Outline

What is the Role of Neuropsychology
Purpose of Neuropsychological Assessments
Common Neuropsychological Disorders
Assessment
Mood Disorders
Case Study
Role of Neuropsychology

Inpatient and outpatient services

Focus of intervention tends to be in 3 areas
- Cognition
- Emotion
- Behavior
What are we assessing and treating?

- Measure cognitive functioning in order to identify neuroanatomical structures and functions that have been affected by insults to the brain.

- Use known pathology of neurological disorders as a framework to identify which cognitive, affective and behavioral domains have been affected.
Why do we assess?

- Obtain a broader picture of the person’s cognitive, behavioral and emotional strengths and weaknesses

- Which deficits are caused by the CVA
  - premorbid factors
  - psychological issues

- Address issues related to return to premorbid functioning
### Simplified Brain Behavior Relationships

#### Frontal Lobe
- Initiation
- Problem solving
- Judgment
- Eye movement
- Planning
- Inhibition of behavior
- Planning/anticipation
- Self-monitoring
- Motor planning
- Personality/emotions
- Awareness of abilities/limitations
- Organization
- Attention/concentration
- Mental flexibility
- Speaking (expressive language)

#### Temporal Lobe
- Memory
- Hearing
- Understanding language (receptive language)
- Organization and sequencing
- Object perception
- Motion perception

#### Parietal Lobe
- Sense of touch
- Differentiation: size, shape, color
- Spatial perception
- Visual perception
- Sense of taste and smell
- Visuospatial map
- Visual attention

#### Occipital Lobe
- Vision
- Visual Perception
- Recognition of
- Printed Word
- Shape
- Contrast

#### Cerebellum
- Balance
- Coordination
- Skilled motor Activity
- Eye movement

#### Brain Stem
- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration
Common Disorders

- Speech Disorders
  - Aphasia’s – common consequence of left hemispheric lesions
  - 1/3 of CVA patients experience some type of aphasia

- Cognitive Dysfunction

- Unilateral Neglect
  - Inattention to half the universe

- Delirium
  - Acute confusional state
  - Abrupt onset/short duration

- Post Stroke Depression/Anxiety
Assessment

- Reading the chart
  1. Obtain and clarify if needed, the referral question
  2. Read the H&P, specialist’s consultation reports
  3. CT/MRI/EEG
  4. Most recent progress notes looking for any recent changes in mental status, improvement or decline in functional status
Neuropsychological Assessment

- Orientation
- Intellectual Functioning
- Attention & Concentration
- Language (receptive and expressive)
- Comprehension
- New Learning
- Memory
- Spatial Abilities
- Processing Speed/Reaction Time
Potential Issues to be addressed

Next Steps
- Inpatient Rehabilitation
- Outpatient Services

Safety
- Can this person be left alone
- Can this person drive
Beyond the basics….

**Independence**
- Can this person live alone?
- Can this person manage their medications?
- Can they manage their finances?
- What supports need to be provided to maximize independent living/provide the least restrictive environment?

**Employment**
- Can this person work in their previous capacity?
- Can this person work at all?
- In what type of job would this person be most successful?
- What accommodations can be made to maximize success?
Estimated Premorbid Level of Intellectual Functioning

- Is current level of intellectual functioning consistent with estimated premorbid level or is there evidence of decline?

- For individuals with CVA’s, tend to see focal deficits rather than global decline
Verbal Abilities

- Aphasia assessments
- Comprehension or speech production difficulties
- Verbal abilities/verbal reasoning
- Assesses general left-hemisphere functioning
Nonverbal Abilities

- Assess visual-constructional abilities
- Nonverbal reasoning
- Visual sequencing
- General right-hemisphere functioning
How quickly individuals can process visual information

Usually affected by any brain damage
Executive Functions

- Planning
- Problem-solving
- Inhibition
- Initiation/generation
- Self-monitoring
- Cognitive flexibility
Executive Functions

- Primarily in the prefrontal cortex but also influenced by connections in other areas
  - Association cortex of parietal, occipital & temporal lobes
  - Limbic cortex
  - Subcortical structures such as amygdala, basal ganglia, thalamus and cerebellum
Attention/Working Memory

- Attention span, divided attention (efficiency) & sustain attention
- Dorsolateral prefrontal cortex
- Basal ganglia
- Frontal and parietal lobe lesions
Learning & Memory

- Verbal and visual semantic memory
- Learning new information
- Immediate and delayed recall of information
- Recognition of information
Post CVA Psychiatric Disorders

- Depression 35%
- Anxiety 25%
- Apathy 20%
- Pathologic Affect (PBA) 28%
- Catastrophic Reaction 20%
- Psychosis is rare
- Mania is rare
- New onset Bipolar D/O is rare

- Behavioral Impact
  - Behavioral Excess
    - Too Much
  - Behavioral Deficit
    - Too Little
Multifactorial Etiology

- Localizable lesions
- Transmitter system
- Cognitive dysfunction
- Medications
- Primary Psychiatric
- Other medical issues/delirium
- Psychosocial Factors
PSD and PSA

- Impact on acute recovery
  - A depressed individual may lack motivation to push himself/herself during therapy sessions
  - An anxious person may be too fearful of ailing to attempt to walk without assistance despite assurance that he/she is ready to do so.

- Treatment
  - Combinations of approaches typically has better outcome
    - Counseling
    - Pharmacology
    - Family Intervention
Case Study

- 59 Year old female with CVA in 2016
- Recovery was complicated by obstructive hydrocephalus
- Followed during inpatient rehab
- Seen for initial and repeat NP assessment
- Followed for psychotherapy for adjustment to CVA and lifestyle changes
- Worked full-time as a coordinator at the IU.
Case Study

- **Intellectual Resources**
  - Largely intact

- **Language**
  - Conversational speech notable for occasional word-finding deficits
  - Confrontational naming is now in the low average range

- **Executive Functioning**
  - Initially moderately impaired but on repeat testing she improved to the low average range
Case Study

- **Memory**

- Performance on logical memory measures reveal immediate recall at the 5\(^{th}\) percentile with delayed recall at the 2\(^{nd}\) percentile

- Logical Memory-I is at the 5\(^{th}\) percentile, Logical Memory-II is below the 1\(^{st}\) percentile

- Verbal List learning is at the 4\(^{th}\) percentile following a 20 minute delay

- Visual Reproduction-I was at the 63\(^{rd}\) percentile and drops to the 9\(^{th}\) percentile after a 20 minute delay
Case Study
Visuospatial skills

- Visual perception of spatial relationships
Start by doing what is necessary;

Then do what is possible;

and suddenly you are doing the impossible

St Francis of Assisi