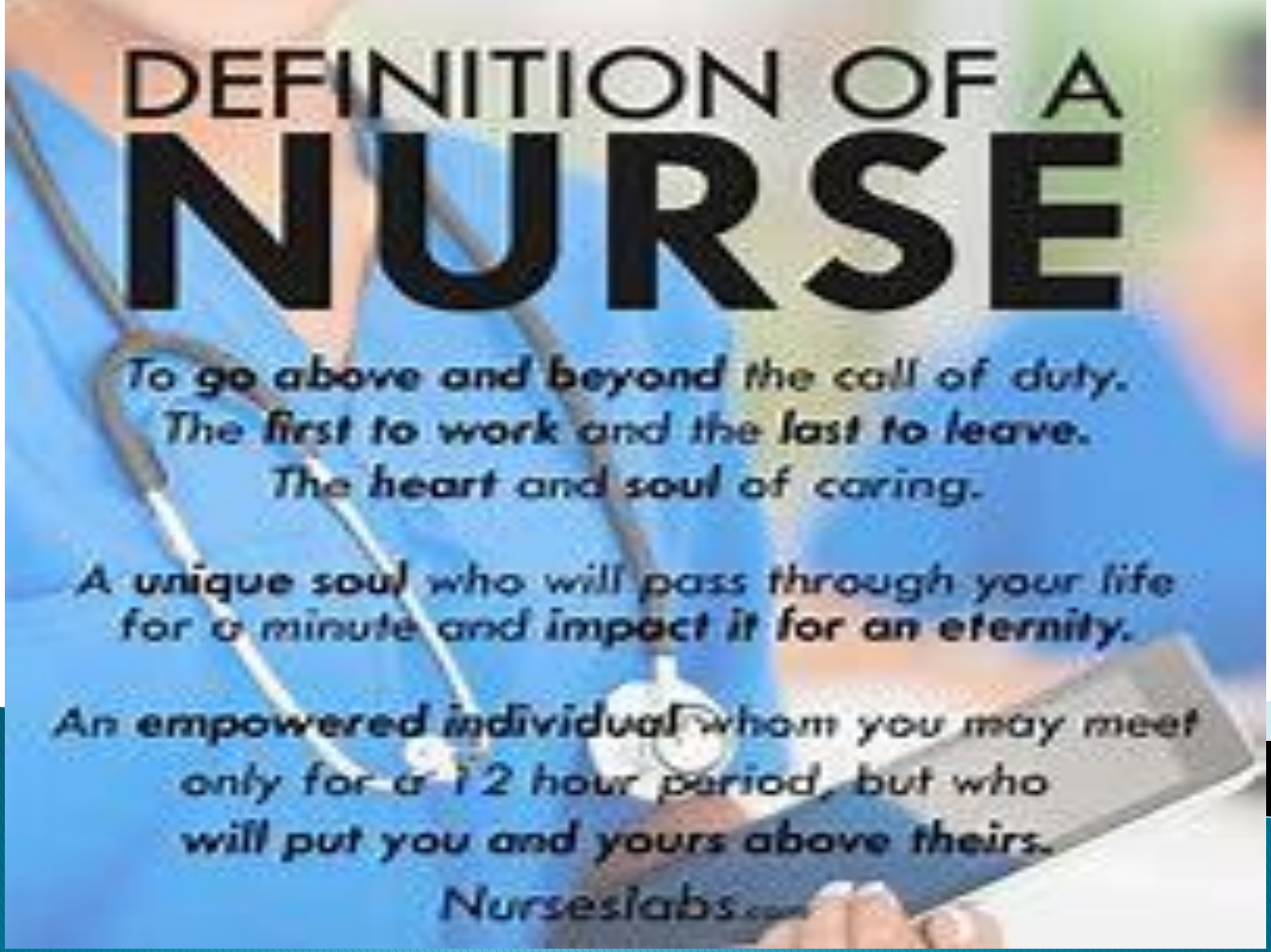
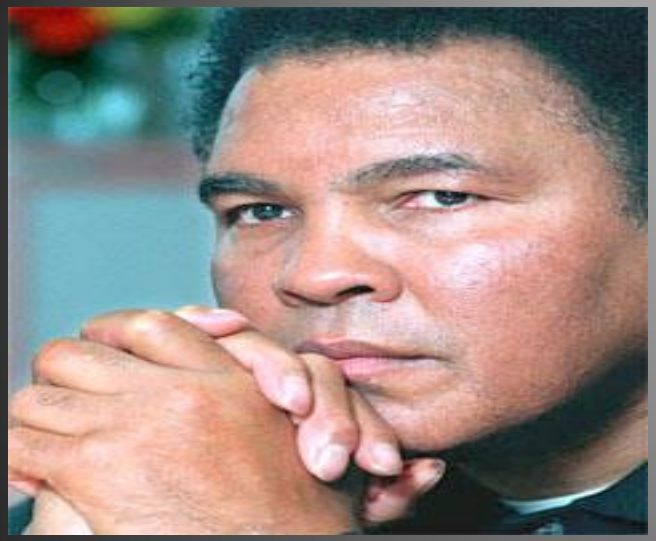
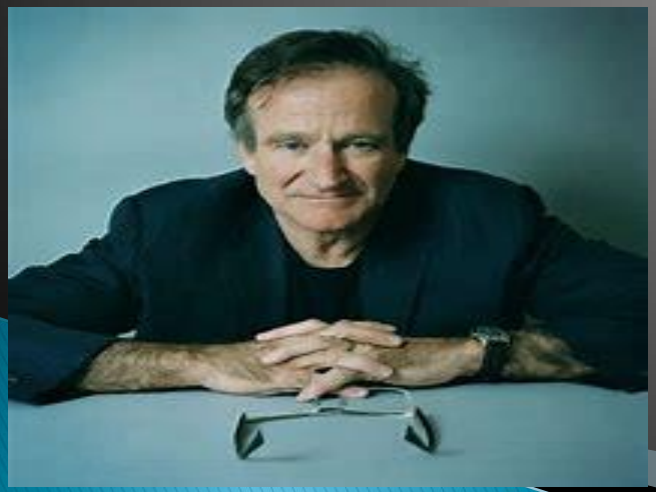

DEFINITION OF A
NURSE
To go above and beyond the call of duty.
The first to work and the last to leave.
The heart and soul of caring.
A unique soul who will pass through your life
for a minute and impact it for an eternity.
An empowered individual whom you may meet
only for a 12 hour period, but who
will put you and yours above theirs.
Nurseslabs.com

Parkinson Disease: Basics and Med factors

Johanna Hartlein, APRN
Washington University
School of Medicine

Your Neighbor May Have Parkinson Disease





Parkinson Disease

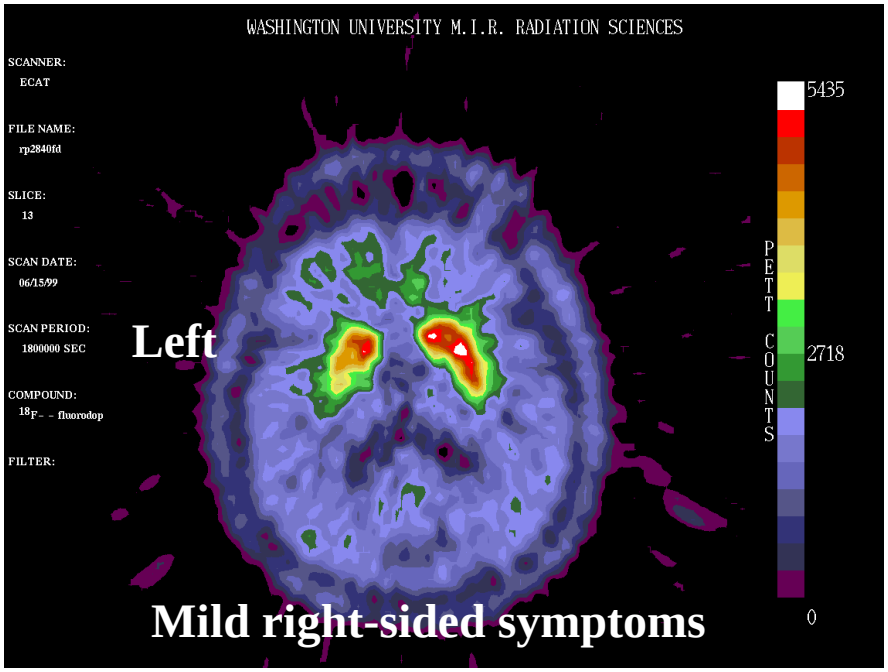
"…caused by degeneration of dopamine producing neurons in midbrain, specifically the substantia nigra pars compacta"

The Substantia Nigra
Dopamine is good for you!

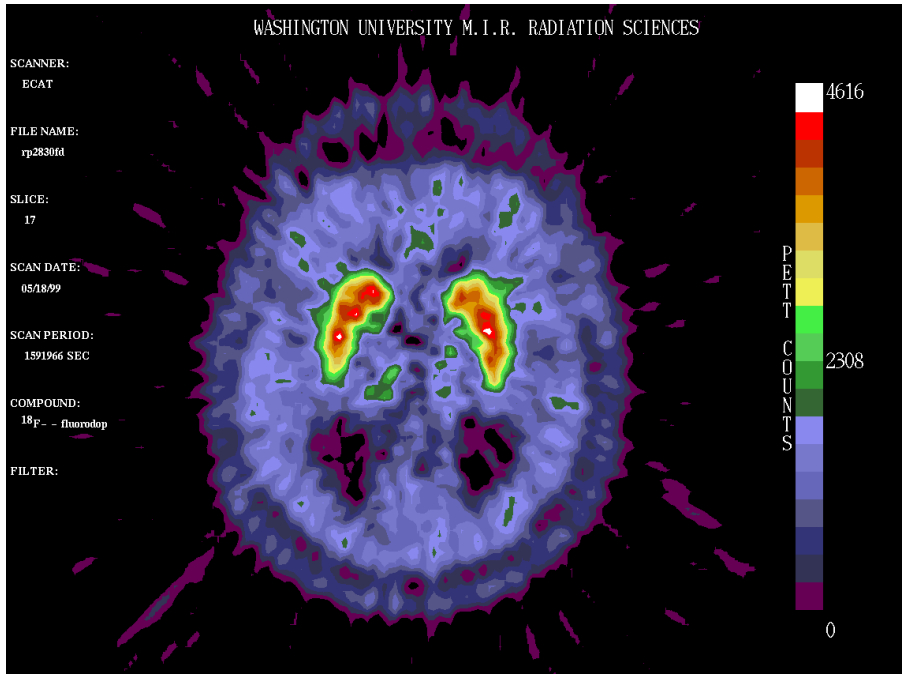
- Substantia nigra is the major source of dopamine in the brain
- Substantia nigra is in the midbrain
- Motor symptoms develop after losing 60-80% of these brain cells
- Substantia nigra neurons fire:
  - When expecting a reward
  - During learning of a new task
- Direct injury of the substantia nigra causes (suicidal) depression

PD Normal

Parkinson disease



Normal



PD Epidemiology

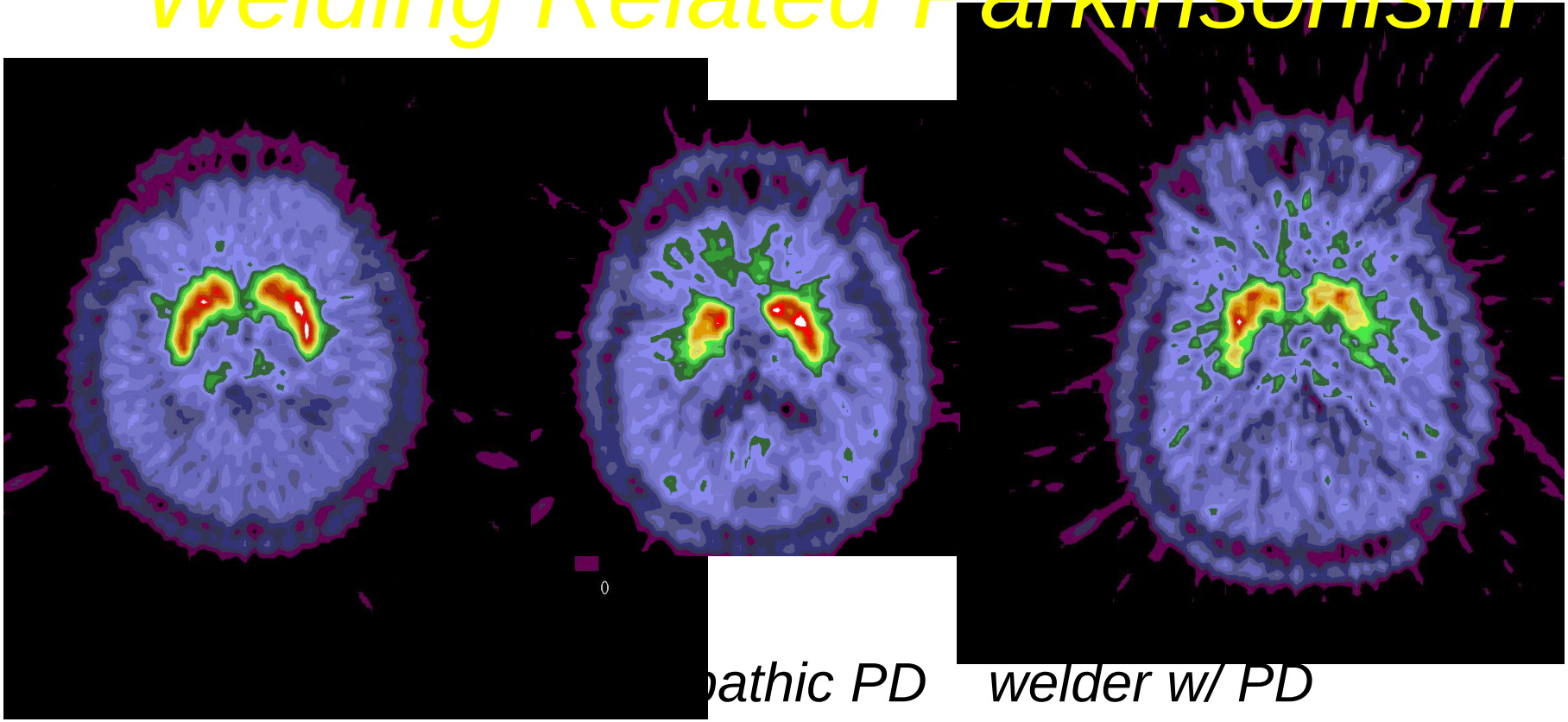
- At least 1 million PD patients in the USA
- Prevalence on the rise with aging baby boomers (expected to triple in the next 40 years)
- 60k new cases diagnosed each year
- Genetics thought to account for less than 5% of cases
- Man/Woman ratio = 2:1
- Age: 10/100,000 by age 50, 200/100,000 by age 80
- Race: more common in whites (access to care??)
- Before Levodopa, life expectancy was
  - 25% deceased in 5 years
  - 65% deceased in 10 yrs
  - 89% deceased in 15 yrs
  - 2017 study says lifespan is on average 2 years less than the general population

PD Epidemiology Cont.

- Chemicals: pesticides, manganese, MPTP (1983)
- Occupation: agriculture, carpenters, cleaners, teachers, health care workers, exposure to metals, welders…

- Neuroprotective factors:
  - NOTHING ESTABLISHED YET TO BE NEUROPROTECTIVE
    - No real dietary interventions
    - No herbal remedies
    - No cannibinoids/THC thus far

Welding Related Parkinsonism

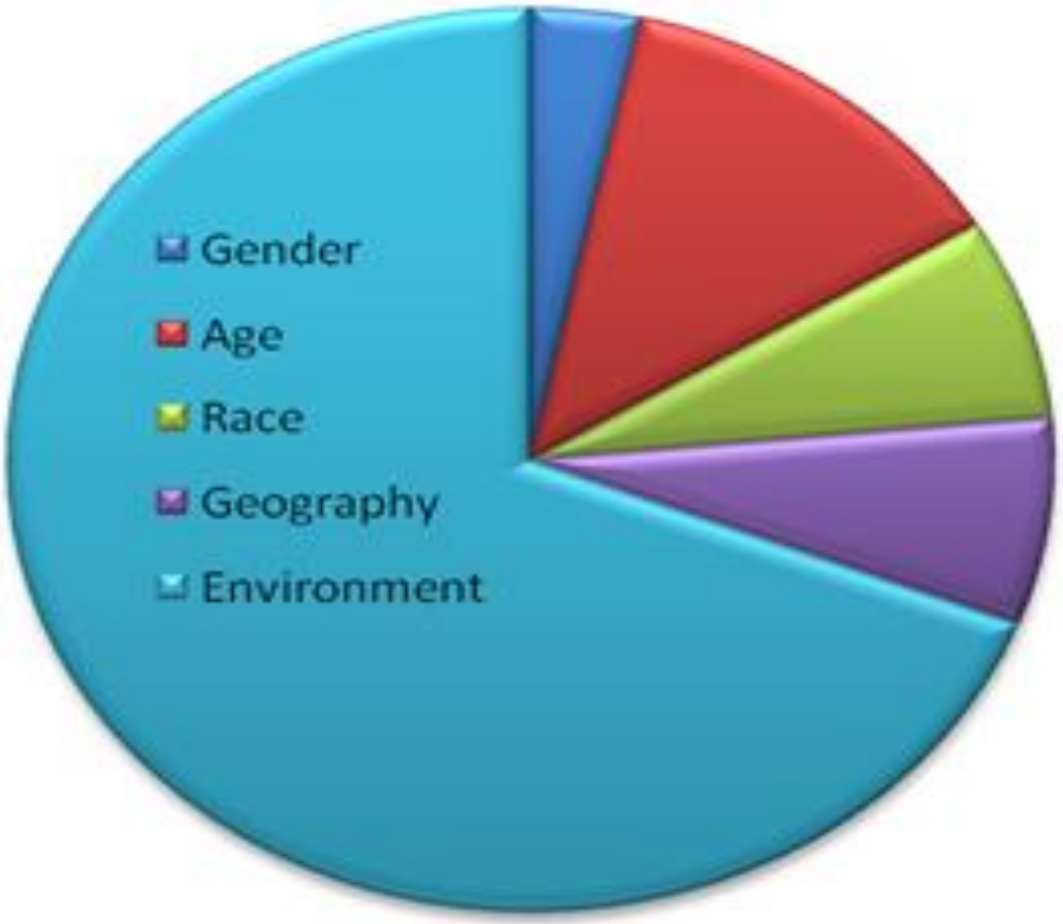


athic PD *welder w/ PD*

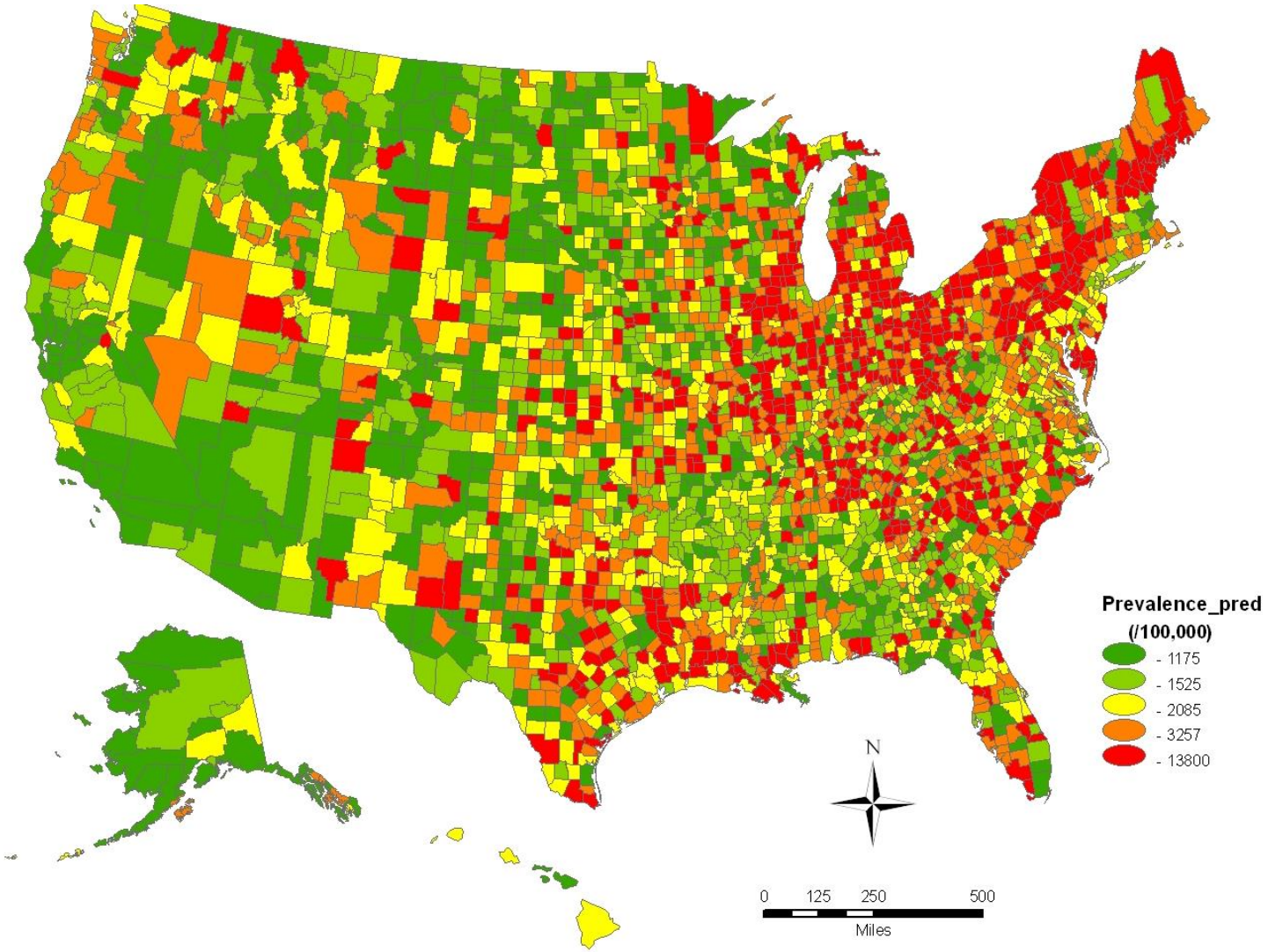
Mean onset:	*63 yrs*	*46 yrs*
(n)	*(100)*	*(15)*

Racette et al, 2002

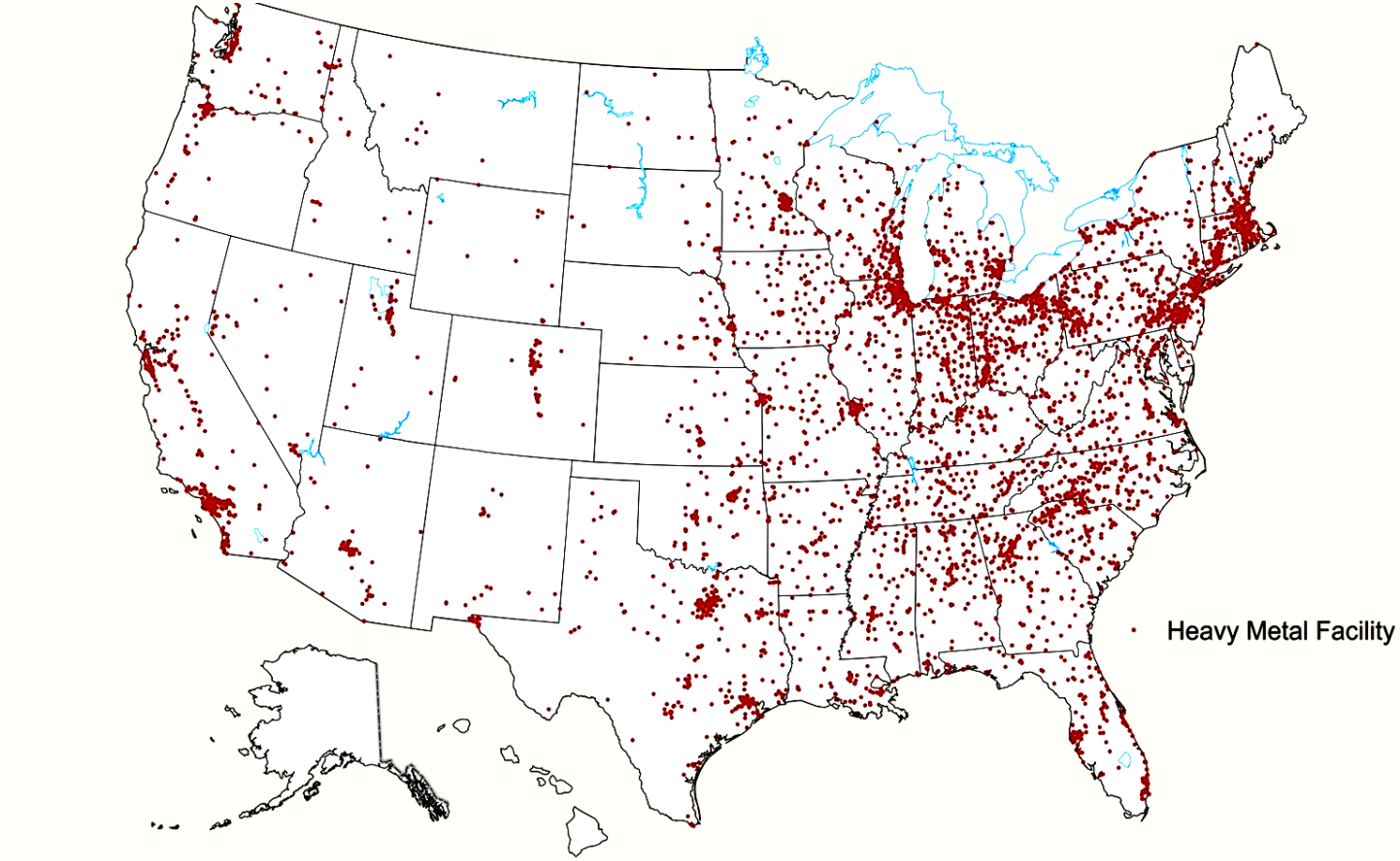
PD Epidemiology



Geographic Prevalence of PD



Manganese Releasing Facilities




"When you are a
nurse you know
that everyday you
will touch a life
or a life will touch
yours."

Nursing Home Patients with PD

- Tend to be older
- More advanced PD
- More ADL impairment
- More likely to have dementia
- More likely to have hallucinations
  - Aarsland et al 2000

- Basically, you all are getting the sickest of the sick. And it is a hard job.

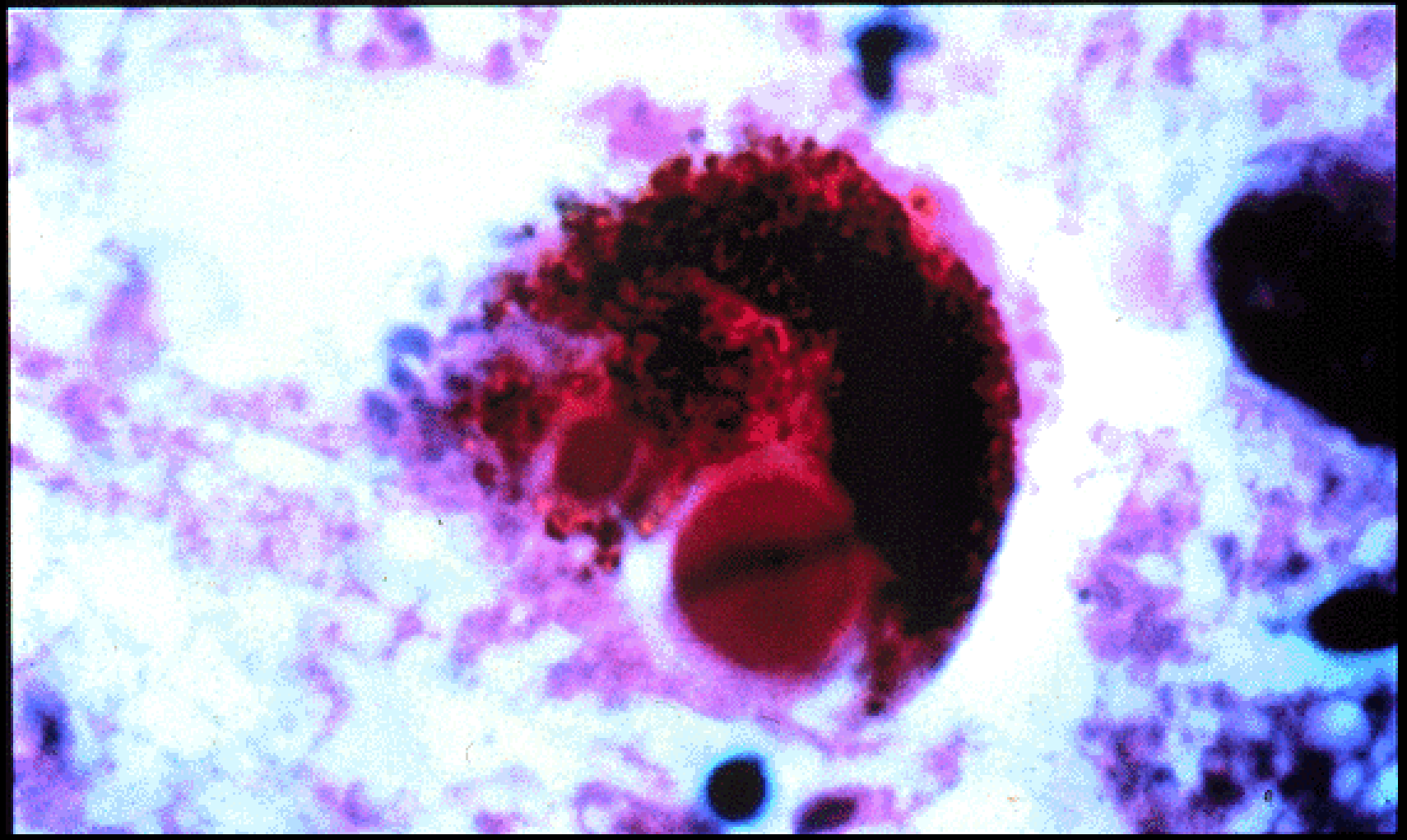
Other NH facts

- At least 25% of PD patients reside in a long term care facility
  - This number will grow and grow as people live longer
- Broken hips, urosepsis, dementia and psychosis seem to be the “tipping point” where patients are admitted to LTC
- Direct and indirect cost of PD is $25 billion per year in the US

Pathophysiology of Parkinson Disease

- Lewy bodies in the midbrain=PD
- Lewy bodies in midbrain and cortex=PD/dementia, “Lewy Body Dementia”
- Neuropathology starts in the olfactory bulbs and lower brainstem, move to the nigrostriatal pathways where motor symptoms begin, then spread to the cortex where dementia can occur.

PD: Lewy Bodies



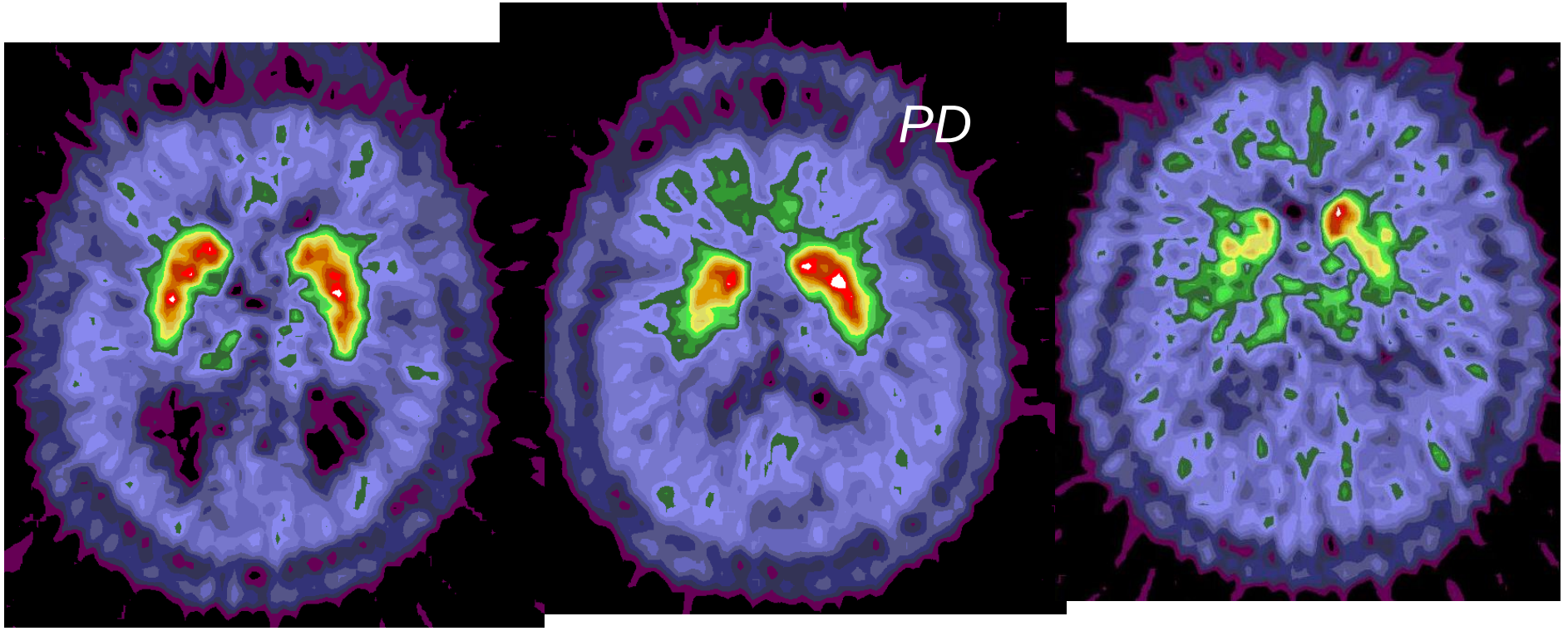
CARDINAL MANIFESTATIONS

- Resting Tremor
- Rigidity (stiffness)
- Bradykinesia (slowness)
- Postural Instability

Diagnosis of Parkinson Disease

- Diagnosis: 2/3 Cardinal Symptoms
- Asymmetry
- Rule out Parkinson Plus Syndromes (atypical parkinsonism):
  - 10% of parkinsonian patients
  - Rapidly disabling
  - Poorly treatable
- MRI used to r/o SOL or strokes
- Fdopa, DAT, Spect not specific for PD vs parkinsonisms

[18F]FD….but doesn't discriminate one type of parkinsonism vs another



Normal *mild PD* *moderate PD*

Differential Diagnoses

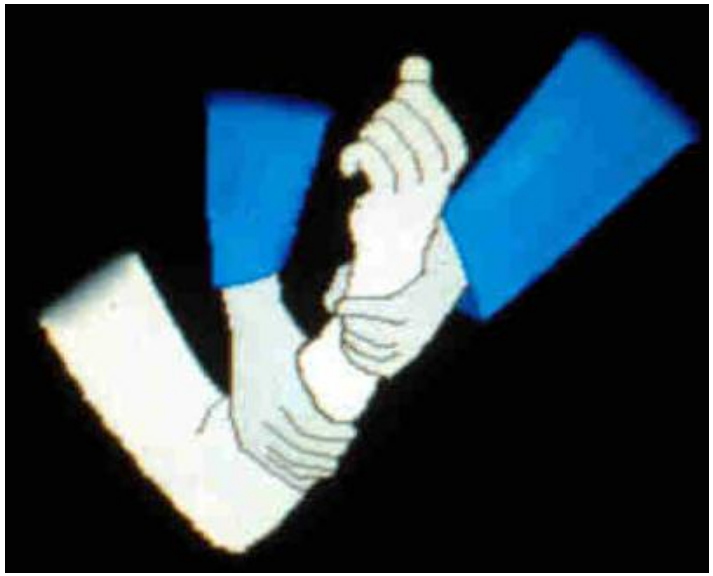
- Multiple system atrophy:
  - (P+autonomic system problems+freezing+early falls+may or may not respond to levodopa
  - Can be cerebellary dysfunction or PD like
- Progressive supranuclear palsy
  (P+early imbalance+substantial neck rigidity+early dementia+eyes movement abnormalities)
- Corticobasal ganglionic degeneration-CBD
  - (P+unilateral+ dystonia+early falls+early thinking problems+alien limb)
- Lower body Parkinsonism:
  - Vascular Parkinsonism (white matter disease?)
  - Normal pressure hydrocephalus

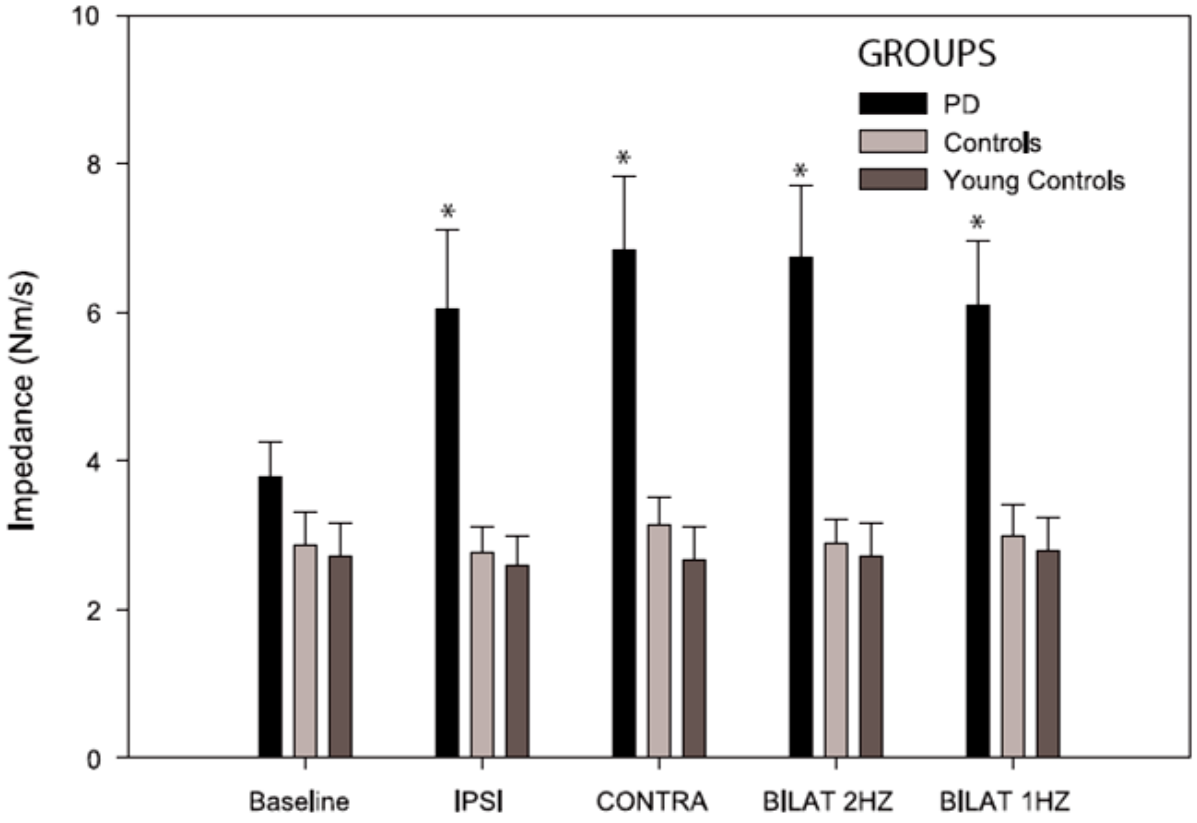
THESE DISEASES ARE NOT LIKELY TO RESPOND TO PD DRUGS

Rest Tremor


Tremor of one hand is a frequent early manifestation of parkinsonism
Tremor often improves or disappears with purposeful function
© CIBA

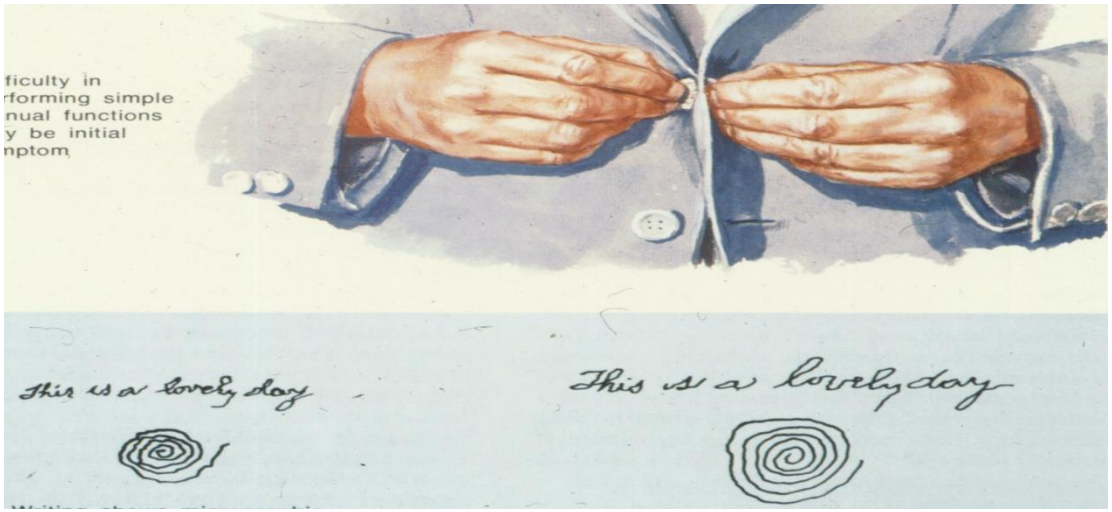
Rigidity: Uniformly increased resistance to a passive range of motion

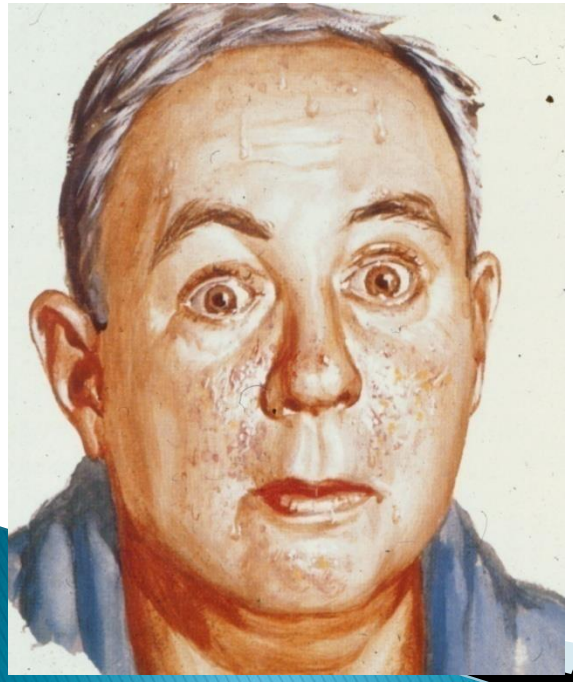




Hong et al, 2007

BRADYKINESIA

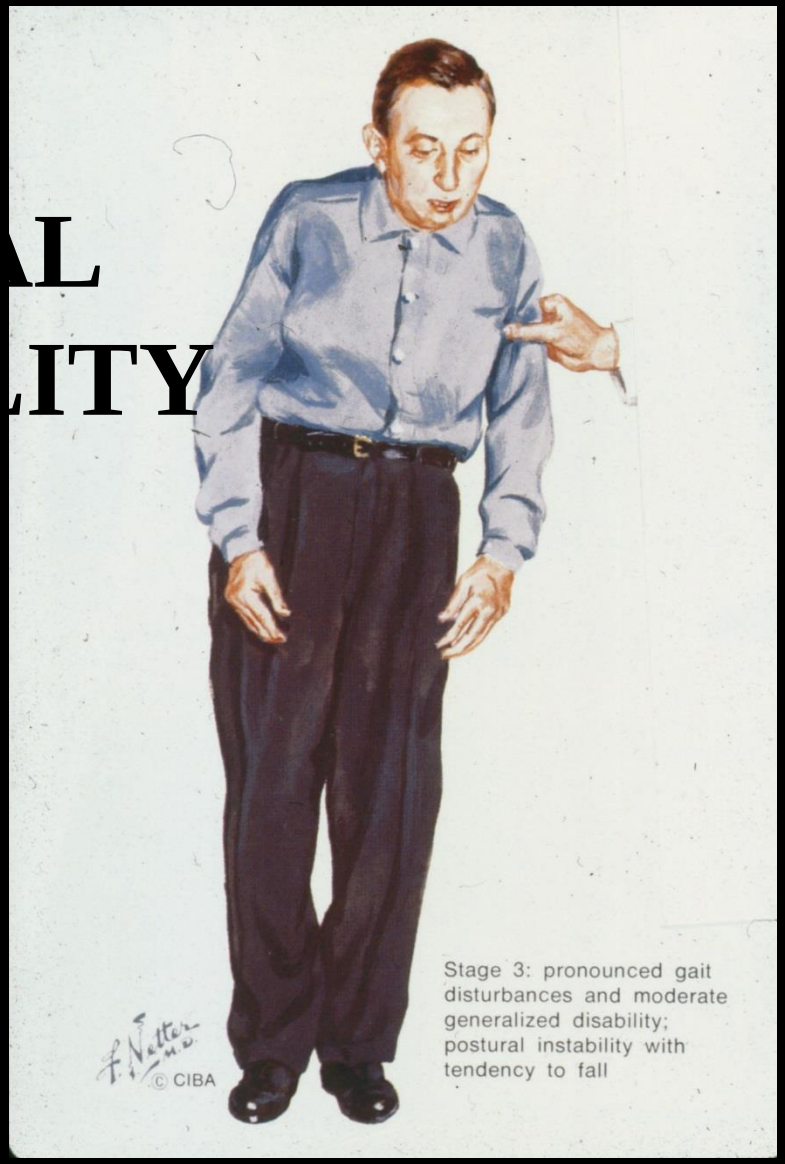




AKINESIA

AL

LITY



Stage 3: pronounced gait disturbances and moderate generalized disability; postural instability with tendency to fall

Still with me???

Autonomic Problems

- Orthostasis (drops in BP)
  - Major issue. Patients with frequent falls or "dizziness" should be monitored
- Bowel/Bladder problems
  - Constipation
    - Miralax, stool softeners, Senna
  - Bladder urgency, inability to get started, residual urine in bladder, incontinence
    - Only Myrbetriq for OAB
    - Meds for incomplete emptying can drop BPs

Autonomic Problems cont

- Bradycardia (slow heart rate)
- Sweating
- Inability to maintain erection
  - Sometimes responsive to Viagra
- Swallowing problems
  - No one can force a feeding tube. Often not medicine responsive
- Convergence problems
  - Can try patching an eye
- Drooling
  - Botulinin can help substantially; avoid oral anticholinergics to “dry out” (confusion)

Cognitive Problems

- Psychosis and Dementia #1 reason for nursing home in PD
- Psychosis (meds?)
  - Hallucinations
  - Delusions
- Depression/Anxiety
- Dementia
  - AD vs Cortical Lewy Bodies
  - Confusion and hallucinations are not the same!

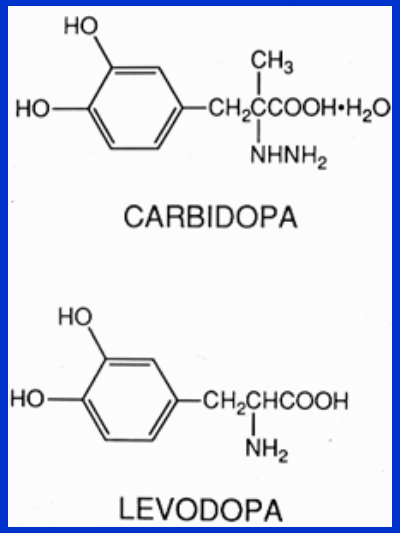
Other features of PD

- Masked facies
- Hypophonia
- Freezing
- Dystonia
- Small steps/shuffling
- REM sleep behavior disorder
  - 38% to 50% develop PD later
- Loss of sense of smell
  - May occur 20+ years before PD motor

DON'T MESS WITH ME! I GET PAID TO STAB PEOPLE WITH SHARP OBJECTS.

Medical Treatments for PD

Levodopa



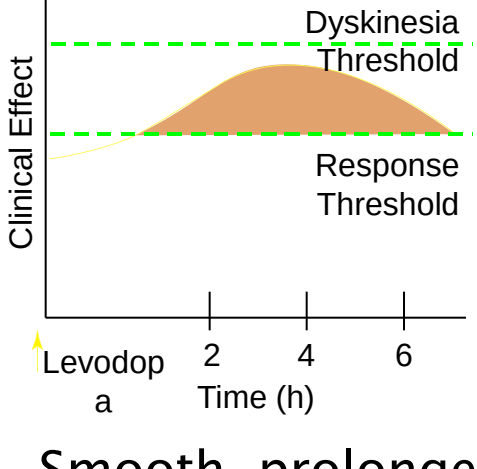
- Discovered about one hundred years ago
- Discovered as tx for PD in 1960s
- Immediate precursor of dopamine
- Most efficacious treatment for PD
- Increases quality of life and survival
- Most common side effects: nausea, lightheadedness,
  sleepiness, mental confusion, hallucinations,
  involuntary movements, wearing off
- Therapeutic range: 100 mg to >6000 mg/day
- Formulations:
  - Sinemet
  - Stalevo
  - Parcopa
  - Rytary
  - Duopa

Possible side effects of levodopa

- Nausea
- Lightheadedness
- Hallucinations
- Dyskinesia
- Excessive sleepiness
- Confusion
- Goal of therapy: To maximize functional ability and minimize side effects

Diminishing Duration of Target Levodopa Response

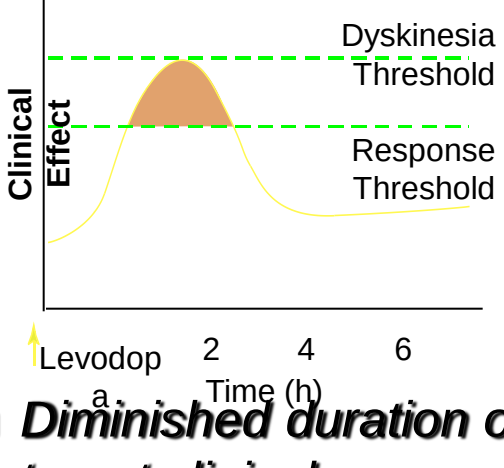
Early PD



- Smooth, prolonged clinical response
- Low incidence of dyskinesias

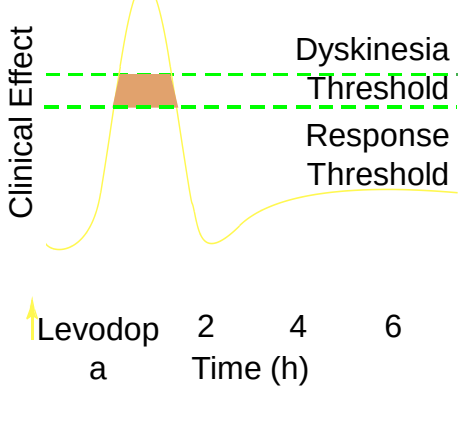
Target Response

Moderate PD



- ***Diminished duration of target clinical response***
- ***Increased incidence of dyskinesias***

Advanced PD



- ***Short duration of target clinical response***
- ***"On" time is associated with dyskinesias***

Adapted with permission from Obeso JA et al.
In: Olanow CW, Obeso JA, eds. *Beyond the Decade of the Brain. Vol 2. Dopamine agonists in early Parkinson's disease*. Kent, UK: Wells Medical Ltd; 1997:11

Other treatments for motor sx

- **Dopamine releasers/replacers**
  - Catecholamine-O-methyl transferase (COMT) inhibitors: tolcapone (Tasmar), entacapone (Comtan)=extenders
    - May change color of urine, Tasmar requires liver monitoring but works best
  - Dopamine agonists: bromocriptine (Parlodel), pergolide (Permax, recalled d/t heart valve defect problems), pramipexole (Mirapex), ropinirole (Requip), apomorphine (Apokyn, more recently approved in US), rotigotine patch (Neupro)
  - amantadine (Symmetrel)=decreases dyskinesia
    - Lightheadedness, hallucinations, confusion, livido reticularis
- **Mono-amine oxidase inhibitors (MAOI):**
  - Type B : selegiline (Eldepryl), rasagiline (Azilect), safinomide (Xadago)
    - No real side effects besides those of levodopa
  - These ARE safe with most antidepressant medicines
- **Anticholinergics:** trihexyphenidyl (Artane), benztropine (Cogentin)=not used often because of side effects and lack of efficacy

Dopamine agonists

- More likely to cause lightheadedness, psychosis, sleepiness, impulse control disorders
- Not as efficacious as PD for motor sx
- Less likely to cause dyskinesia or "on-off" phenomenon
- Sometimes are necessary for restless legs
- Bottom line: Usually not in people older than 65, never for people with hallucinations or dementia

Surgical Treatments

Considerations for Deep Brain Stimulation (DBS)

- Best response to levodopa will be best response to surgery
- So inappropriate for levodopa poor responders
- Inappropriate for parkinsonisms
- Inappropriate for those w/dementia
- Best for those w/good response to levodopa, wearing off, and dyskinesia

Duopa Considerations

- May be good for people who cannot or will not agree to have DBS
- Slow continuous infusion of levodopa
- May cut down dyskinesia
- You have to carry a pump and refills
- Not good for those with dementia or who live alone
- likely not good for NH patients as they can pull these out easily

Gamma Knife Surgery/Ultrasound (US)

- Currently no approval for US in the USA
- Gamma knife being used for ET but not PD at this point
- Both are treatment for tremor but do not treat other symptoms of PD
- May be found to be appropriate for people with tremor predominant PD dementia or those who otherwise cannot have DBS
- Caveat: It is permanent

COMPASSION

"It's more than just a job. Sometimes the patients just need a touch on the hand, a touch on the shoulder; a smile; just let them know that we are there for them."

~ Suzanne Hazelaar
Licensed Practical Nurse, Hospice of St. Frances Care Center

What is the difference between Doctor and Nurse

- Doctors focus on the disease
- Nurses focus on the patient as a whole
- Nurses focus on wellness
- Doctors are rarely there
- Nurses are always there
- Nurses judged most trusting of all professions for 16 years running
- These are OUR patients

Nonmedicinal Interventions

- PT
  - Lee Silverman BIG--Focused on stretching, strength, balance, walking, freezing
  - Standard PT (gait, balance, strength, stretching)
  - PT exercise classes/youtube channel
  - Rock Steady Boxing
- OT
  - Home safety assessments, memory strategies
- ST
  - Lee Silverman LOUD
  - Hypophonia, word finding
  - Swallowing Difficulties

Why do your patients need their meds on time?

- Levodopa is generally not a long acting med, which is why it must be taken multiple times per day
  - It kicks in and wears off
- Long acting levodopa (CR, XR) takes dramatically longer to "kick in" and you absorb less
- Caveat: All care centers have an hour window in either direction to give meds so training nursing staff is important.
  - Can it be done? Is it reasonable?

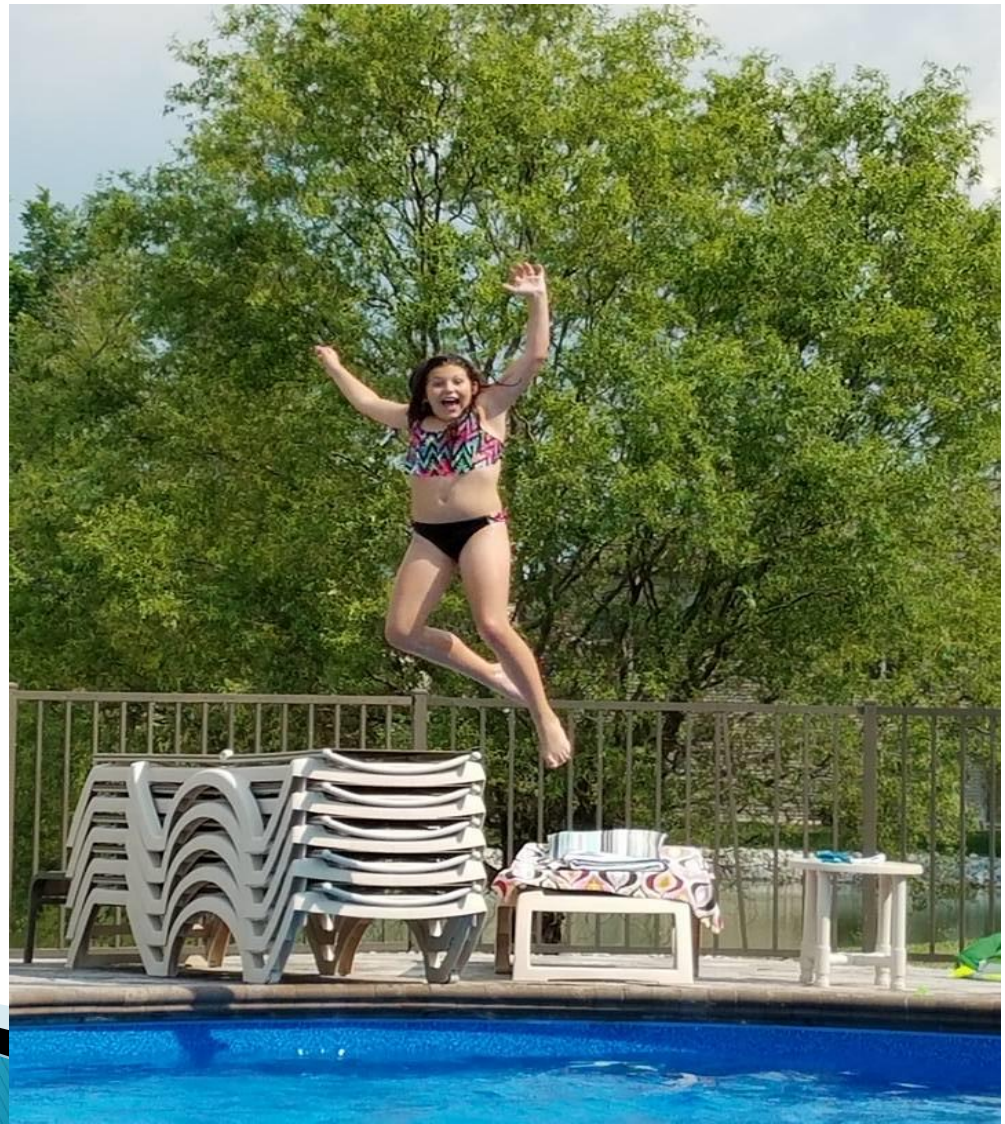
What happens when I do get my meds on time?

- My benefit lasts from dose to dose
- Improved symptoms include:
  - Balance/walking
  - Better tremor control
  - Less slowness
  - Less rigidity
  - Better dexterity
  - Better mood
  - Less falling

What happens if my patient's meds are late?

- May not be able to walk
- May be excessively slow
- May not be able to feed or dress self
- May have more frequent falls
- May not be able to arise from chairs or from the toilet
- May have excessive hand shaking
- May seem sad and agitated
- May be in substantial pain
- May be depressed/anxious/agitated

ALL OF THIS EQUALS SUBSTANTIALLY MORE WORK FOR NURSING STAFF



Meds to avoid with PD

- Nausea meds
  - For PD induced nausea, only supplemental carbidopa or domperidone
  - For general nausea, only ondansetron
    - No compazine, Reglan, metoclopramide, Tigan
  - All others can severely worsen PD motor symptoms
  - Other nausea meds besides these are an ABSOLUTE contraindication in PD
  - Other nausea meds are potent dopamine depleters

Meds to avoid cont

- Pain meds
  - Prescription pain medicines may be necessary for severe pain or after surgery
  - They may worsen cognition, cause hallucinations/deulusions, worsen balance, blood pressure control and constipation
  - Use Tylenol, Ibuprofen or Aleve when possible
  - Muscle relaxers are safer than prescription pain meds

Meds to avoid cont

- Meds for hallucinations/delusions
  - Only quetiapine, Nuplazid or clozapine may be used
    - Clozapine is by far the best but requires frequent blood draws
    - All carry increased risk of death
  - All other neuroleptic drugs are potent dopamine blockers
  - They are absolutely contraindicated in PD except in severe cases of schizophrenia
  - No Haldol, Risperdal, Zyprexa, Abililfy, etc

Meds to avoid cont

- Meds for anxiety/depression/agitation
  - Benzodiazepines should be avoided when possible. They worsen confusion and balance and are habit forming
    - Benzos are sometimes necessary in panic disorder or used for REM sleep behavior disorder
  - Adjunctive medicines for depression or anxiety: You can really only use quetiapine or clozapine adjunctively but No Haldol, Risperdal, Zyprexa, Abililfy, etc
  - When possible, no -ZAM drugs (no alprazolam, lorazepam, clonazepam, etc)


It's a PRIVILEGE to
CARE for the sick.
It is an HONOR to be present
when humans are BROUGHT
into this LIFE and when
they LEAVE

End stage PD

- No two people are the same
- Increased trouble swallowing
- More rapid weight loss
- Complete dependence for ADLs
- More severe rigidity
- Inability to walk
- More withdrawn, confused, psychotic
- Possibly increased pain
- Loss of bowel or bladder control
- May stop eating, drinking,communicating
- Do not be afraid to call in Hospice, especially if patient has pain

Frequently Asked Questions

- My patient can walk sometimes and other times cannot. Why? Is he/she faking?
- Is it really that big of a deal to give meds late?
- Can my patient get PT if they have substantial balance problems?
- My patient is agitated and combative. What should I do?
- My patient is having more dyskinesia? Does he/she need more PD medicine? Or is he/she overdosed?
- My patient is confused. Will more PD meds help?

General tips

- Remember not every single symptom is because of PD
- Remember not every single symptom requires a trip to the ER
  - ERs tend to be dangerous for people with PD, especially if patient also has dementia
- If falling or changes in cognition, always check sitting and standing BPs and UA first
- Your patient is going to be slow—its ok
- Proper mental health, physical, emotional, recreational and cognitive care and support is needed