



# Brain Health

PAMELA M. DEAN, PH.D., ABPP  
BOARD CERTIFIED IN CLINICAL NEUROPSYCHOLOGY  
VA PUGET SOUND HEALTHCARE SYSTEM, SEATTLE

ACTING ASSISTANT PROFESSOR  
DEPARTMENT OF PSYCHIATRY AND BEHAVIORAL SCIENCES  
UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE

# Objectives

- ▶ Dementia
  - ▶ Defining terminologies
  - ▶ Risk Factors
  - ▶ Evaluation and Treatment
- ▶ Healthy Brain aging
  - ▶ What can we do now to support optimal brain health
- ▶ Caregiver Resources
  - ▶ Resources for providers and patients
  - ▶ Resources for the caregiver



# Normal Cognitive Aging

## Does it exist?



### What is Typical with Age

Forgetfulness: Appointments, names but remembering later, glasses, keys, TV remote, but find it typical places

Executive Functioning: Occasional bank errors

Confusion: occasionally forgetting how to work microwave, VCR, time and place: day of the week but figure it out

Visuospatial function: vision changes due to cataracts

Language: occasional word-finding

Reduced judgment: occasional poor choice

Withdraw from work/social activities:  
Occasionally feeling weary of work or new situations

Changes to mood/personality: Irritability when out of routine

### Warning Signs

Forgetfulness: appointments, names, repeating self, losing objects **(found in odd places)**, medications

Executive dysfunction: managing money, concentration

Confusion: **driving in familiar places**, time, dates

Visuospatial deficits: Trouble understanding visual images/spatial relationships, **judging distance**, reading

Language: Word-finding, lose thought process

Reduced judgment and insight

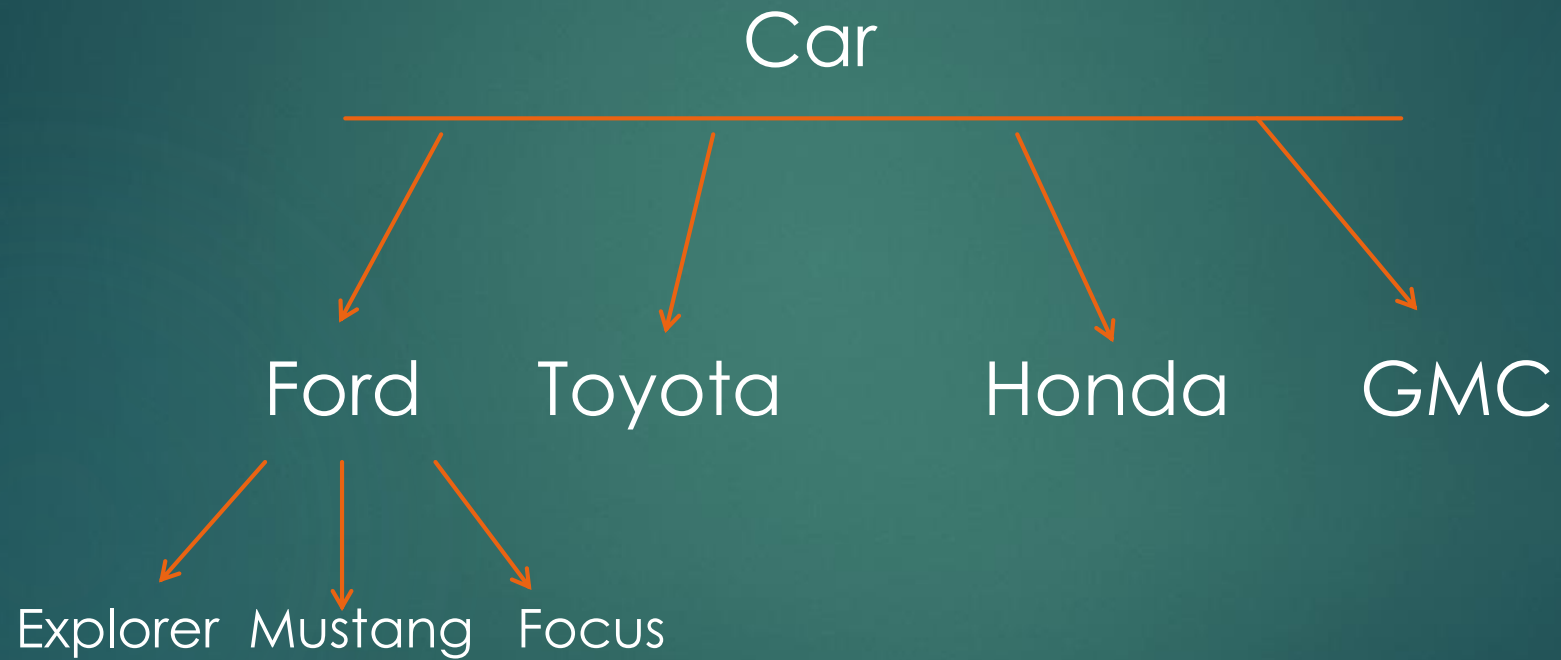
Withdraw from work/social activities

Changes to mood/personality: Suspicious, confused, depressed, anxious, fearful

# Doc, Do I have Alzheimer's Disease or Dementia?



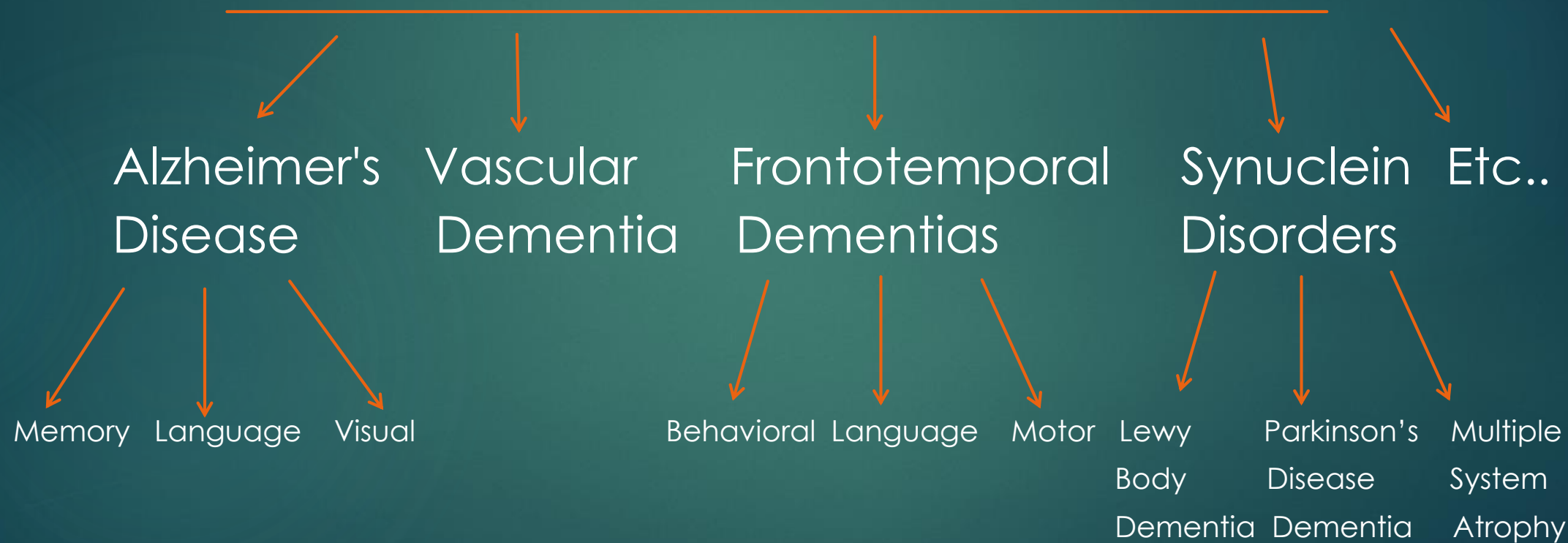
# The Dementia's: Just think of Cars



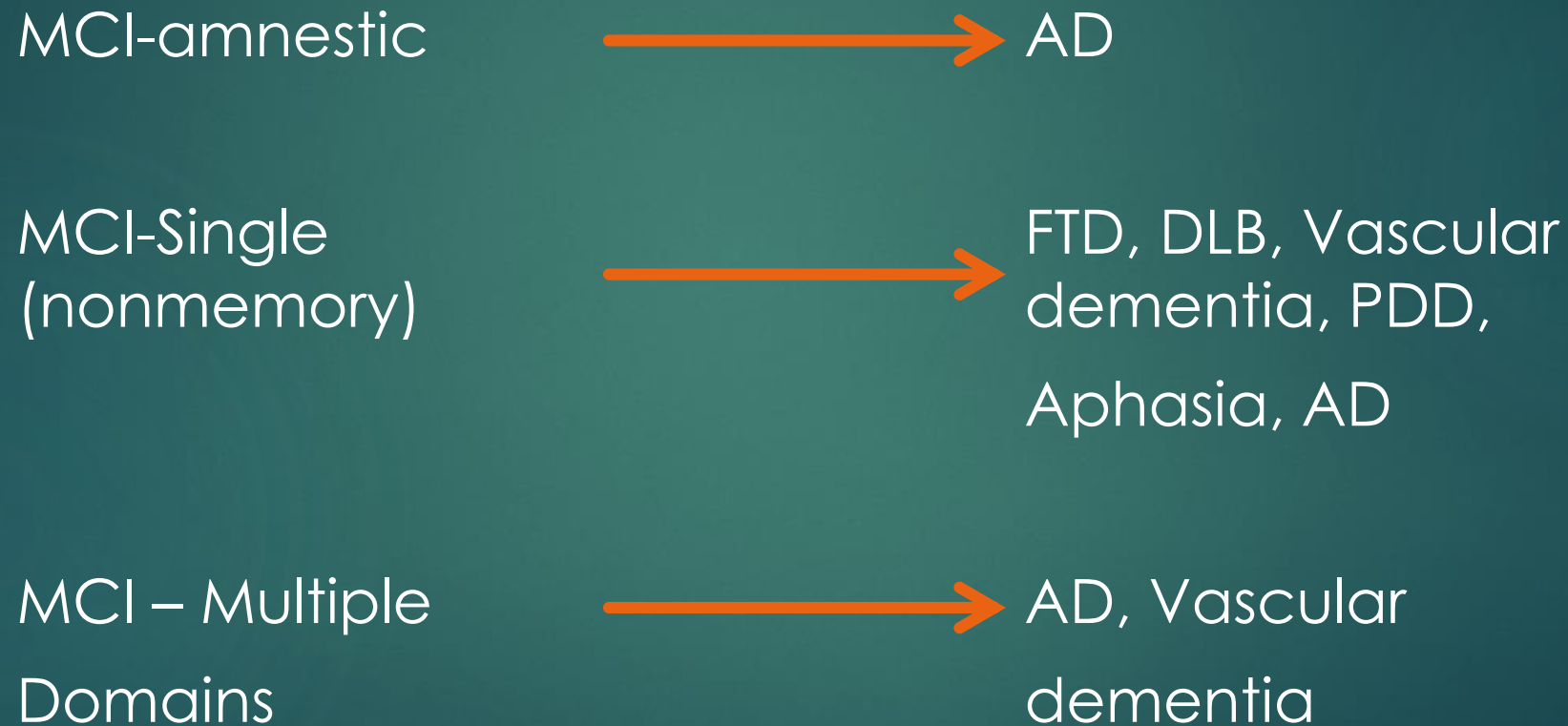


# The Dementia's Just think of a Car

Dementia

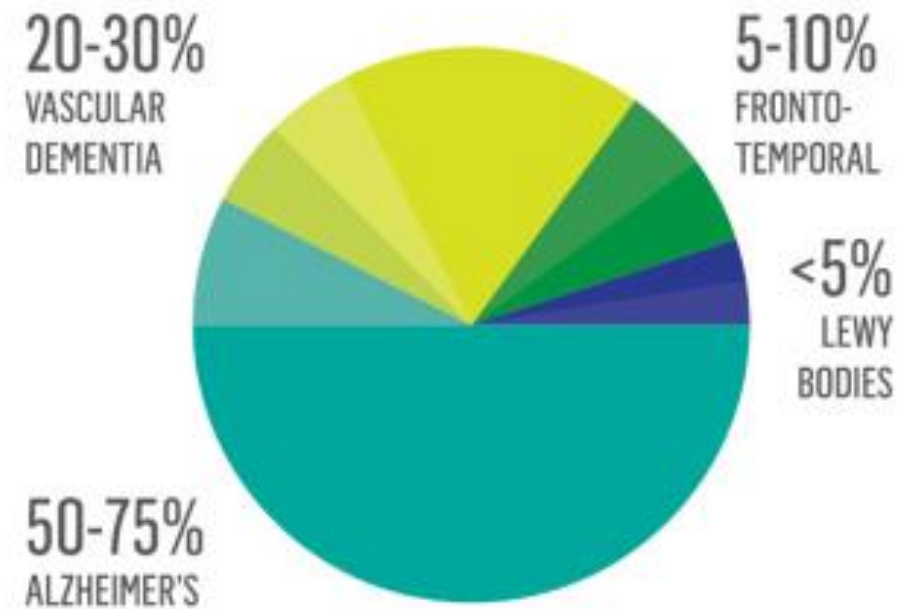


# Proposed Conversion Diagnoses for Mild Cognitive Impairment (MCI)



# Common Clinical Causes of Dementia

- ▶ Alzheimer's disease (AD)
  - ▶ Onset: 65+
  - ▶ Course: 2-15 years
- ▶ Vascular dementia
  - ▶ History of cerebrovascular disease or risk factors
- ▶ Lewy Body dementia (LBD)
  - ▶ Onset: 70's
  - ▶ Rapid progression
- ▶ Frontotemporal dementia (FTD)
  - ▶ Early Onset: 50's
  - ▶ Changes in behavior and/or language



Goodman, Lochner, Thambisetty,  
Wingo, Posner, & Ling, 2017

Note, pathological diagnostic prevalence differs



# Current Stats on AD

- ▶ 15-20% of people 65+ have Mild Cognitive Impairment
  - ▶ Memory impairment beyond normal age related decline with relatively preserved functional abilities.
- ▶ 1/3 of these individuals will develop a dementia related to Alzheimer's disease in 5 years (Alz. Association 2017 report)
- ▶ 5.5 million Americans had AD in 2016
- ▶ 454,000 Newly Dx each year
- ▶ 16% women and 11% men > 71yrs have AD
- ▶ Unless advances are made to reduce risk, projections world wide are from 26.6 million in 2006 to 107 million in 2050.

# Risk Factors

- ▶ Age
- ▶ Gender
- ▶ Family History
- ▶ Genetics
  - ▶ 3 genes related to onset < 65 years (< 5% of all cases)
  - ▶ Susceptibility Genes (APOE-e4)
    - ▶ Increases risk for onset > 65 years
- ▶ Down's Syndrome
- ▶ Lifestyle (diet, exercise, health history)

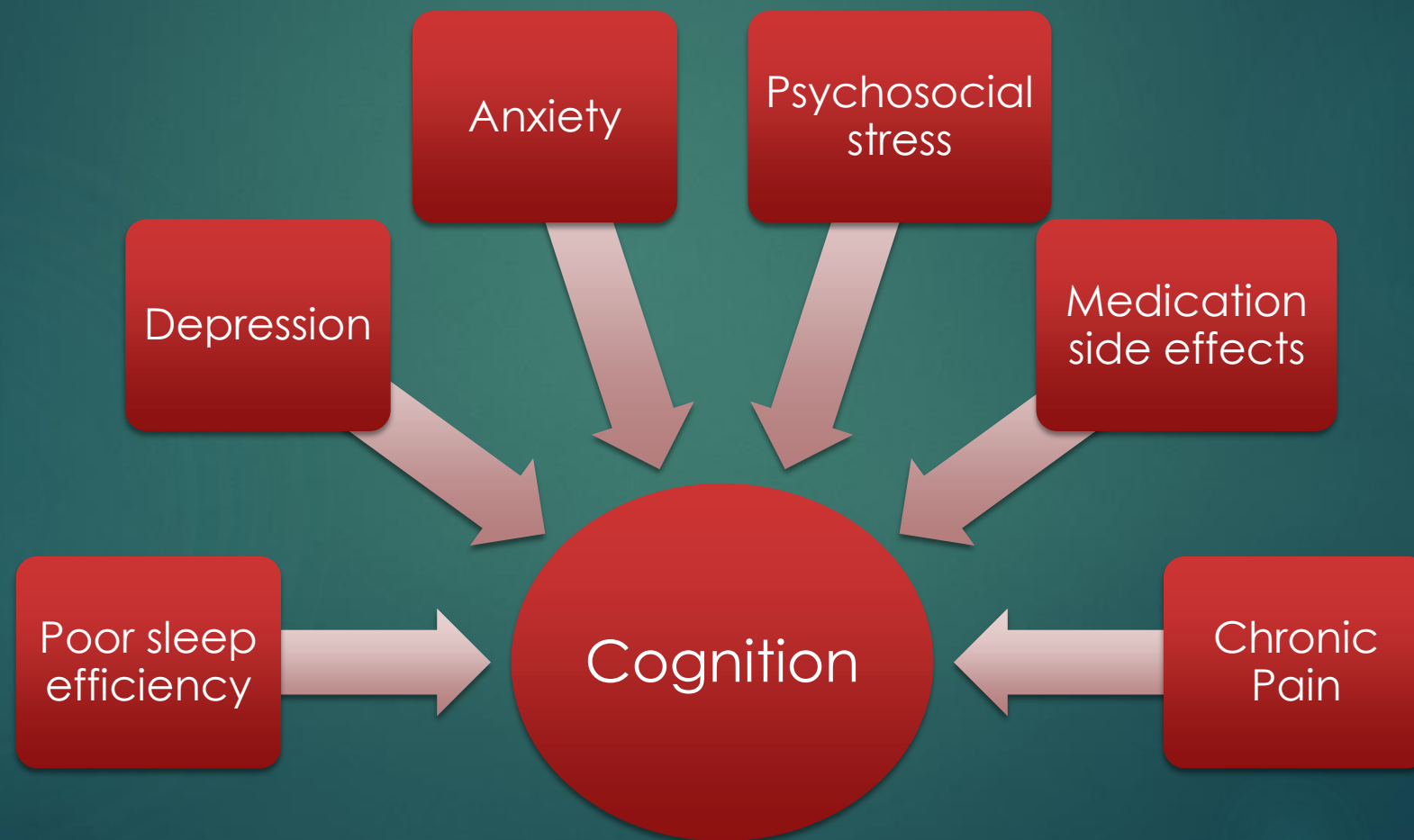
# Who Provides Care?

- ▶ 75% of people with dementia live at home
- ▶ 83% of their care is from family, friends, neighbors (unpaid caregivers)
- ▶ \$56,290 average cost for care
- ▶ Stress of caregiving is reflected in 8% higher costs for caregivers health compared to noncaregiver
- ▶ Those who don't qualify for Medicaid will pay \$81,000 per year for advanced care (ie., nursing homes)

Not All Memory Problems= MCI  
&  
Not all MCI = Dementia



# Contributions to cognitive dysfunction





# Cognitive Screening Measures

- ▶ Provides a brief overview of cognitive functioning
- ▶ Triggers inquiry into better understanding cognitive weaknesses
- ▶ Provides a baseline evaluation for tracking
- ▶ Its repeatable

- 
- ▶ Vulnerable to ceiling and floor effects
    - ▶ a normal score doesn't mean there's nothing wrong.
    - ▶ A low score  $\neq$  Dementia
  - ▶ Sensitive to educational and cultural factors
    - ▶ \*\*A word about fluency in ESL
  - ▶ Screenings do not provide information for etiology
    - ▶ Strong emphasis on memory
  - ▶ There are no embedded validity indicators



	Normal	MCI	(Dementia) Moderate	Severe
MoCA	26-30	<26		
MMSE	25-30	20-25	10-20	0-10
SLUMS	27-30	21-26	1-20	

\*SLUMS and MoCA have educational adjustments not represented here

# Neuropsychological Evaluation

- ▶ Neuropsychologist
  - ▶ Doctoral level Psychologist with 2-years of specialized postdoctoral training in the applied science of brain-behavior relationships
- ▶ Neuropsychological Evaluation
  - ▶ Specialized assessment technique used to evaluate brain functioning and measure behavior
- ▶ Differentiation:
  - ▶ normal aging, clinical correlates based on known brain pathology, additional contributions
- ▶ Describe performance:
  - ▶ strengths/weaknesses
- ▶ Etiology:
  - ▶ Neurological vs non-neurological
- ▶ Tracking progression
- ▶ Recommendations to patient and family, providers future care planning



# Neuropsychological Evaluation

- ▶ Record Review
  - ▶ Labs
  - ▶ Imaging
  - ▶ Clinical History and pertinent specialties
  - ▶ Current meds
- ▶ Clinical Interview
  - ▶ Onset and course
  - ▶ Concerns
  - ▶ ADLs
  - ▶ MH functioning/stressors
  - ▶ Developmental History
  - ▶ Social History
  - ▶ Substance Use/Abuse
- ▶ Data Collection via Neuropsychological measures
- ▶ Integration

\*\*What Fits and What Doesn't Fit

# Neuropsychological Assessment

## Cognitive Evaluation

- Intellectual Ability
- Premorbid Level of Functioning
- Academic Skills
- Executive Functions
  - Planning, problem solving, cognitive efficiency
- Attention
  - Simple and complex
- Memory
  - Learning, retention, recall, recognition
- Language
- Visual Spatial functions
- Fine Motor Coordination

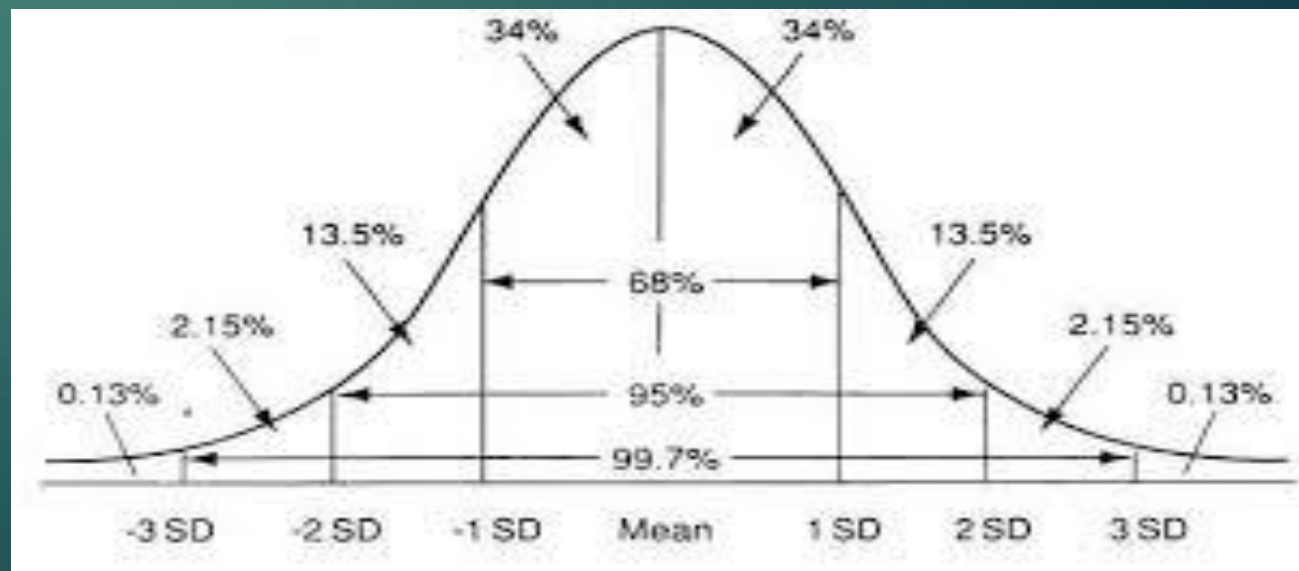
## Non-Cognitive Evaluation

- Alertness
- Demeanor
- Thought process
- Impulsivity
- Motor speech
- Motor abnormalities
- Ocular abnormalities
- Language Output/Comprehension
- Mood/Affect
- Personality
- Effort/motivation
- Frustration tolerance

# Putting the Puzzle Together

- ▶ Setting the bar
  - ▶ Hold measures – measures that resistant to most conditions that impact the brain
  - ▶ Demographic factors
- ▶ How do we assess for impairment?

Premorbid Ability





# Limitation

- ▶ Can't differentiate profiles when people are actively using substances, benzos, or opioids
- ▶ Other significant or acute mental health factors also make differentiation limited

# When to Refer for a Neuropsychological Evaluation

- ▶ NP evaluation is part of the standard of care particularly for early identification
- ▶ Patient's who score under normative cut offs on screening measures and/or have histories suggesting decline
  - ▶ Keep in mind base rates!
    - ▶ < 65 AD is rare (<5%)
    - ▶ <65 behavior, language, or motor problems are more likely to reflect FTLD (memory is not likely to be the primary complaint)
    - ▶ >65 AD is the most common form of dementia followed by Lewy Body and Vascular.
- ▶ Confirmation of presentation and assist in treatment planning
  - ▶ Not just diagnostic, but behavioral recommendations and supports for providers and family
- ▶ Validity concerns

# Common Pharmacological Treatments for Dementia

## Cholinesterase inhibitors

- Donepezil (Aricept)
- Galantamine (Razadyne)
- Rivastigmine (Exelon)

## Glutamate Antagonists

- Memantine (Namenda)

## Behavior Management

- Mood Medications and Antipsychotics

## Non-pharmacological

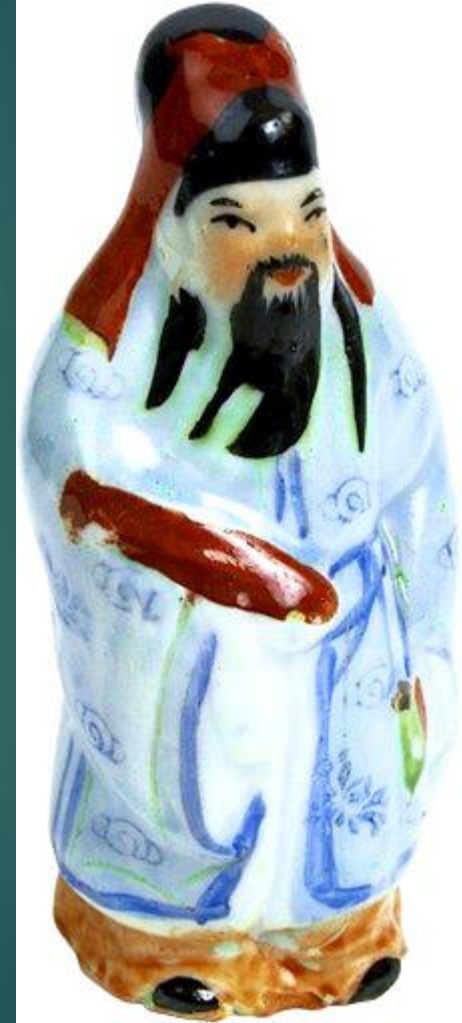
- Manage depression, mania, and agitation
- Compensatory strategies: calendars, alert reminders, daily routines

**Tell me** something and  
I'll forget it

**Show me** something  
and maybe I'll  
remember it

**Involve me** and I will  
remember it

~ Confucius



# Non-pharmacological Interventions

- ▶ External memory aids
  - ▶ External reminders
    - ▶ Calendar in a visible location
    - ▶ Message board
    - ▶ Alarms for medication reminders
  - ▶ Visual cues for navigation
    - ▶ Ex: labels on cupboards, drawers, closets
- ▶ Use daily routines and minimize change
- ▶ Pill boxes
- ▶ Focused memory training (i.e., calendar training)
  - ▶ not demonstrated effective transfer to ADL's but can improve mood and quality of life.



# Keeping Your Brain Healthy

1. Managing Health
2. Physical Activity
3. Mental Activity
4. Social Activity

## Keeping the brain at its best



Image from LSU Center on Aging

- ✓ Psychological Conditions
- ✓ Medical Conditions
- ✓ Avoid medications with Negative Effects on Memory

- Pain Medications
- Anxiety Medications
- Sleep Medications
- Anti-cholinergics

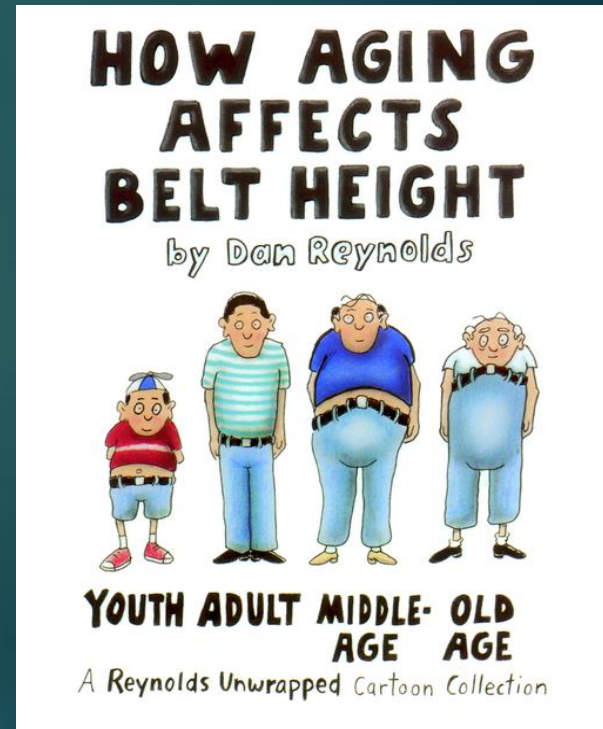
# Modifiable Risk Factors Associated with Cognitive Changes

## Medical Conditions

- ▶ High Blood Pressure
- ▶ High Cholesterol
- ▶ Sleep Apnea
- ▶ Diabetes Mellitus Type 2
- ▶ Weight
- ▶ Sensory Changes

## Behavioral Factors

- ▶ Poor Nutrition/Diet
- ▶ Tobacco
- ▶ Alcohol/Substance use
- ▶ Lack of Exercise
- ▶ Stress
- ▶ Inefficient Sleep
- ▶ Depression



# Physical Activity

- ▶ Research shows that aerobic exercise improves physical and mental functioning.
- ▶ Brain imaging studies have shown improvements in cardiovascular fitness were associated with increased functioning in certain brain regions.
  - ▶ Walkers showed improved attention and focus
- ▶ A study of nearly 6000 healthy women, 65+ years old over 8 years, found that women who were more physically active were less likely to experience a decline in their mental functioning.

# Physical Activity for Every Ability Level

- ▶ Walk

- ▶ Sidewalks
- ▶ School track
- ▶ Shopping mall
- ▶ Silver Sneakers

- ▶ Swim

- ▶ Bike

- ▶ Street
- ▶ Stationary
- ▶ Recumbent



- ▶ Tai Chi

- ▶ Yoga

- ▶ Chair/Gentle Yoga

- ▶ Low-impact Aerobics/exercise

- ▶ Pilates

- ▶ Mat
- ▶ Reformer

- ▶ Weight lifting

- ▶ Water aerobics

- ▶ Stretching

- ▶ Armchair exercises

- ▶ Jog/run

- ▶ Row

- ▶ Arm bike

- ▶ Youtube workouts





# Mental Activity



- ▶ Companies are marketing software to *improve brain performance, enhance memory and attention, and live a better life.*
- ▶ Fernandez & Goldeberg (2009) looked at 4 products (Posit Science, Brain Fitness and Insight; Cognifit; and Applied Cognitive Engineering, Intelligym) and found low to moderate validation. Cost ranges from \$99-395
- ▶ Other studies have found some benefits with lasting effects at 3-month follow ups (Smith et al., 2009; Zelinski et al., 2011)
- ▶ Research is inconclusive, but there are still many other benefits to keeping your brain active and engaged





# Social Activity

- ▶ Research has suggested a relationship between social engagement and cognition
- ▶ Socializing with friends and acquaintances and participating in social activities is associated with reduced cognitive decline





# Caregivers

# Caregiver Responsibilities

## Early Stage

Reminding about appointments

Remembering words, names, places

Managing money

Managing, administering medications

Planning or organizing

## Middle Stage

Adapting daily routines

Providing structure

Developing and using coping techniques

Providing additional care

## Late Stage

Preserving quality of life and dignity

Soothing, comforting

Providing full care

# Caregiver Burden with Associated Patient Functional Decline

Cognitive  
Functioning  
Declines → Functional  
Abilities  
Declines → Dependence on  
Caregivers  
Increases

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(Patient & Caregivers)

Emotional  
Distress  
Increases

Physical  
Health  
Declines

Economic  
Burden  
Increases



# Self Care

Support  
groups

Respite  
care

Mental  
health  
support

Relaxation/  
meditation/  
self-calming

Healthy diet

Exercise

Injury  
prevention

Adequate  
sleep

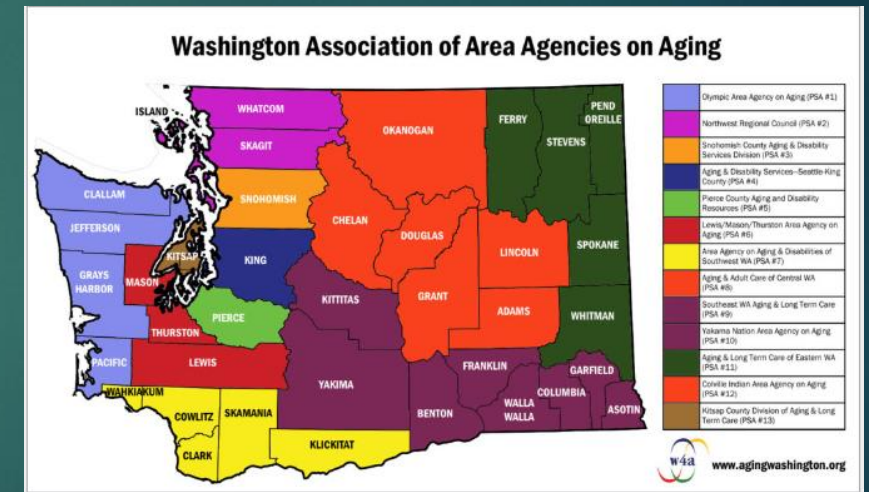
Reach out  
to friends,  
family



# Resources for Patient's, Families, and Clinicians

- ▶ The Alzheimer's Disease Association: [www.alz.org](http://www.alz.org)
  - ▶ 24/7 Helpline: 1800-272-3900
  - ▶ Current information on AD research: [www.alzforum.org/](http://www.alzforum.org/)

- ▶ Momentia
  - ▶ [Momentiaseattle.org](http://Momentiaseattle.org)



- ▶ Area agencies on aging in different counties:
  - ▶ [www.agingwashington.org](http://www.agingwashington.org)



# Books for Caregivers

- ▶ The Best Friends Approach to Alzheimer's Care, by Virginia Bell, M.S.W., and David Troxel, M.P.H.
- ▶ Alzheimer's Disease. Published by the American Academy of Neurology and available from the AAN Online Store at [www.aan.com](http://www.aan.com). This publication is also available through Demos Medical Publishing and Amazon.com.
- ▶ Loving Someone Who Has Dementia: How to Find Hope while Coping with Stress and Grief, by Pauline Boss.
- ▶ Passages in Caregiving: Turning Chaos into Confidence, by Gail Sheehy

# Summary

- ▶ Not all memory concerns = MCI/Not all MCI = Dementia
- ▶ Alzheimer's is the most common form of dementia for persons over age 65, base rates for AD under age 65 is less than 5%
- ▶ There are many different neurodegenerative disorders that can cause a dementia spectrum condition
- ▶ Cognitive Screeners are a first stop
- ▶ Neuropsychological Evaluations are comprehensive cognitive assessments that can further assist in understanding presentation
- ▶ Manage modifiable health factors for optimal cognition
- ▶ Engage in Physical, Cognitive, and Social Activity
- ▶ Caregiver burden contributes to financial and physical costs

# Questions



[pamela.dean@va.gov](mailto:pamela.dean@va.gov)