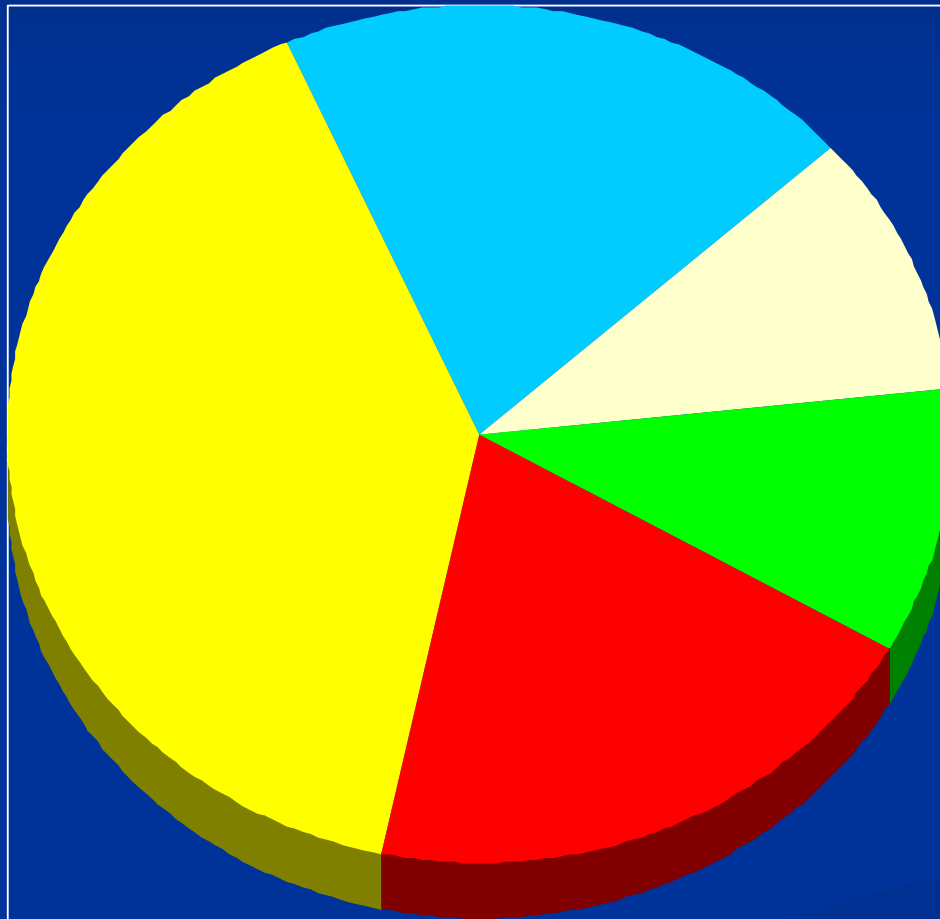


# The Neuropsychology of Parkinson's Disease

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# The Comprehensive PNMG Assessment



- Neuropsychological
- Neurological
- Neuroimaging
- Lab/Blood/Genetic
- Other

# Neuropsychological Evaluation

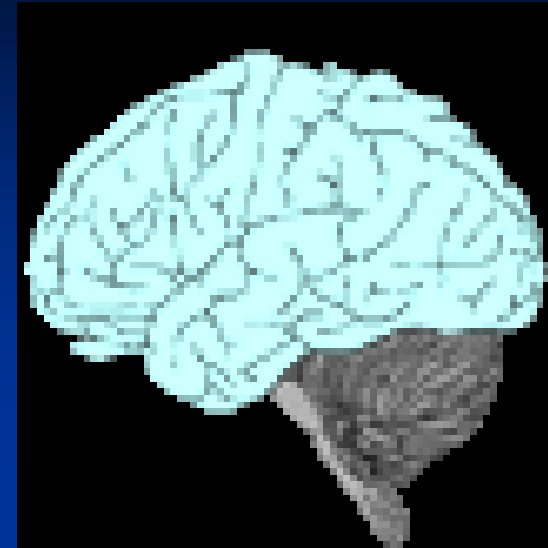
- Examines the relationship between the brain and mental life (cognition, emotions, personality, behavior).
- Determine cognitive strengths & weaknesses by comparing patient's performance to that of the "average" peer.
- Assists neurologist in diagnosis and treatment planning.
- Track change over time.

Normal Cognition

Age-associated  
cognitive deficits

Mild Cognitive  
Impairment

Dementia



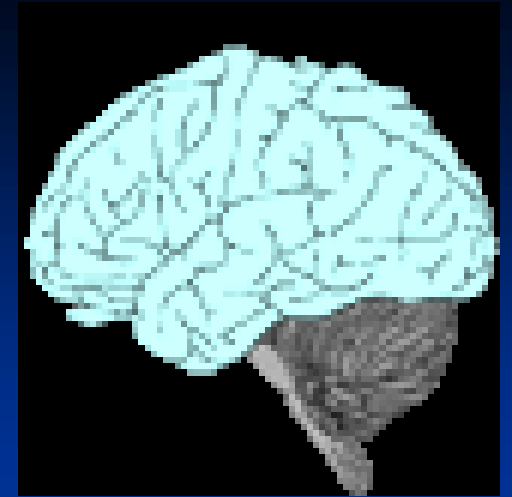
Normal Cognition

Age-associated  
cognitive deficits

- Slowing of processing speed
- Decreased Learning and Memory

Mild Cognitive  
Impairment

Dementia



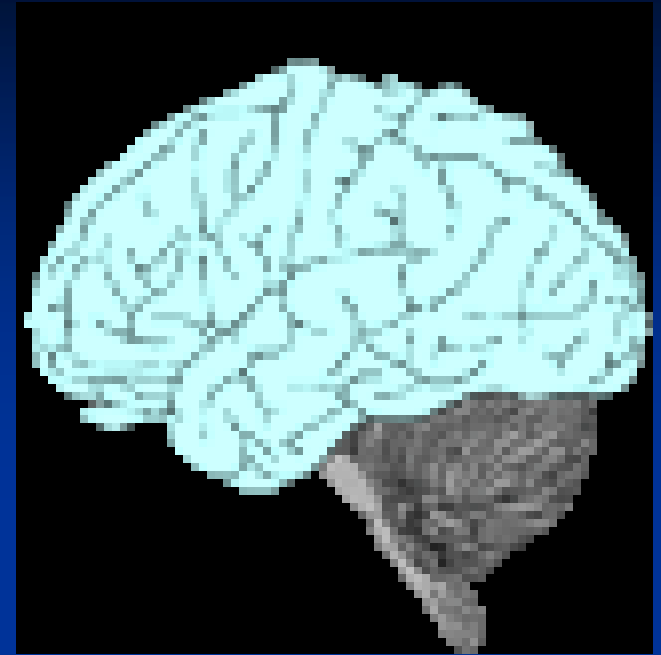
Normal Cognition

Age-associated  
cognitive deficits

Mild Cognitive  
Impairment

Dementia

- More severe neuropsychological deficits
- Mild difficulty with day-to-day functioning



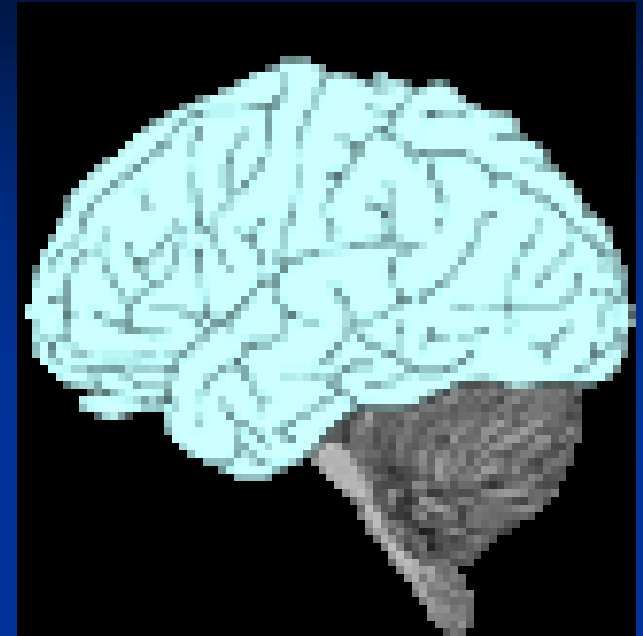
Normal Cognition

Age-associated  
cognitive deficits

Mild Cognitive  
Impairment

Dementia

- Impairments in multiple cognitive domains
- More serious functional difficulties
- Not due to delirium or depression



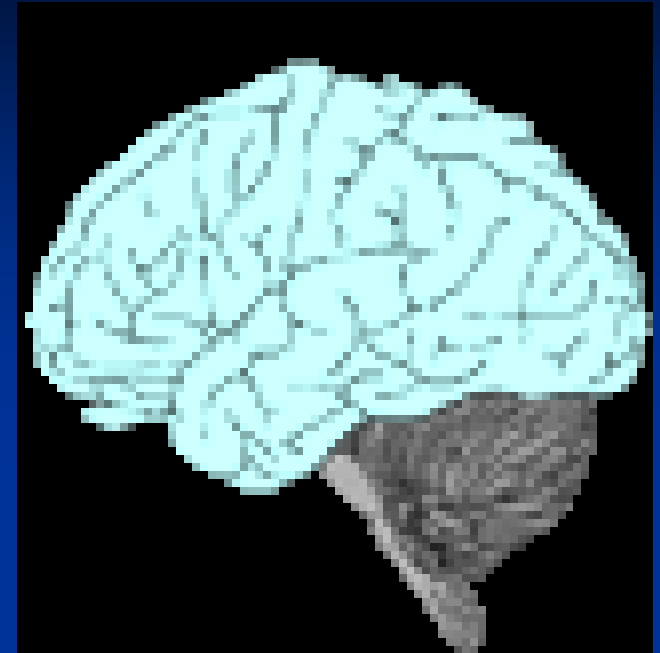
Normal Cognition

Age-associated  
cognitive deficits

Mild Cognitive  
Impairment

Dementia

- Alzheimer's Disease
- Parkinson's Disease
- Metabolic, Alcoholism, Strokes



# What Happens During the Evaluation?

- Neuropsychological Tests
  - Non-invasive
  - Paper & pencil tests
  - Computerized tests
  - Normative data
- Assess multiple “domains”
  - Attention/Concentration
  - Learning & Memory
  - Visuospatial



# How We Assess These Changes

- First-person Account
  - Cognition
  - Mood
  - ADL Functioning
- Collateral Information
- Observation of Behavior



# Cognitive Impairment and PD

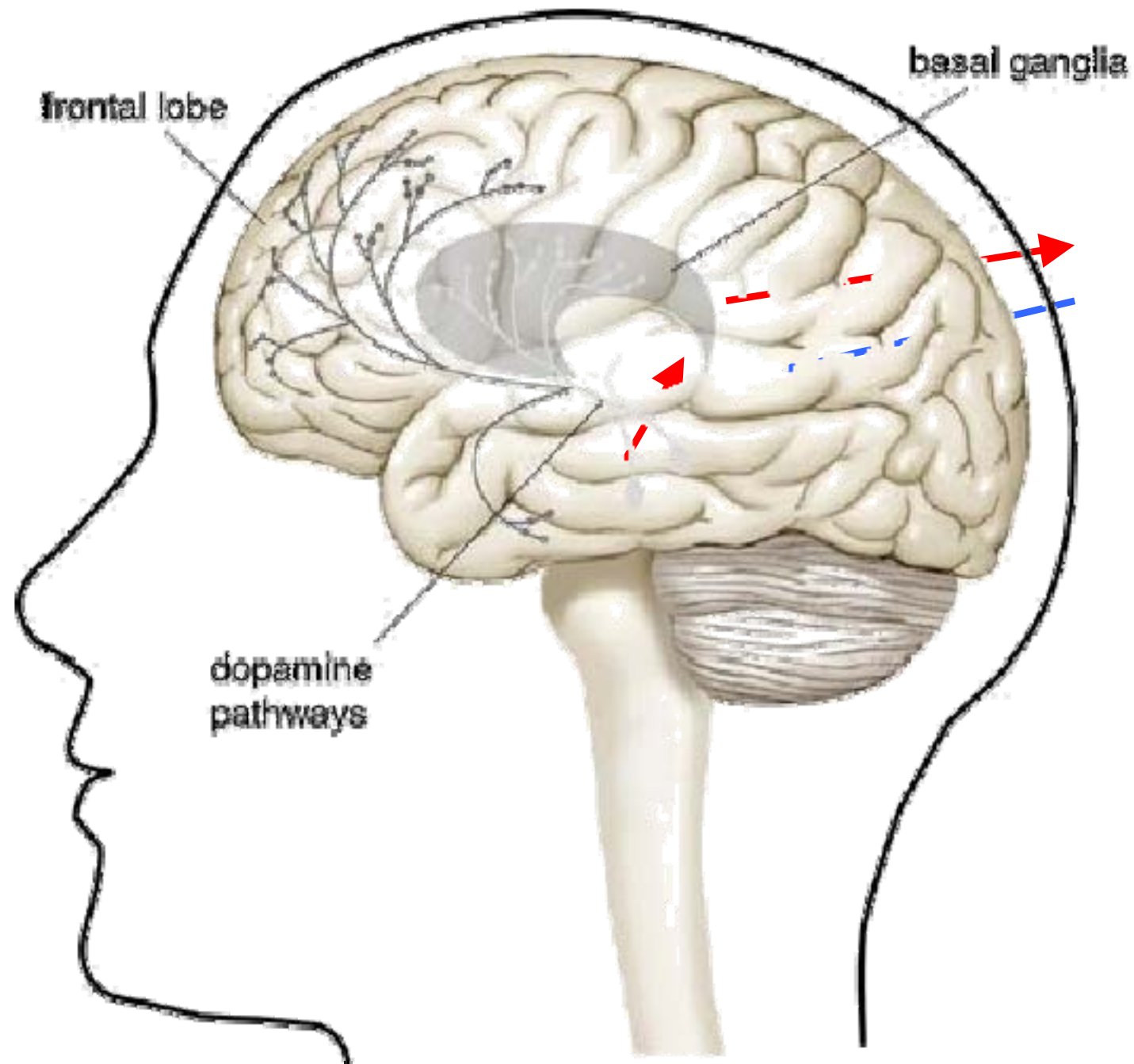
- Cognitive impairment believed to affect about **40%** of those with PD.
- In studies that follow those with PD, prevalence of cognitive disorders after 4-years is about 50%. After 8 years almost 80% of study participants have problems.
- **Numerous Risk Factors:** older age, later age of PD onset, longer duration of PD symptoms, presence of hallucinations, and mixed tremor/akinetic pattern of PD.

# How Parkinson's Disease Changes the Brain

## ■ Neuroanatomically

### ■ Fronto-striatal Circuits

- Substantia Nigra – Dopamine-producing neurons
- Basal Ganglia – Involved in motor functioning
- Frontal lobes – Involved in cognitive functioning (planning, working memory, language, attention)



# Cognitive Changes in PD

- Greatest area of deficit is executive functioning (e.g., dealing and adapting with novel situations).
- Other Common Areas of Difficulty
  - Attention & Concentration
  - Visuospatial Functioning
  - Learning & Memory
  - Cognitive Fluency
  - Word-Finding
  - Mood

# Psychological Changes and PD

## ■ Depression

- 4-90% affected (average 40%)
- Motor symptoms may be mistaken as depression
- Dopamine replacement does not relieve, and may exacerbate.
- Responds well to antidepressant medication

## ■ Apathy

- Indifference
- 15-42% prevalence rate
- Less common than depression

# Psychological Changes and PD

- Emotional Processing
  - Difficulties with emotional expression
  - Possible difficulties with emotional perception
  - No difficulties with experiencing of emotions
- Hallucinations
  - Usually visual in nature
  - May be the result of over-medication
  - Sometimes indicative of alternative diagnosis

# What You Can Do

## ■ Organization

- External devices to help manage day-to-day affairs (e.g., scheduling, reminders, To do lists)
- Keep things simple, don't attempt to multi-task

## ■ Mnemonics

- Putting material in a meaningful format
- Multimodal learning
- Spaced Retrieval

## ■ Medications

- Listen to your doctor
- Report side effects
- Caregivers: Note changes in behavior and cognition

# Thank You!

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