

# Parkinson's Disease

## ...in 60 minutes

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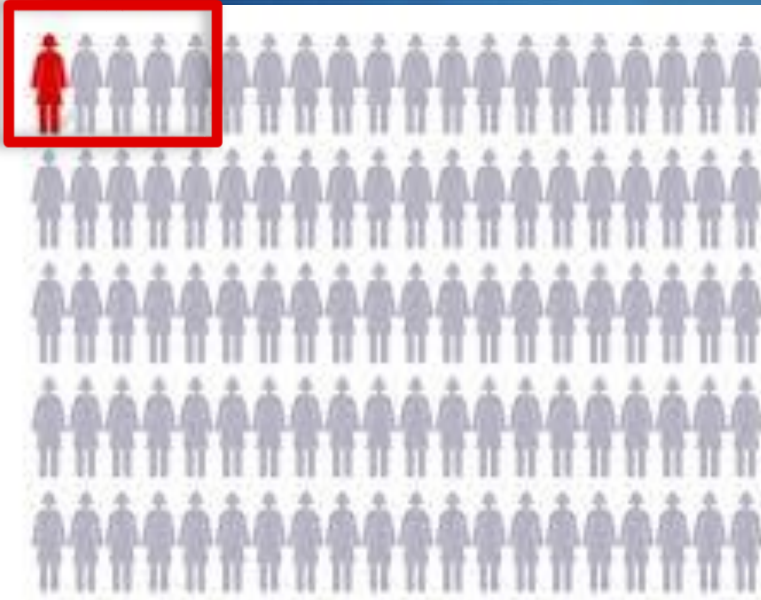


# Plan of attack



- 💧 What causes Parkinson's disease – brief
- 💧 Symptoms/Diagnostic Criteria
- 💧 **Treatment options – the whole gammut**

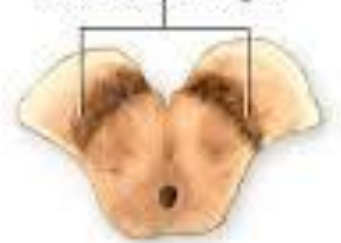
# Parkinson's Disease



Cut section  
of the midbrain  
where a portion  
of the substantia  
nigra is visible



Substantia nigra



Diminished substantia  
nigra as seen in  
Parkinson's disease







*I'm afraid I might fall.*

# Symptoms





**Mild**

**Moderate**

**Advanced**

Wearing off

Delayed on

Increasing  
dyskinesias

**Monotherapy**

**Monotherapy**

**Combination  
tx**

**Interventional**



# Treatment



# Treatment

1. **Medications for PD**
2. Don't forget the non-motor symptoms
3. Alternative treatments
4. It's not all about medications



# Major Medication Classes

## **DOPAMINE**

Levodopa-  
carbidopa/Sinemet

Levodopa-  
benserazide/Prolopa

## **DOPAMINE AGONISTS**

Pramipexole/Mirapex

Ropinirole/Requip

Bromocriptine

## **MAOB-I**

Rasagiline/Azilect

Selegiline

# Add on Medications

Entacapone/  
Comtan

Trihexiphenidyl  
/Artane

Amantadine

# The levodopa myths



# Myth

- 💧 **Sinemet accelerates disease progression**
- 💧 **Reality:** *Levodopa has been shown to increase lifespan and dramatically improve quality of life.*



# Myth

- 💧 **Sinemet stops working after 5 years so we need to save it for later**
- 💧 **Reality:** *Levodopa works for decades.* Levodopa does not treat all of the symptoms of PD, but it dramatically helps many of the most disabling motor symptoms.

# Myth

- 💧 **Sinemet causes dyskinesias so we need to try to delay the use of Sinemet as long as possible.**
- 💧 **Reality:** *Treatment related side effects are less with levodopa.*

# Myth

- 💧 **You should wait as long as possible to take the next dose of levodopa.**

- 💧 **Reality:** *Levodopa is most effective when taken on time, just before the previous dose wears off.*

- 💧 **Secret:** *A medication timer can help.*

# Approach to starting

Younger

Older, cognitive  
impairment

more emphasis on long-term  
considerations to guide early  
treatment

longer life expectancy and  
are more likely to develop  
motor fluctuations and  
dyskinesias

less emphasis is placed on  
long-term considerations

focus is on providing adequate  
symptomatic benefit in the near  
term, with as few adverse  
effects as possible



# In a nutshell

- 💧 levodopa more robust effect
- 💧 DA generally more side effects which increase with age (somnolence, hallucinations, peripheral edema, ICD)
- 💧 motor complications occur earlier with levodopa



**Mild**

**Moderate**

**Advanced**

Wearing off

Delayed on

Increasing  
dyskinesias

**Monotherapy**

- l-dopa
- MAOB-I
- DA\*\*

**Monotherapy**

- higher dose
- increased frequency

**Combination tx**

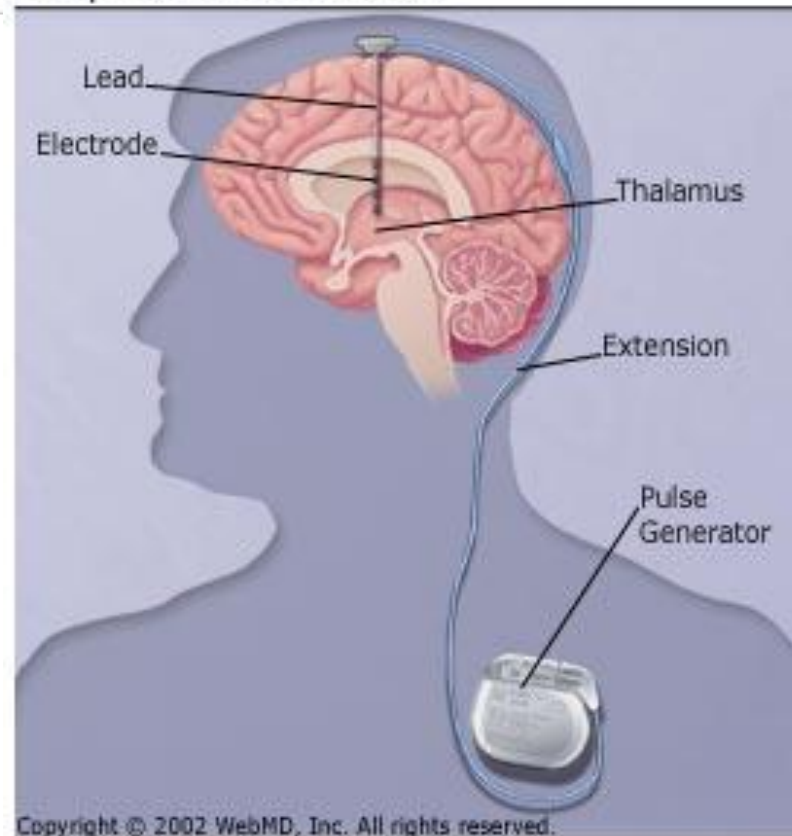
- l-dopa
- DA
- COMT-I
- MAOB-I

**Interventional**

- DBS
- continuous intraduodenal infusion

# Deep Brain Stimulation

Deep Brain Stimulation



# Duodopa





# Recent updates

- 💧 Tasigna/Nilotinib – leukemia drug
- 💧 Antimalaria drugs (ex: chloroquine)
- 💧 Inhaled levodopa

# Take home messages

1. Medications for PD
2. **Don't forget the non-motor symptoms**
3. Alternative treatments
4. It's not all about medications



## Non-motor symptoms



# IMPORTANT

Unidentified or untreated non-motor symptoms contribute to poorer quality of life and poorer motor function overall



# Urinary, bowel, sexual dysfunction



# Postural hypotension



## WHY

- 💧 Parkinson's disease
- 💧 levodopa/dopamine agonist
- 💧 Other comorbid conditions
- 💧 Other medications

## TREATMENT

- 💧 Reduce causative meds
- 💧 High salt diet
- 💧 Stockings
- 💧 Domperidone
- 💧 Other meds

# Mood



- Not just sad...often irritability
- Be open and aggressive in treating mood disorders
- If mood is left untreated, motor symptoms are difficult to treat
- GREATEST DETERMINANT OF QoL

# Cognitive Issues



- ◆ Not Alzheimer's
- ◆ Problems: Multi-tasking, visuospatial, executive function
- ◆ Requires regular assessment
- **Cholinesterase inhibitors** are beneficial for select patients

# “Off” Non-motor symptoms

- 💧 NMS can cycle just as motor symptoms do with OFF times
- 💧 Eg: off-anxiety, off-sweating
- 💧 Approach is to reduce the off time



# Take home messages

1. Medications for PD
2. Don't forget the non-motor symptoms
3. **Alternative treatments**
4. It's not all about medications

# QUESTION

- How many take a non-prescribed drug to help with PD?

# Alternative treatments

- 💧 Coenzyme Q10
- 💧 Creatine
- 💧 Vitamin E
- 💧 Vitamin D
- 💧 Mucuna puriens
- 💧 Caffeine



# Alternative treatments

- ◆ Medical marijuana
  - ◆ anecdotally up to 45% found benefit
  - ◆ few controlled studies
  - ◆ not shown helpful for tremor or dyskinesias
  - ◆ s/e



# Take home messages

1. Medications for PD
2. Don't forget the non-motor symptoms
3. Alternative treatments
4. **It's not all about medications**



# QUESTION

- What forms of exercise are good for Parkinson's disease?

Essentially, all right answers

# Drugs aren't everything



# Resources

- 💧 [www.parkinson.ca](http://www.parkinson.ca) (Parkinson Society Canada)
- 💧 [www.parkinson.bc.ca](http://www.parkinson.bc.ca) (Parkinson Society BC)
- 💧 [www.parkinsons.org](http://www.parkinsons.org) (National Parkinson's Foundation, USA)
- 💧 [www.pdf.org](http://www.pdf.org) (Parkinson's disease foundation)

# THANK YOU

