Understanding Dementia

From the Inside Out

What we will cover

- Brain development & Brain Aging
- How Dementia Impacts the Brain
- How the Dementia Brain Impacts Behavior
- Dementia Behavior & Stress
- The Problem with Drug Solutions
- The Use of Behavioral Interventions Instead

Human Brain Events

- **Progressive events**
  - Neurogenesis
  - Axon guidance
  - Synapse Formation
  - Neurotransmitter receptor development

- **Regressive Events**
  - Normal Programmed cell death (apoptosis)
  - Axon Pruning
  - Synapse Elimination

- **Brain events:**
  - Take place throughout life
  - More dependent on experience than genetics
  - Function based on “Use it or lose it” basis

Normal Memory Problems

ENCODING → STORAGE → RETRIEVAL

Normal Brain

*Images are SPECT scans showing blood flow through the brain, which can help identify types of dementia.

Source: Alzheimer's Association & Alzheimer's Society
Dementia Memory Problems

Comparing Normal/Dementia

Marked by Slow Changes
Understanding the Change

Dementia is Progressive Neural Loss

Frontal Cortex
- Pre-frontal Lobe
  Inhibition & Attention
- Frontal Lobe
  Conscious Executive

Medial Temporal
- Hippocampus
  Conscious Memory
- Amygdala
  Emotional Memory

Refer to Handout
Dementia Basics

Pre-Frontal Loss
Decreased go and no go, frontal monitoring, attention, executive functions, repetitive behavior, self-neglect, reduced activity, lack of guilt, insight, apathy, blunted personality.

Medial Temporal Loss
Detection of familiar faces, place, loss of episodic memory.

Frontal Lobe Loss
Future consequences of current activity, working toward a defined goal, prediction of outcome, expectation of actions, social control.

Reduced activity, e.g., spontaneous activity, lack of drive, can’t plan ahead, no concern.
Restless, aimless, uncoordinated behavior.
Disturbed affect, apathy, blunted personality.
Indifference to the world around him.

File clerk for conscious memory
Some loss of episodic memory (flasbulb)
Loss of declarative memory.
Less short to long term memory transfer.
Less control of spatial memory & behavior.
Understanding Dementia
From the Inside Out

Seminar Goals
• By the end of this Seminar you should:
  • Understand the effects of Aging & Dementia on Resident Behavior
  • Be able to Recognize the Triggers of Resident Behaviors
  • Be familiar with Methods of Managing Behavioral Concerns or Residents

What we will cover
• Brain development & Brain Aging
• How Dementia Impacts the Brain
• How the Dementia Brain Impacts Behavior
• Dementia Behavior & Stress
• The Problem with Drug Solutions
• The Use of Behavioral Interventions Instead
Human Brain Events

**Progressive events**
- Neurogenesis
- Axon guidance
- Synapse Formation
- Neurotransmitter receptor development

**Regressive Events**
- Normal Programmed cell death (apoptosis)
- Axon Pruning
- Synapse Elimination

**Brain events:**
- Take place throughout life
- More dependent on experience than genetics
- Function based on "Use it or lose it" basis


Normal Memory Problems

ENCODING → STORAGE → RETRIEVAL

Peter V. Rabins, M.D., M.P.H.; The 2011 Johns Hopkins Memory White Paper
Mild Cognitive Impairment (MCI) and Dementia

- Marked by Slow Changes

Understanding the Change

Long Term Potentiation

<table>
<thead>
<tr>
<th>Left Brain</th>
<th>Right Brain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefrontal Cortex</td>
<td>Prefrontal Cortex</td>
</tr>
<tr>
<td>Dendrites</td>
<td>Dendrites</td>
</tr>
<tr>
<td>Axon</td>
<td>Axon</td>
</tr>
</tbody>
</table>

13.7% of 60-64 year olds have MCI.
Dementia is Progressive Neural Loss

**Frontal Cortex**
- Pre-frontal Lobe
  - Inhibition & Attention
- Frontal Lobe
  - Conscious Executive

**Medial Temporal**
- Hippocampus
  - Conscious Memory
- Amygdala
  - Emotional Memory

Refer to Handout

Dementia Staging

- The 4 stage Model
  - No dementia
  - Mild Dementia
  - Moderate Dementia
  - Severe Dementia
- The 7 Stage Model
  - No Cognitive Decline
  - Very Mild Cognitive Decline
  - Mild Cognitive Decline
  - Moderate Cognitive Decline
  - Moderately Severe Cognitive Decline
  - Severe Cognitive Decline
  - Very Severe Cognitive Decline

Refer to Handout

Brain/Function Losses

**Pre-Frontal Loss**
- Sensory gating & inhibition
- Differentiation among inputs
- Varying level of internal
  - Different environments
- Varying level of internal
  - Varying level of internal
- Varying level of internal

**Medial Temporal Loss**
- Loss of declarative memory
  - Loss of episodic memory
  - Loss of declarative memory
  - Loss of declarative memory

**Frontal Lobe Loss**
- Reduced activity
  - Lack of drive
  - Lack of social control

Refer to Handout
Different Causes of Dementia

- Mild Cognitive Dementia
- Alzheimer’s disease
- Vascular dementia
- Depression Dementia
- Lewy Body Dementia
- Parkinsonian Dementia
- Frontal Temporal Lobe Dementia

Refer to Handout
Resident Behaviors in Dementia

- **Apathy**: withdrawn, lack of interest, amotivation
- **Depression**: sad, tearful, hopeless, low self-esteem, anxiety, guilt
- **Aggression**: aggressive resistance, physical aggression, verbal aggression
- **Agitation**: walking aimlessly, pacing, trailing, restlessness, repetitive actions, dressing/undressing, sleep disturbance
- **Psychosis**: hallucinations, delusions, misidentifications
Resident Behaviors
Progressively Lowered Stress Syndrome

STEAM Triggers Behavior

- Sensory
  - Too much, too little or conflicting stimulation
  - Taste, touch, smell, hear, see, movement
- Tangible
  - Needing water, food, doll
  - Defending territory
- Escape
  - Avoiding tasks/demands/places/people
  - Retaining isolation
- Attention
  - Who will take care of me
  - Establish recognition or dominance
- Medical
  - Pain, Drug Intoxication, Infection etc.

Drug Intoxication
Low Efficacy, High Cost, Drug Reactions

- OBRA limited SNF psycho-drug use
  - Use Behavioral Interventions 1st
  - Never use on most behaviors e.g. wandering
- Up to 70% of SNF Residents take them
  - 23.4% had no appropriate indications
  - 17.2% doses exceeding recommendations
  - 17.6% had both
  - They are perceived to make things easier

References:
Briesacher, B; et al.; The Quality of Antipsychotic Drug Prescribing in Nursing Homes; Arch Intern Med. 2005;165:1280-1285
Anatomy of a Behavior Problem

Unmet Needs
- Sensory Need
- Tangible Need
- Escape
- Attention Seeking
- Medical

Warning Signs
- Verbal Outburst
- Verbal Threatening
- Increased Activity
- Agitation
- Depression
- Unpredictable

Strategies
- Attention
- Ignoring
- Distraction
- Physical
- Behavioral
- Family
- Respite
- Non-Punishment
- Medication

Behaviors
- Delusions
- Hallucinations
- Physical
- Verbal
- Aggression
- Abusive
- Aggressive
- Non-Compliance
- Replacement

Strategies
- Physical
- Verbal
- Family
- Isolation
- Staff
- One on One
- Calming
- ABA

Reduce Pain

- Most Residents have Arthritis
  - ADLs & Exercise cause Pain Stress
- Residents have Digestive Problems & Hidden injuries
- Residents can have Psychosomatic pain
- Conducting a Pain Audit

Refer to Handout
Physical Modifications

- Install equipment and assistive devices
- Remove objects causing confusion
- Rearrange objects
- Label objects
- Color contrast objects
- Place objects in sequence of use
- Declutter


Reduce Demands

Give short verbal/written instructions
- Provide verbal/tactile cueing
- Keep needed items in easy reach
- Simplify activities
- Plan a routine
- Instruct CR through demonstration

Refer to Handout for ADLs

Gitlin, et al., 2002, Strategies Used by Families to Simplify Tasks for Individuals with Alzheimer’s Disease and Related Disorders: Psychometric Analysis of the Task Management Strategy Index (TMSI). The Gerontologist

Managing ADLs

- ADLS can cause up to 80% of behavior problems in nursing home
  - Pain
  - Confusion (novelty, processing time, memory)
  - Need to escape
- Using ADL Rituals
  - Reduces novelty
  - Uses Healthy Procedural Memory

Refer to Handout