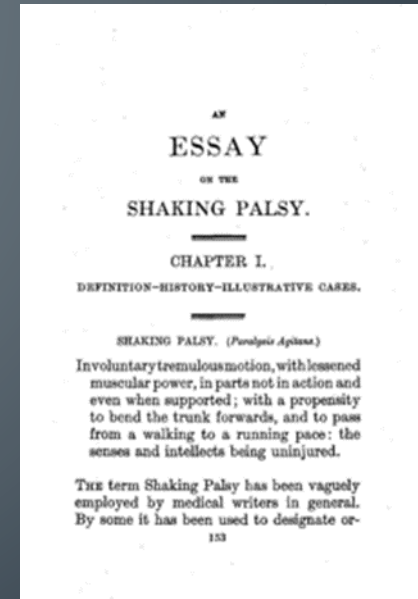
Keiran Tuck MBBS

# Outline

- Overview of PD
- Brief discussion of common non motor symptoms
- Orthostatic Hypotension
- Pain

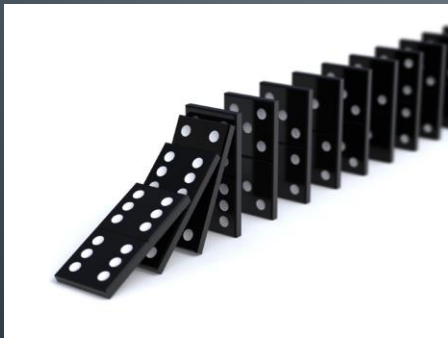
# Terminology

- Parkinson's Disease
- Parkinsonism
  - Vascular
  - PD + syndromes (PSP, MSA, CBD, LBD)
  - Genetic Ataxias
  - Drug induced



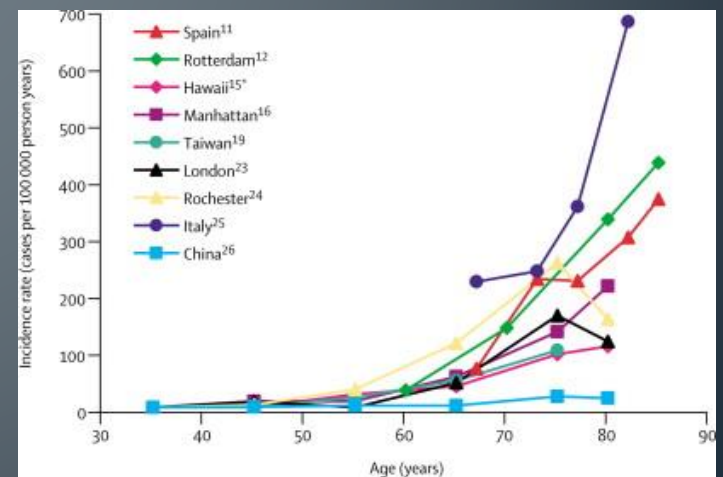
# What causes PD?

- We don't know.
- Risk factors include...
  - Well water
  - Pesticide exposure
  - Agent Orange
  - Genetics
- Smoking and caffeine are protective



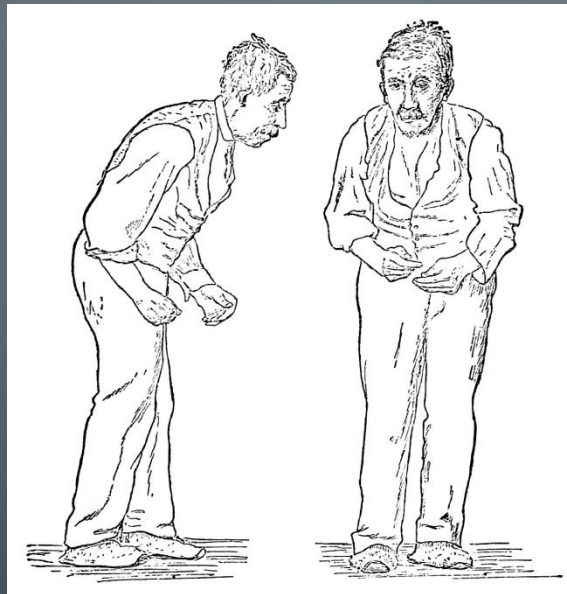
# Numbers

- ~7.5 million in the world with PD
- 2:1 male to female ratio
- Typical onset in 60s with wide range



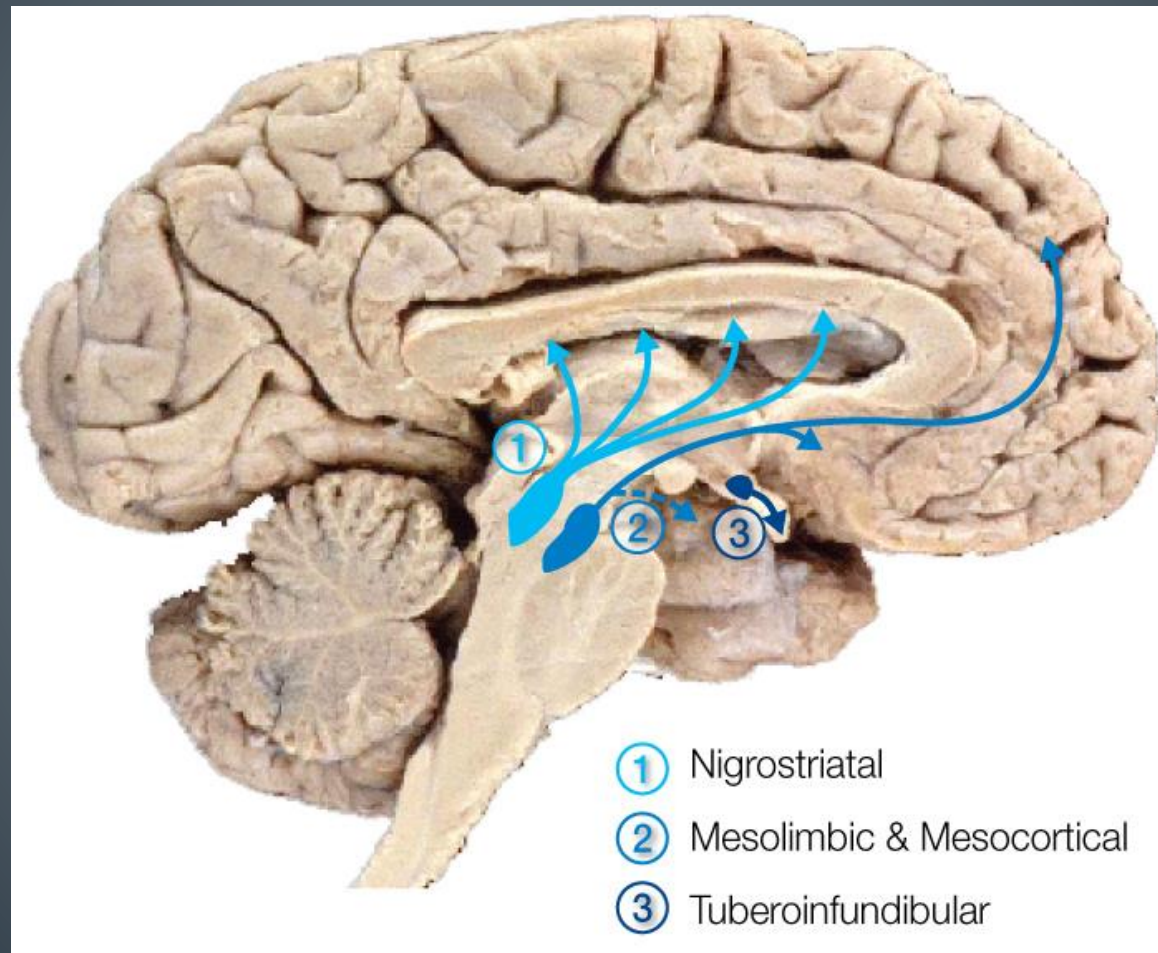
# Cardinal Features of PD

- Tremor → Shaking
- Bradykinesia → Palsy
- Postural Instability → Difficulty with gait and falls
- Rigidity





# Dopamine pathways



# Pharmacology

- Carbidopa/levodopa (CR vs IR vs Rytary)
  - Nausea
  - Hypotension
  - Dyskinesias
  - Constipation
- Ropinirole, pramipexole (dopamine agonists)
  - Leg swelling
  - Impulsive/compulsive behaviors
  - Hypotension
  - Sleep attacks



# Adjunct medications

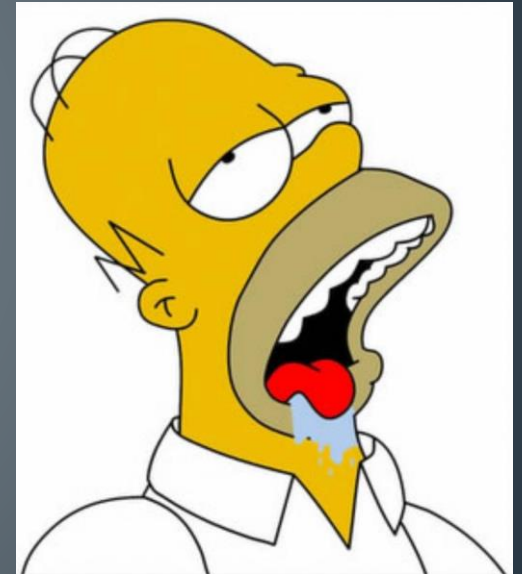
- Amantadine
  - Swelling
  - Anticholinergic effects
- Entacapone (COMT inhibitor)
  - Orange urine and tears
  - Dyskinesias
- Selegiline and Rasagiline (MAOB inhibitor)
  - Stimulating

# Non Motor Features of PD

Drooling  
Olfactory and taste dysfunction  
Choking and swallowing difficulties  
Nausea and vomiting  
Constipation  
Fecal incontinence  
Bladder dysfunction  
Pain  
Weight loss & weight gain  
Cognitive dysfunction and Dementia  
Hallucinations  
Depression  
Anxiety  
Apathy  
Sexual dysfunction  
Orthostatic hypotension  
Excessive daytime sleepiness  
Insomnia  
REM sleep behaviour disorder  
Restless leg syndrome  
Leg swelling  
Excessive sweating  
Diplopia and visual abnormalities  
Delusions  
Impulse control disorders

# Drooling

- Everyone produces saliva and it has to go somewhere
- Swallowing slows down so saliva comes out the mouth
- Treatment
  - Sugar free candy or gum (stimulate swallowing)
  - Atropine drops (dries out the mouth)
  - Botox injections (dries out the mouth)



# Swallowing Dysfunction

- Coughing or choking on food
- Muscle problem treated with speech therapy



# Nausea

- Ginger
- Food with medication
- domperidone



# Constipation

- Increase water intake
- Exercise
- Fiber supplements
- Polyethylene glycol
- Often a daily laxative is needed

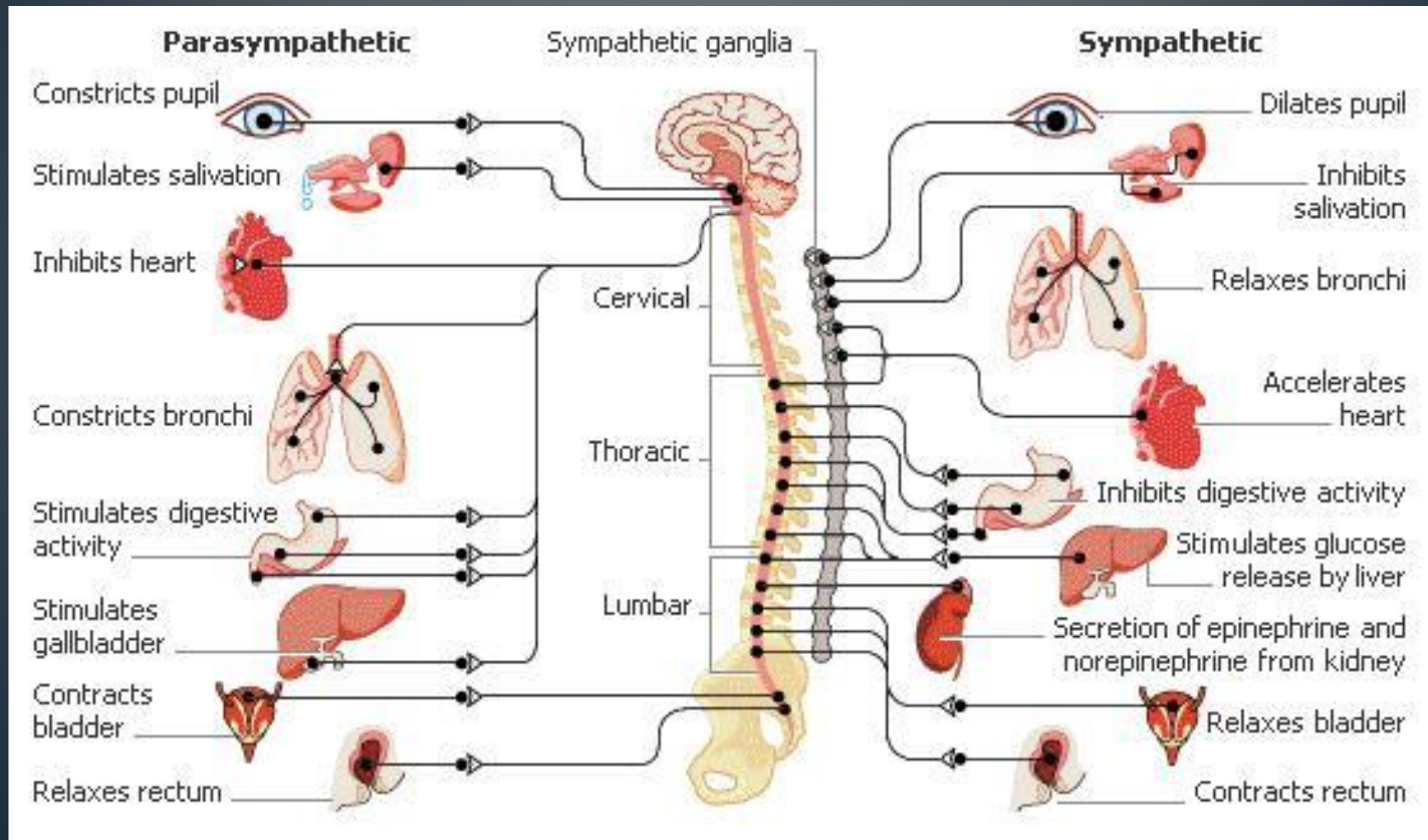




# Autonomic Dysfunction

- Constipation
- Urinary dysfunction
- Erectile dysfunction
- **Orthostatic Hypotension**
  - Difficulty maintaining blood pressure when standing

# Autonomic Dysfunction



# Low Pressure Symptoms



- Leads to falls and fractures!!!

# Definition

- Drop in blood pressure of  $>20\text{mmHg}$  and/or  $>10\text{mmHg}$  diastolic after 3 minutes of standing
- Can also occur after eating as blood goes to the gut

# Prevalence

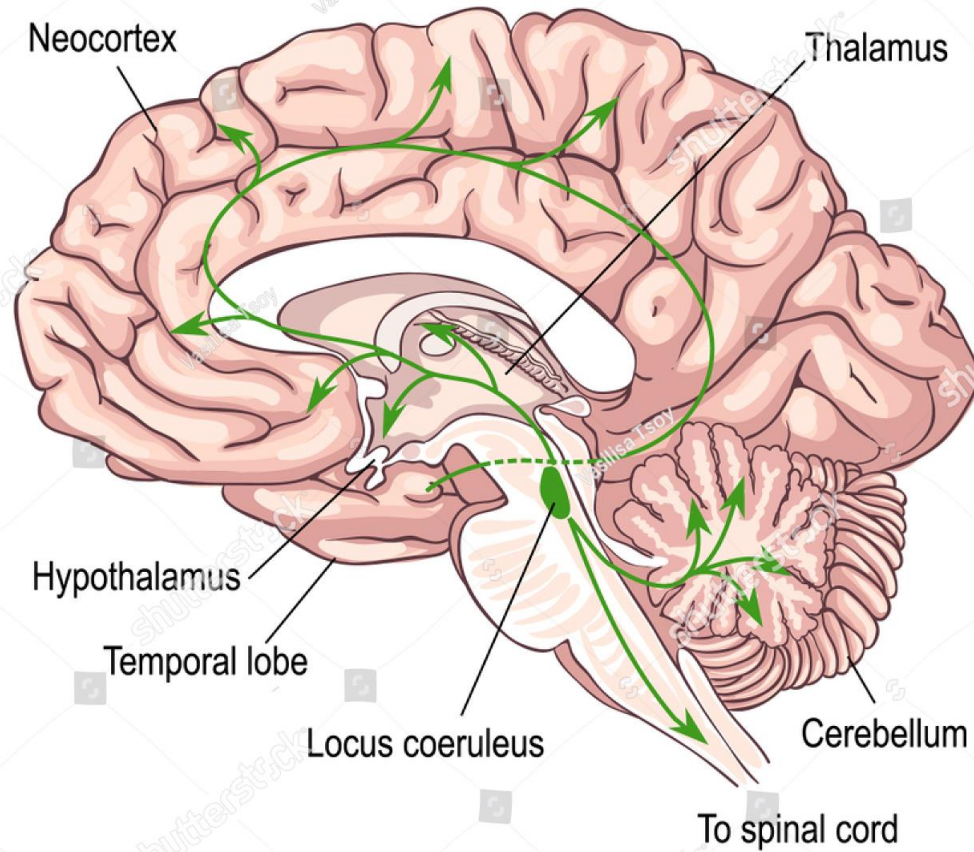
- About 30% of people with PD
- About 80% of people with MSA



# Why the Problem?



# NOREPINEPHRINE SYSTEM



# Causes in PD

- Parkinson's Disease
- Medications
  - Levodopa
  - Dopamine agonists (pramipexole, ropinirole)
  - MAO-B inhibitors (selegiline, rasagiline)
- Multiple Systems Atrophy
- Others:
  - Diabetes
  - Pure autonomic failure
  - Spinal cord injuries

# Treatment?

- Reduce or stop blood pressure medications
- Drink lots of water
- Add salt to diet
- Sleep with head of bed tilted up
- Valsalva, crossing legs, clenching muscles



# Treatment?

- Abdominal binders
- Leg compression stockings





# Treatment?

- **Fludricortisone**
  - Promotes retention of water
  - Can cause swelling
- **Midodrine**
  - Constricts blood vessels
  - Supine hypertension
- **Pyridostigmine**
  - Increases heart rate and constricts blood vessels
  - Diarrhea, palpitations
- **Droxidopa**
  - Constricts blood vessels
  - Supine hypertension





# Take Home Points

- Talk to your doctor about hypOtension
- Have your doctor check your blood pressure sitting down AND standing up
- If positive
  - Reduced blood pressure meds
  - Non pharmacologic treatment
  - Consider medications to boost blood pressure

# PAIN



# Classification of Pain in PD

- musculoskeletal pain
- radicular/neuropathic
- dystonia-related
- akathitic discomfort/RLS
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Levodopa responsive

# Prevalence

- 5.2 million in the world with PD
- Up to 85% experience pain
- Prevalence of pain in PD is higher than in age-matched controls

# Prevalence

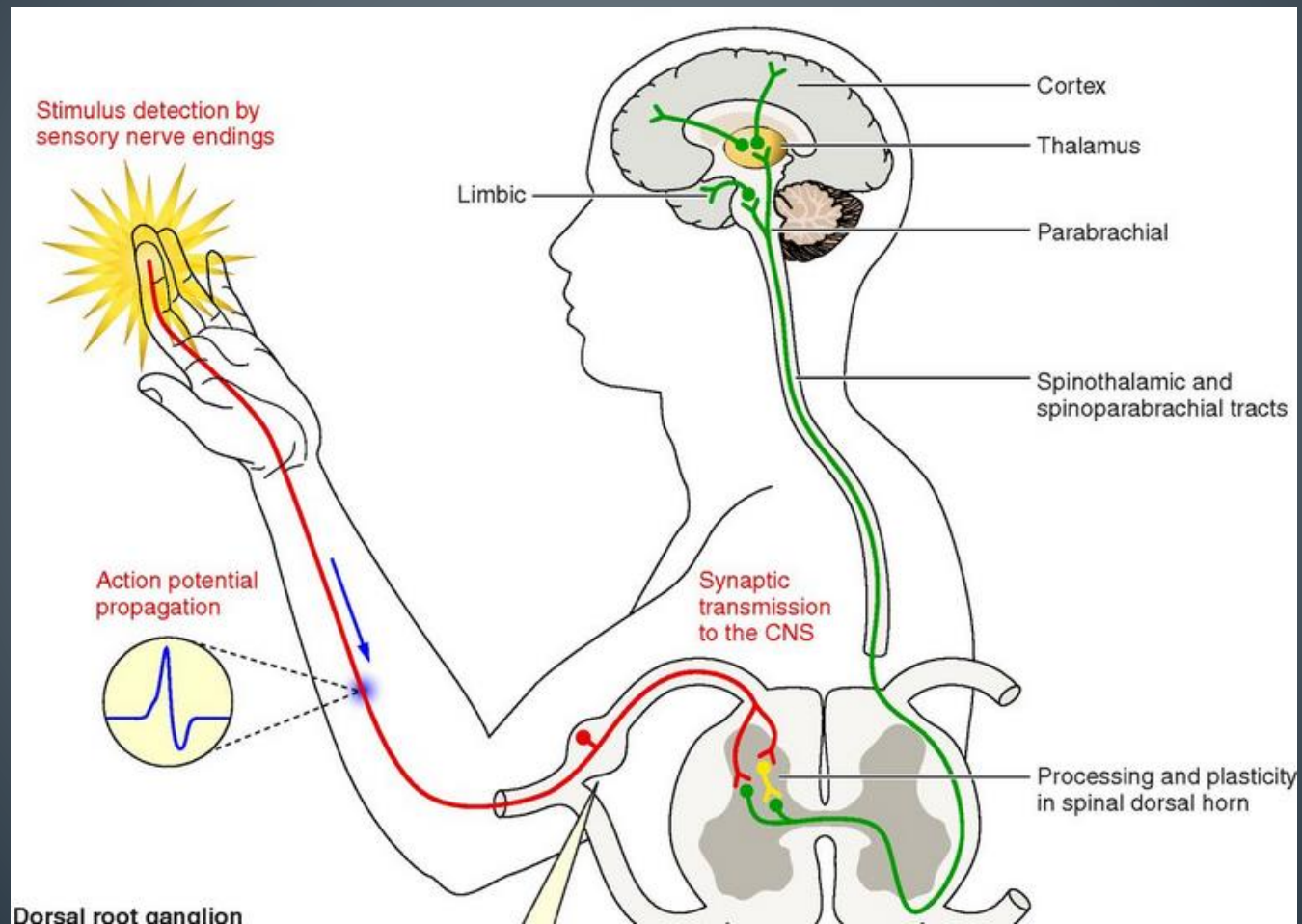
- Pain is most common non-motor complaint in early (<6 years) PD
- 25% of early PD and 16% of late PD consider pain one of their top three most bothersome symptoms



# Quality of Life

- Pain in PD linked to
  - reduced QOL
  - impaired motor function
  - depression
  - reduced social functioning
  - poor general health
  - (Roh 2009, Rahman 2008, Winter 2011, Quittenbaum 2004)
- PD caregivers describe end-of-life pain as common and poorly managed. (Goy 2008)

# Why the Problem?



- “Pain is a multidimensional experience involving motivational, affective, cognitive and motoric components.”



# Treatment?



# Under treated... under recognized?

- Despite up to 85% of people with PD having pain...
  - 59% of people with PD take an analgesic (Lee 2006)
  - 50% of people with PD **and pain** take an analgesic (Bieske 2009)
  - 20% who describe pain as "dominating their day" take an analgesic

*Table 3*  
**Overall Use of Analgesics in the Study Population (n = 123)**

WHO Ladder	Drug	%
Step 1	NSAID	12.2
	Paracetamol/acetaminophen	50.4
Step 2	"Weak" opioids	25.2
		(most commonly codeine)
Step 3	"Strong" opioids	0
Adjuvant analgesic	Anticonvulsants	0.8
	Antidepressants	8.9
	Steroids	0
	Muscle relaxants	0.8



# Treatment

- Leeches, stimulating fomentations, and a blister, which was made for sometime to yield a purulent discharge, were applied over the cervical vertebræ; and in the course of a very few days the pain was entirely removed





# Warning... No/Some Evidence Zone



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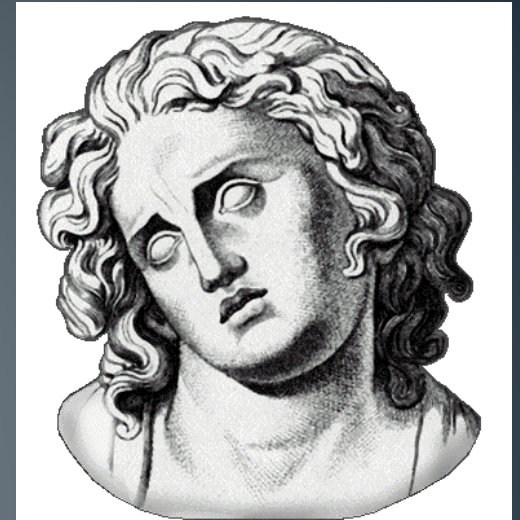
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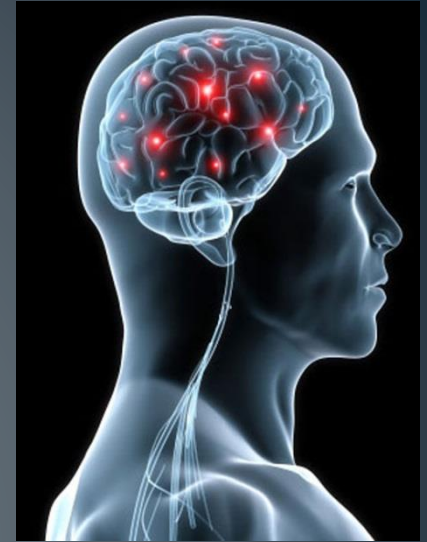
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  - ???? Duloxetine, Gabapentin, Valproate, Carbamazepine ????



# Take Home Points

- Pain is a common problem in PD
- Ask your doctor about pain
- PT, PT and more PT
- Although evidence is limited there are medications which can help
- More research is needed

# Questions?

