



Healthy Brain Initiative
Los Angeles

BRAIN HEALTH – Early Recognition and Detection of Cognitive Impairment in Primary Care

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AND USC-RANCHO CALIFORNIA ALZHEIMERS DISEASE CENTER

Objectives

At the conclusion of this presentation attendees will be able to:

- List at least three triggers for conducting a cognitive screen
- Identify characteristics of patients that predispose them to develop cognitive impairment
- Incorporate cognitive screening into the usual care for high risk patients

Why is this topic important?

The Institute of Medicine defines timely care, including diagnosis, as one of its six aims for improving the quality of the health care system¹

Increasing numbers of patients with cognitive impairment and dementia

Opportunity to engage patient in their own care when they can express their wishes

New therapeutics targeted at those with very early disease (Mild Cognitive Impairment/MCI)

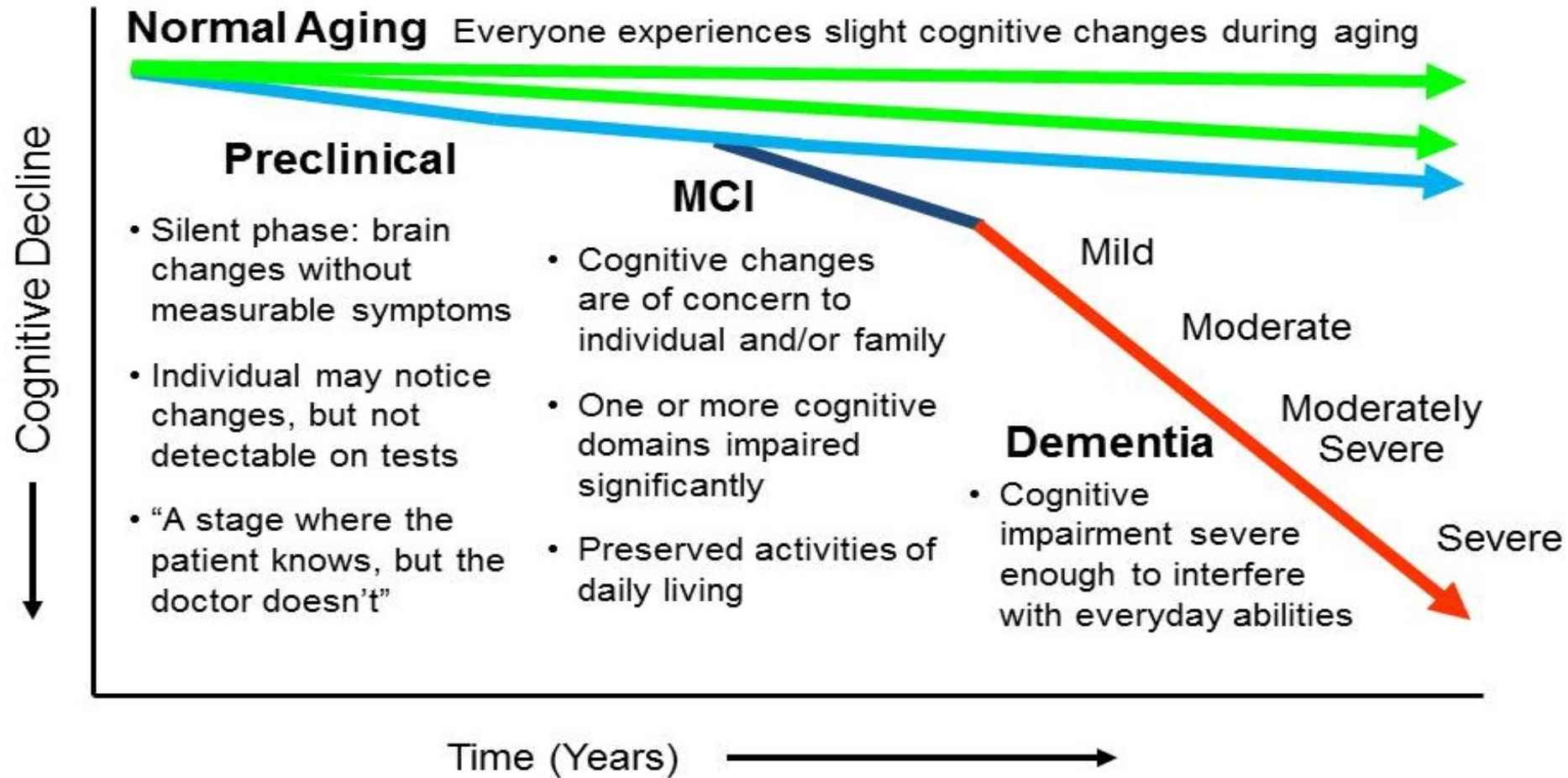
DHS Population – Delayed Recognition

Rancho-USC Dementia Clinic

- Latino/Hispanic
- Female
- <65 yrs (early onset)
- Low health literacy
- Vascular risk burden
 - HTN
 - DM
- Moderate stage
 - 3-5 yr symptom onset
 - Behavioral problems



Continuum of Cognitive Impairment



Delays in Recognition of Cognitive Impairment in Primary Care

50-75% older adults report at least minor concerns for memory loss^{1,2}

Dementia unrecognized in up to 50% of patients in primary care setting³

39% of 1,000 surveyed PCPs reported “never or only sometimes” making a diagnosis of Alzheimer’s disease or other dementias

50% of PCPs report the medical profession is “not at all or very unprepared” to care for the growing number of people living with Alzheimer’s or other dementias

1. Luck T et al *BMC Psychol.* 2018;6(1):23
2. Ginó S, et al. *Gerontology.* 2010;56(3):272-277. 23
3. Valcour VG, et al. *Arch Intern Med.* 2000;160(19):2964-2968

Pay Attention: When to be concerned

Patient reports memory/cognitive changes

Family reports changes of

- memory/cognition
- behavior

Staff report concerns

- Missed appointments
- Repeated calls

Screening identifies possible problem



Medicare Annual Wellness Visit

Screening for **cognitive impairment, depression, functional ability** and falls risk

Does not mandate how to perform

- Series of questions (ACT-AD Toolkit)
- Screening instrument (Mini-Cog)

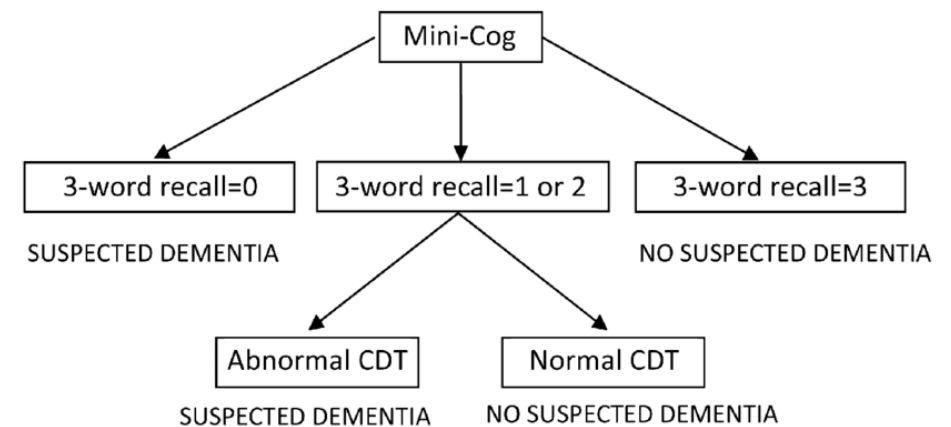
Cognitive Screening

ACCT-AD Toolkit Questions

- Has there been changes in memory or thinking in the last 5-10 yrs?
- Has there been a change in language or speech?
- Have you noticed any changes in personality?

Mini-Cog

- 3 word recall
- Draw a clock



Benefit of Early Detection

Identification of reversible or treatable conditions

Provide explanation for current symptoms

Time to implement care management strategies

Advanced care planning

Avoid future medical crises

Pharmacologic therapy most effective in early dementia

Participation in clinical trials

Increased patient and caregiver burden with delay



Barriers to Early Detection: providers

Training

- Limited exposure to the topic in school or residency
- Lack of experience during clinical training to patients with dementia
- Reliance on patient complaint

Assessment tools

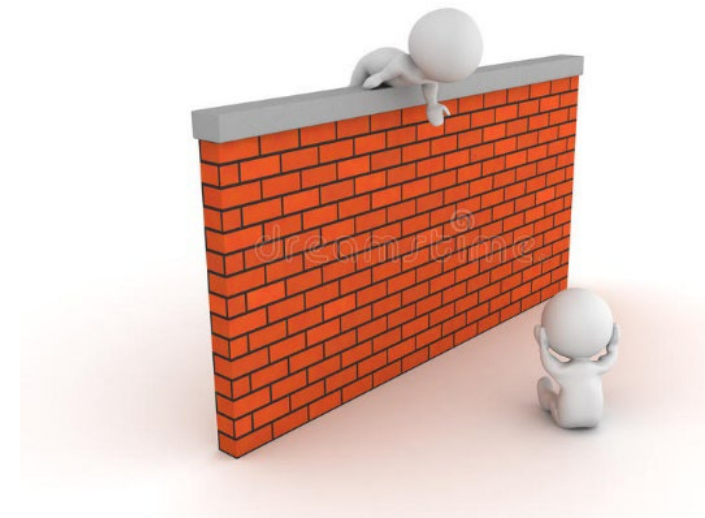
- Lack of familiarity with mental status assessment tools
- Reliability and validity of tools
 - Non-English speaking and low literacy populations

Personal beliefs

- Ageism
- Failure to recognize importance of cognitive & functional changes

System

- TIME
 - Short visits
 - Problem focused
 - Co-morbidities
- Reimbursement



Practice Clues – When to Suspect

Missed appointments

Failure to schedule testing or consults

Medication errors

- Excess refills (lost meds, running out early)

Family member or other always speaking for patient

Impaired decision-making capability

- Cannot 'talk back' on reason for test/referral, changes in meds, etc.

Chronic disease management control

- HTN – elevated on meds, hypotension
- DM – hyper or hypo-glycemia
- Thyroid
- CAD – unexplained increase in symptoms

Medical Conditions Contribute to Cognitive Impairment

Hypertension

Diabetes Type II

Heart disease

Hearing loss

HIV-AIDS

Major Depression

Alcoholism

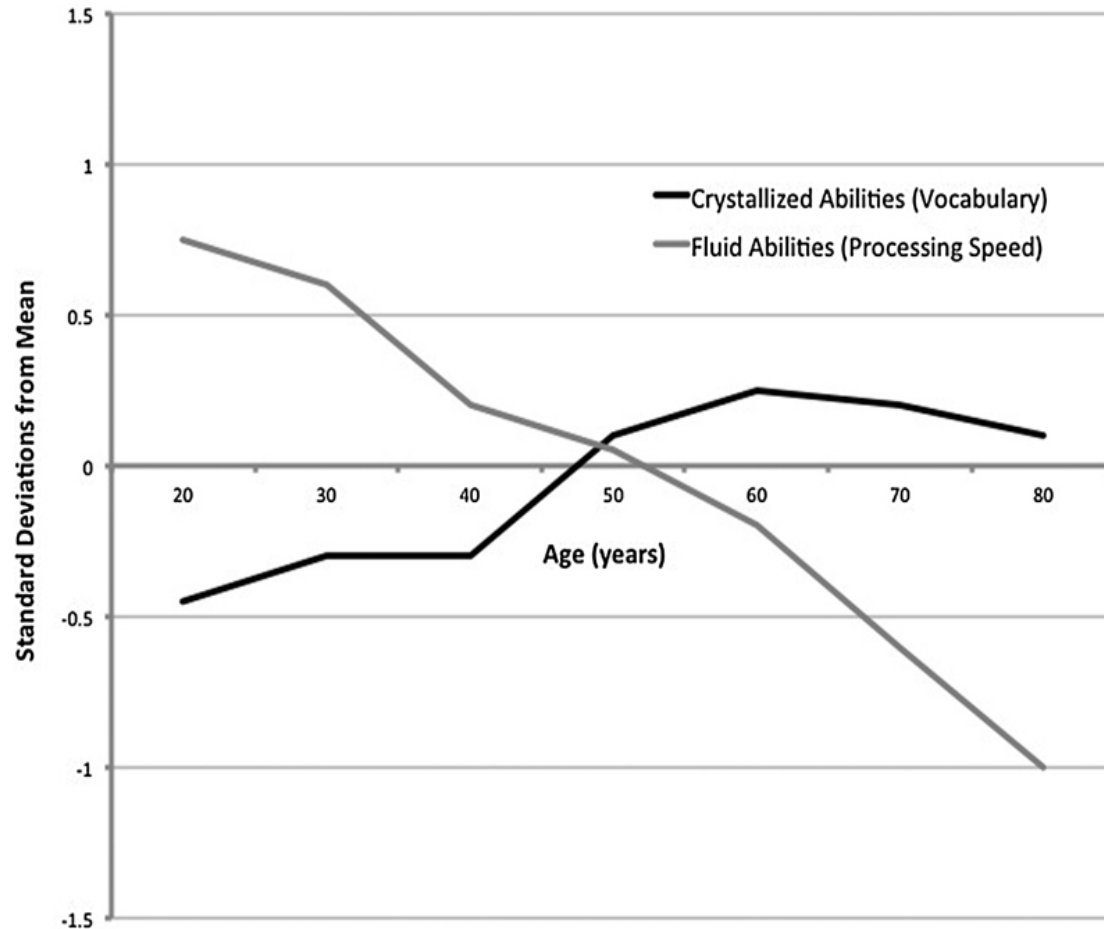
Exposure to anesthesia

Commonly Used Medications that Impact Cognition

- Antidepressants
 - TCAs, paroxetine
- Antihistamines
 - Diphenhydramine
- Antispasmodics (GI, GU)
- Barbiturates
- Benzodiazepines
- Muscle relaxants
- Narcotics
- Anti-convulsants



Cognitive Changes with Age



Improvement in crystallized abilities until approximately age 60 followed by a plateau until age 80, and there is steady decline in fluid abilities from age 20 to age 80

Cognitive Changes with Normal Aging

Decreased mental processing speed

- Takes longer to learn new things
- Takes longer to accomplish tasks

Difficulty sustaining attention

- Multi-tasking difficult

Decreased mental flexibility

Improved vocabulary with (?) decrease in fluency

Mild Neurocognitive Disorder – Mild Cognitive Impairment (MCI)

Cognition

- Short term memory/recall difficulty
- Temporal orientation intact – may lose track of time
- Language – intermittent difficulty finding correct word
- Processing – complex tasks take longer

Function – No change/normal

Behavior – Usually normal

- May have depression

Major Neurocognitive Disorder - Dementia

Cognitive impairment in one or more cognitive domains

- Documented by testing

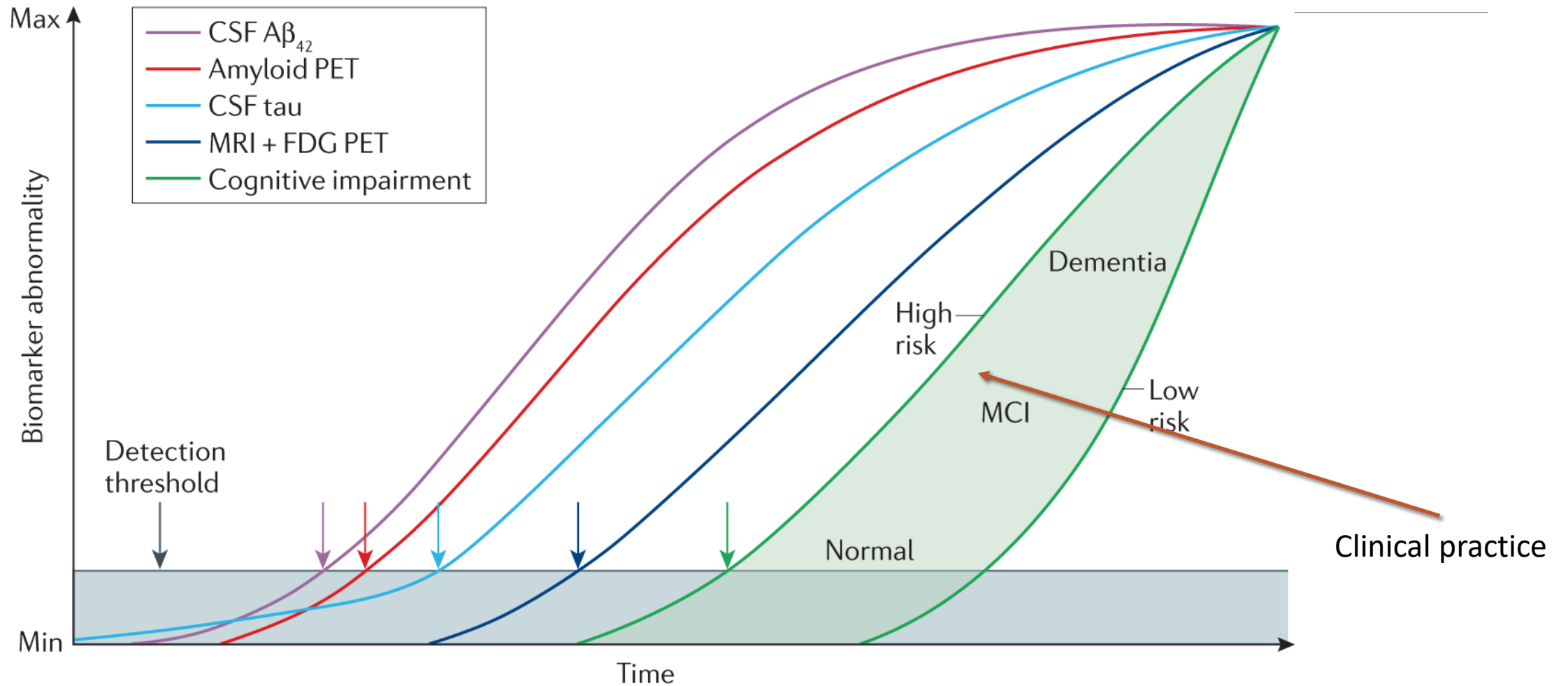
Interference with independence in everyday activities

Cognitive deficits outside of the context of delirium

Not explained by major psychiatric disorder

Specify: with or without behavioral disturbance

Continuum of Cognitive Decline in AD



Case Example

Mrs. H is a 66 yo Hispanic female referred by PCP at CCC where she has been followed for HTN, DM, OA knees for the past 7 yrs.

Daughter calls and leaves message that she is concerned about memory. Forgets to cook dinner, when cooks she has burned items for last 4-6 mos. They recently went to Mexico for the funeral of pt's older brother (74, complications DM2) and pt got confused, did not recognize family members, had urinary accident airport while trying to locate the bathroom.

E-consult sent with above, and "please evaluate and manage"

Resources

Los Angeles Dept of Public Health -<https://bit.ly/healthybrainla>

Alzheimers Los Angeles – www.alzheimersla.org

Alzheimers Association, So Calif Chapter – ww.alz.org/socal

UsAgainstAlzheimers, Brain Health – www.usagainstalzheimers.org/center-brain-health-equity

NIH/NIA Alzheimers Disease Education & Referral Center - www.nia.nih.gov/health/alzheimers

Centers for Disease Control (CDC), Alzheimers Disease & Healthy Aging –

www.cdc.gov/aging/index.html

California Dept. of Public Health, Alzheimers Disease –

www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CDCB/Pages/AlzheimersDisease

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PROMOTING BRAIN HEALTH IN VULNERABLE POPULATIONS

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No conflict of interest to disclose

Objectives

- Improve recognition of risk factors that place African Americans and Latinos at increased risk for dementia of all causes
- List interventions that can reduce dementia risk among vulnerable populations
- Identify three changes in current practice that could be implemented with potential to improve brain health and decrease dementia risk among the patients you care for

Nation Alzheimers Project Act (NAPA) Goals

1. Prevent and Effectively Treat Alzheimer's Disease and Related Dementia by 2025
2. Enhance Care Quality and Efficiency
3. Expand Supports for People with Alzheimer's and Related Dementias and Their Families
4. Enhance Public Awareness and Engagement
5. Improve Data to Track Progress
6. **Reduce the Burden of Risk Factors for Alzheimer's Disease and Related Dementias***

“Cognitive decline is not inevitable. With this new national goal, the United States commits to focus not only on treatment, but on preventing Alzheimer's and related dementias in the first place.” *H. Becerra, Secty HHS*

Why is this topic important?

Managing a dozen risk factors could prevent or delay about 40 percent of worldwide dementia cases (Lancet Commission 2020)

Dementia risk can be modified by brain healthy behaviors

- effective management of hypertension, diabetes, and obesity

Exponential rise in dementia projected over next four decades (2020-2060) among African Americans & Latinos¹

- 200% rise in the number of African Americans
- 440% rise in the number of Latinos
- 69% increase among non-Hispanic Whites

Medical providers could make a difference, but do not address brain health as a part of routine care

Demographics of Los Angeles Population

[Hispanic or Latino](#) (of any race): 47.5%

[Non-Hispanic Whites](#): 29.4%

[Asian](#): 10.7%

[Black or African American](#): 9.8%

[Two or more races](#): 2.8%

[Native American, Native Hawaiian and Other Pacific Islander](#): 0.7%

Other: 25.2%



Rancho-USC Dementia Clinic Population

Latino/Hispanic

Female

<65 yrs (early onset)

Vascular risk burden

- HTN
- DM

Moderate stage

- 3-5 yr symptom onset
- Behavioral problems



BACKGROUND

WHAT WE KNOW ABOUT RACIAL/ETHNIC DIFFERENCES, COGNITIVE IMPAIRMENT AND DEMENTIA

Disparities in Alzheimers Disease & Related Dementias



Estimates are by 2030 nearly 40 percent of all Americans living with Alzheimer's will be Latino or Black.

Black Americans are approximately 2 times more likely, and Latinos 1.5 times more likely to develop Alzheimer's disease than non-Latino Whites

Rate of diagnosis of dementia lower for people of color

Timely, accurate diagnoses and comprehensive follow-up care are less accessible in communities of color.¹

Disproportionate Impact of Alzheimer's Disease on People of Color

Discrimination

- Half of Black Americans (50%) and one in three Latino Americans (33%) report they have experienced healthcare discrimination.¹

Delay in diagnosis

- Compared to non-Hispanic White Medicare beneficiaries, Black Americans (OR 1.12) and Hispanic (OR 1.58) more likely to experience missed or delayed diagnosis²
 - Mean diagnosis delay 34.6 months for non-Hispanic Blacks, 43.8 months for Hispanics, compared with 31.2 months for non-Hispanic Whites
 - Non-whites had poorer cognition and more functional limitations at time of diagnosis

Low rates of research participation

- Latino and Black Americans make up less than 10% of all clinical trial participants in active ADRD research³

¹ Alzheimer's Association. (2021). Race, Ethnicity and Alzheimer's in America.

² Med Care, Aug 2021

Systemic Inequities & ADRD Risk

Less likely to have medical insurance

Less likely to have college education

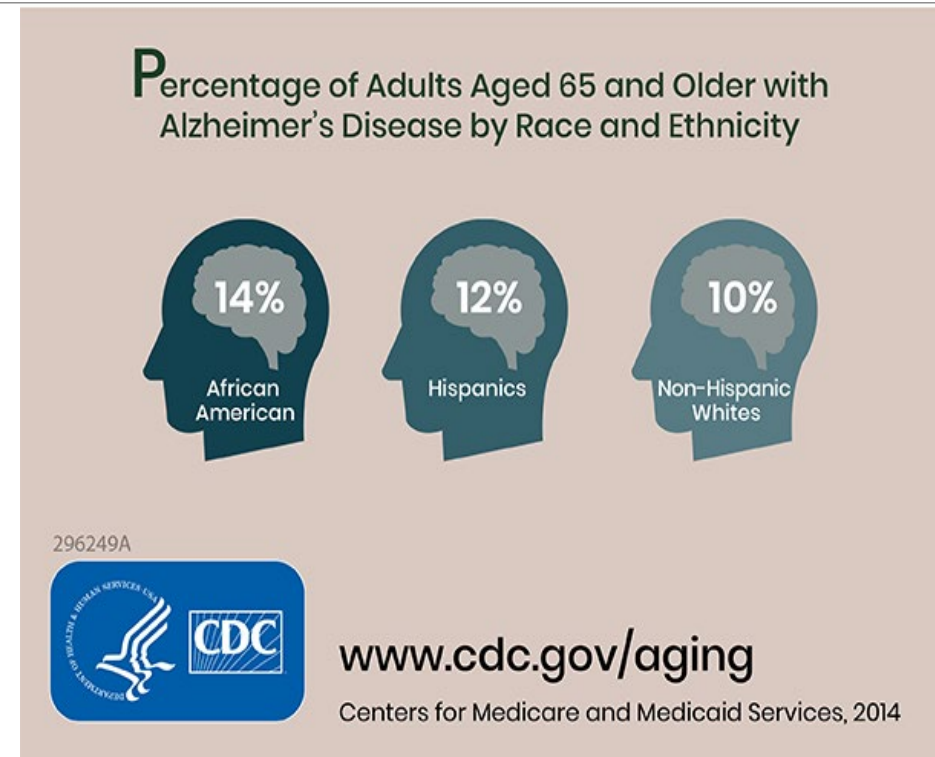
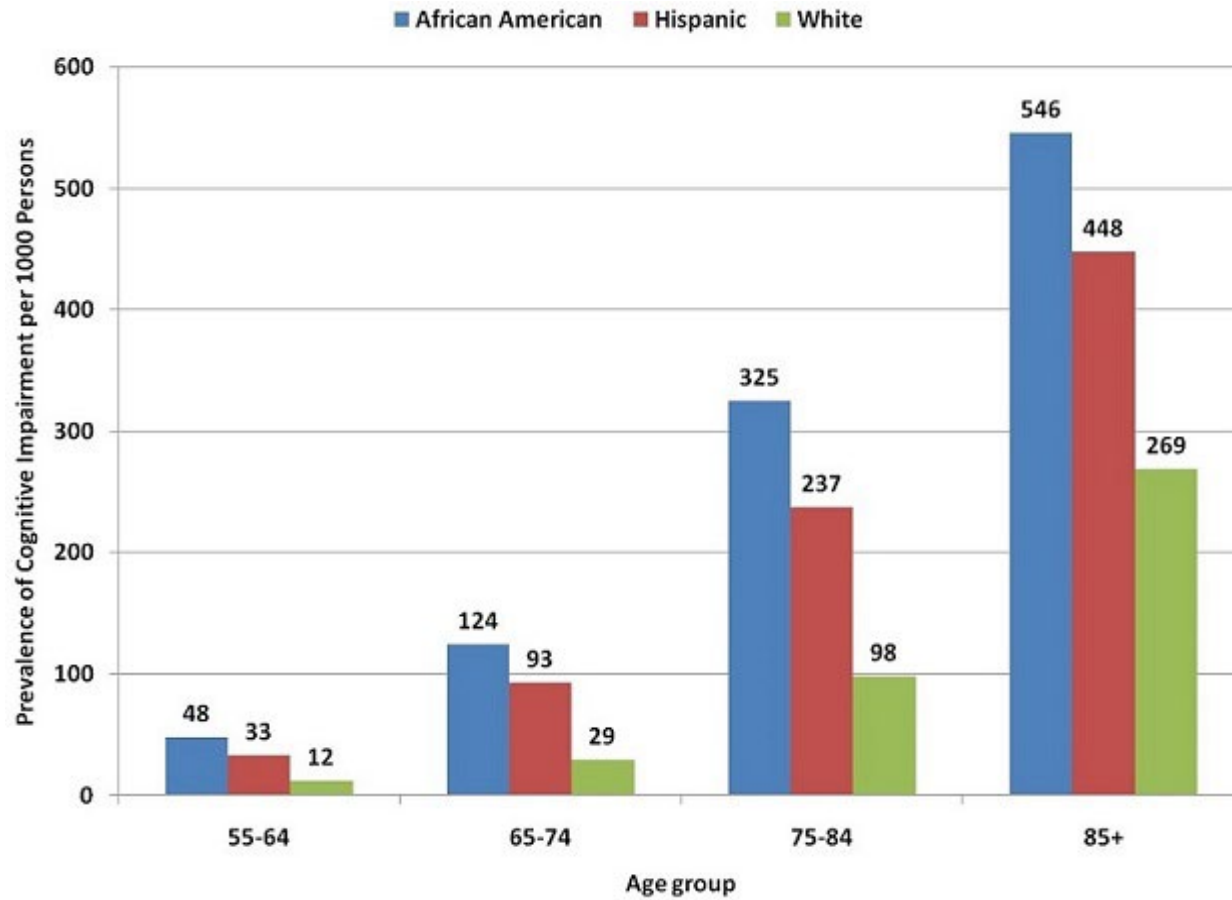
Less access to exercise

More likely to have lower income

More likely to report poorer health



Race Impacts Dementia Risk



Adapted from Alzheimer's Association, 2010

Delay in Diagnosis



Lower rates of recognition of cognitive impairment in non-white populations
Decreased rates of diagnosing dementia in African Americans and Latinos
Diagnosis at later stage of disease in African Americans and Latinos

Subjective Cognitive Decline

10.8% of adults aged 45 years or older reported SCD

- Prevalence varied by race and ethnicity
- 10.7% Whites
- 12/3% Blacks
- 9.9% Hispanics

1 or more chronic conditions associated with SCD

- 64.0% Whites
- 79.1% Blacks
- 64.1% Hispanics

By race and ethnicity, Hispanics and Blacks with SCD were more likely to report functional limitations compared to whites

Less than half of AA or Hispanics with SCD have discussed their symptoms with a medical provider

Higher burden of chronic conditions and adverse social determinants among Blacks and Hispanics with SCD, predict worse cognitive health outcomes

Risk Factors

IDENTIFIABLE AND MODIFIABLE

Risk Factors for Cognitive Impairment & Dementia Among African Americans & Latinos

Vascular

- Hypertension
- Diabetes
- Stroke

Socioeconomic

- Education
- Income

Diabetes

Diabetes is a known risk factor for dementia – AD & Vascular

- 1.5-2x increase risk¹

Diabetes in midlife associated with a 19% greater cognitive decline over a 20-year period²

Younger age of onset of diabetes associated with increased risk for developing dementia³

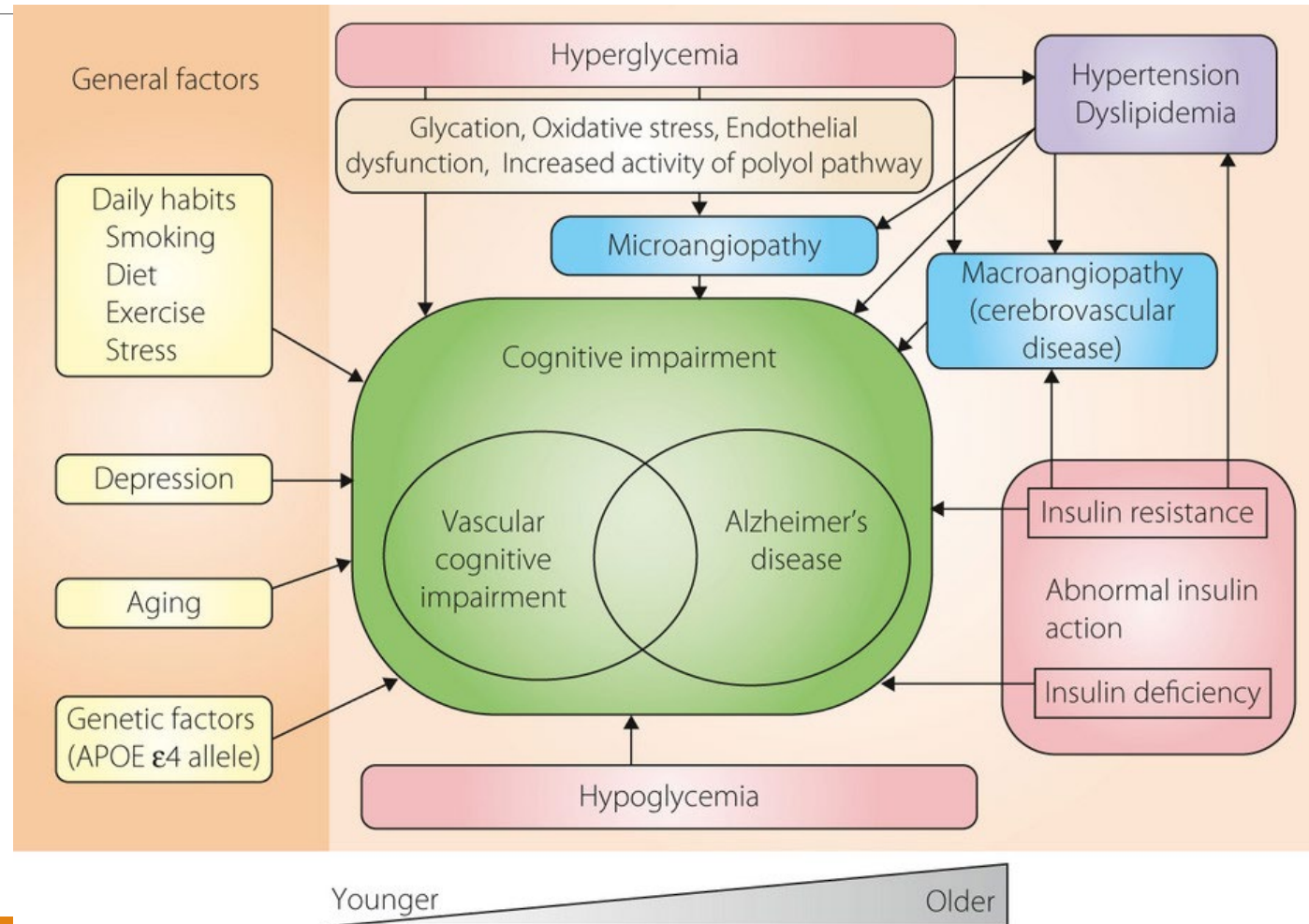
- Diagnosed diabetes <70 yrs were 24% more likely to have dementia than people without type 2 diabetes at age 70
- Younger age at diagnosis of diabetes had dementia at a younger age

1 Barbiellini A, et al *JAMA*. 2021 Apr 27;325(16):1640-1649

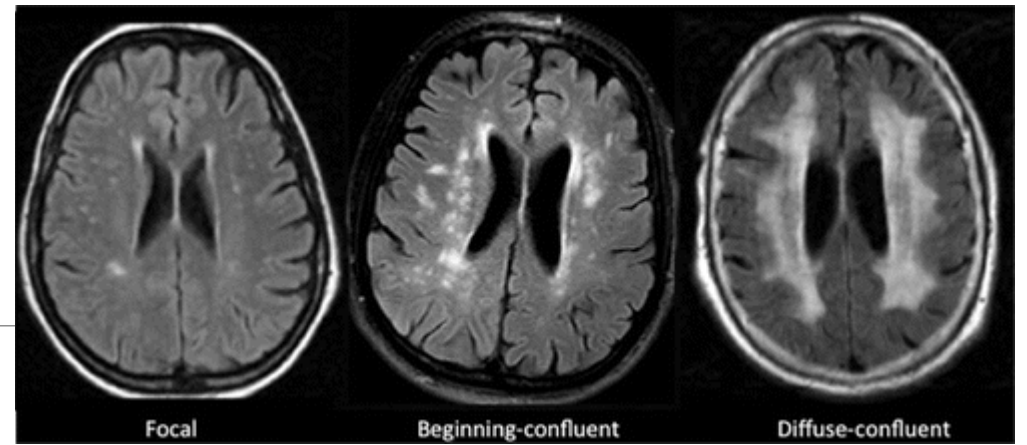
2. Rawlings et al *Ann Intern Med* 2014;161:785–793

3. Peila R, *Diabetes* 2002;51:1256–1262

Proposed mechanistic contribution to cognitive impairment in diabetes mellitus



Hypertension



Hypertension increases risk for cognitive impairment and dementia

- Vascular & AD

Causes pathological alterations in cerebral microvessels

- Contribute to the genesis of cerebral microhemorrhages, lacunar infarcts and white matter injury associated with cognitive decline.

Persistent midlife hypertension associated with increased risk for late life dementia¹

HTN is risk factor for white matter hyperintensities on MRI²

1. Lancet 2020

2. Skoog I. Dement Geriatr Cogn Disord 1998;9 suppl1:13-9

Studies Support BP Control to Decrease Dementia Risk

Framingham Offspring cohort (n 1440) showed elevated SBP (≥ 140 mmHg, mean age 55y) associated w/ increased risk of developing dementia (**HR 1.6**) over 18y follow-up (McGrath et al, 2017)

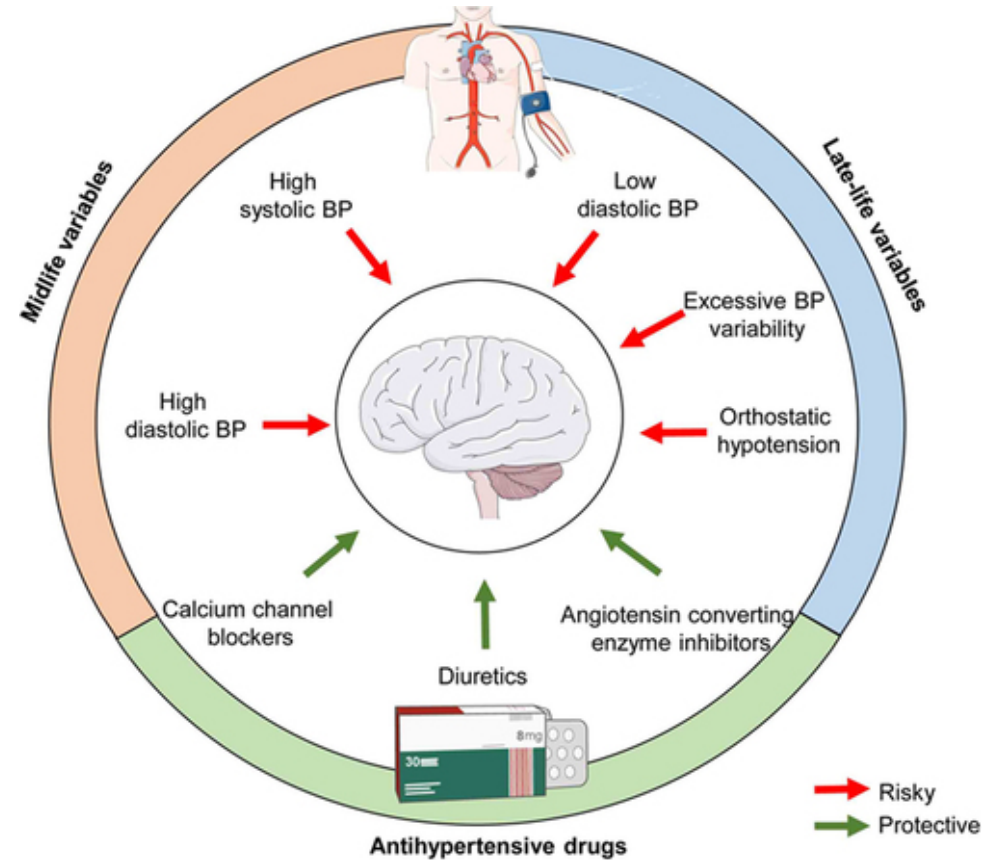
- Risk increased further if HTN persisted into later life (**HR 2.0**, mean age 69y) (Pase et al, 2016)
- People with ideal cardiovascular parameters had lower 10-yr risk of all-cause dementia (**HR 0.8**), vascular dementia (**HR 0.5**), and AD (**HR 0.8**)

Midlife HTN associated w/ **reduced brain volumes and increased WM hyperintensity volume**, but not amyloid deposition (Lane et al, 2019)

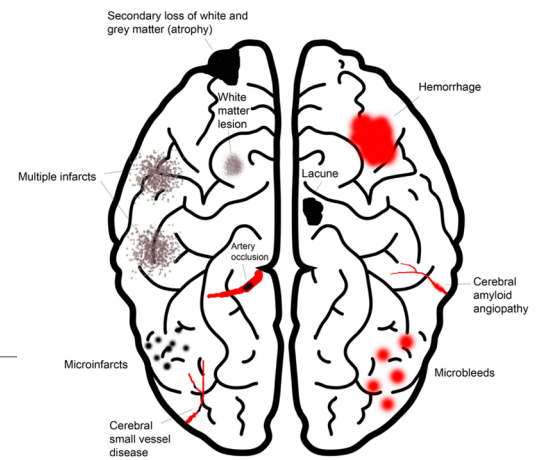
SPRINT MIND trial of patients >50 yo showed **decreased dementia cases** (7.2 vs 8.6 cases / 1000 person-years, **HR 0.8**) **and MCI** (14.6 vs 18.3 cases, **HR 0.8**) in intensive arm (SBP goal <120) compared to standard (goal SBP <140) (Williamson et al, 2019)

Hypertension and the Brain

Pharmaceutical and/or lifestyle interventions that reduce BP in combination with treatments that promote microvascular health could potentially prevent or delay cognitive decline in patients with HTN



Stroke



Cognitive impairment common in stroke patients

- 2/3 of stroke patients experience cognitive impairment or cognitive decline following a stroke
- 30% of stroke patients develop dementia within 1 year of stroke onset

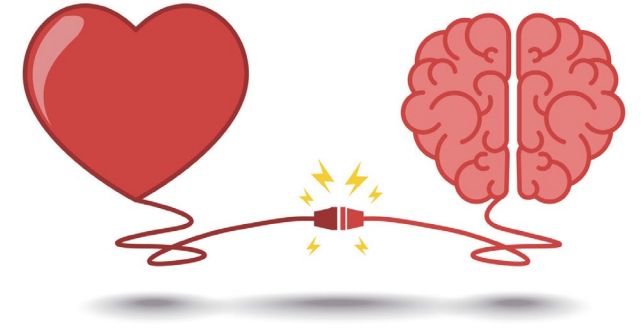
Diabetes & prior stroke associated with stroke-related CI/dementia

Presence of cognitive impairment strongly linked to post stroke outcomes

Risk for developing dementia 10x greater among individuals with stroke than without

- Mortality 2-6X greater in stroke patients with dementia

Heart Disease



Cardiovascular disease and dementia have shared risk factors

Heart disease doubles risk for MCI

Lower cardiac output and worse left ventricular diastolic function linked to executive function deficits

Possible mechanisms linking CVD and CI/dementia

- Altered clearance of brain toxins, increasing neurodegeneration
- Altered cerebral perfusion
- Subclinical strokes

Early intervention most beneficial:

CVD risk has strongest relationship with cognition when measured years before the onset of dementia.

Risk Reduction

DECREASE RISK & IMPROVE BRAIN HEALTH THROUGH HEALTHY LIFESTYLE

Nutrition (Diet)

What we eat affects the way we feel, *think and behave*

Eating certain foods -- and avoiding others -- slows brain aging by 7.5 years, and lessen the chances of developing Alzheimer's disease

Emphasize foods that

- Minimize inflammation and insulin resistance
- Nourish neurons and enhance synaptic connections

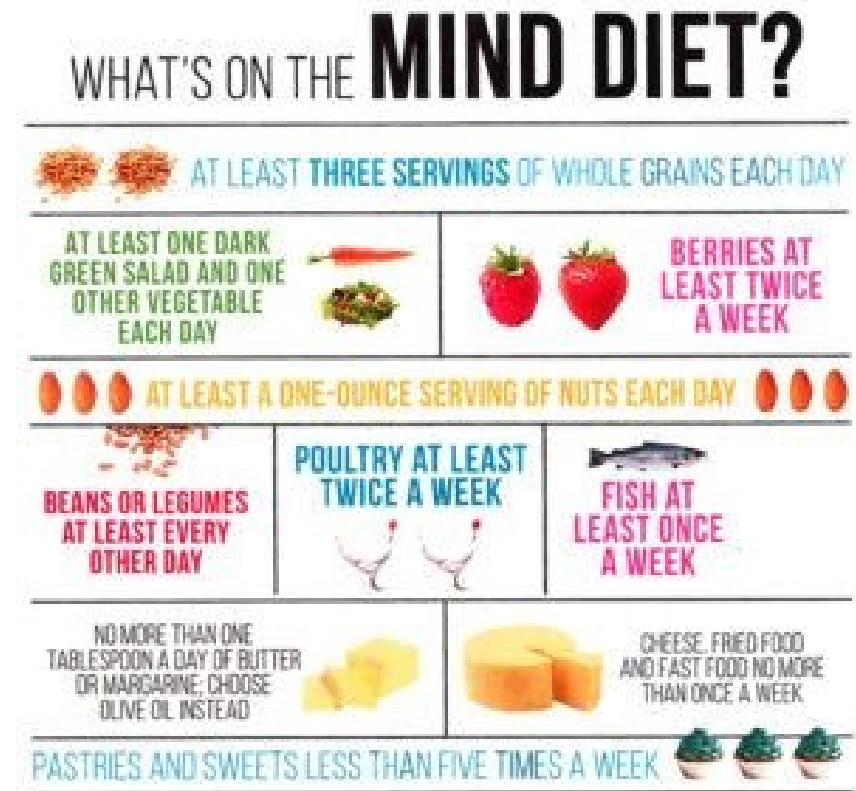
MIND* Diet (Mediterranean-DASH Intervention for Neurodegenerative Delay)

Brain-healthy food groups

- Green leafy vegetables & other vegetables
- Nuts
- Berries (especially blueberries and strawberries)
- Beans
- Whole grains
- Fish or poultry
- Olive oil
- Red wine

Unhealthy food groups

- Red meats
- Butter and stick margarine
- Cheese
- Pastries and sweets
- Fried or fast food



* Mediterranean + DASH (Dietary Approach to Stop Hypertension)

PHYSICAL ACTIVITY (Exercise)

Regular physical activity is good for heart, bones, muscles *and brain*

Exercise promotes brain plasticity

- stimulates growth of new connections between cells
- Increases growth factors in the brain that facilitate new neuronal connection

Cognitive decline is almost twice as common among adults who are inactive compared to those who are active¹

Physical activity has beneficial effects on cerebrovascular and cognitive functions²

SLEEP

A GOOD NIGHT'S SLEEP IS ESSENTIAL FOR BRAIN HEALTH

Sleep is restorative to brain health and cognition

- CSF flushes out toxins that accumulate from neuronal activity
- “slow waves” that characterize deep, non-REM sleep contribute to memory consolidation

Sleep quality, quantity, and sleep-disordered breathing associated with cognitive impairment

Sleep deprivation associated with daytime cognitive impairment (CI)

60 to 70% of people with cognitive impairment or dementia have sleep disturbances

Poor sleep is a risk factor for Alzheimers disease

Brain Health Check-Up

Addition of cognitive screen into routine care

- Annual exam
- Chronic disease management
 - Hypertension
 - Diabetes
 - Post-stroke
 - Heart Disease

Lifespan Approach to Promote Brain Health

Child

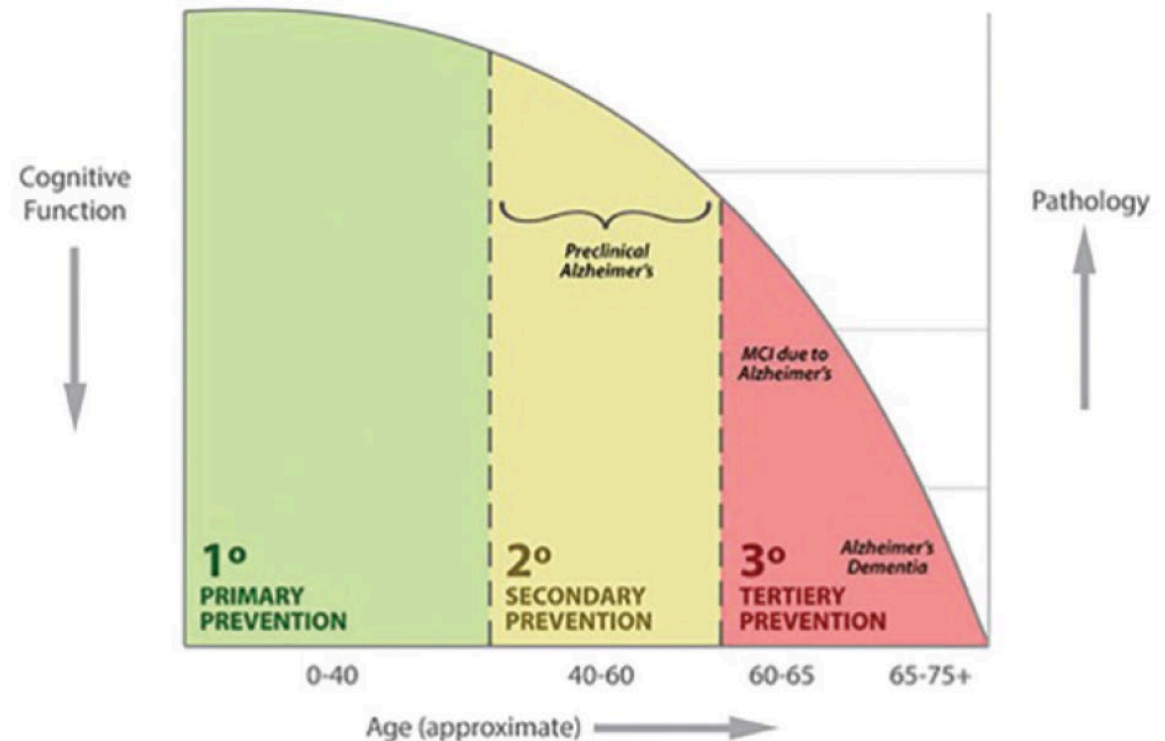
- Early education
- Obesity reduction

Adolescent/Young Adult

- High level of education
- Head injury prevention
- Minimize drug and alcohol use

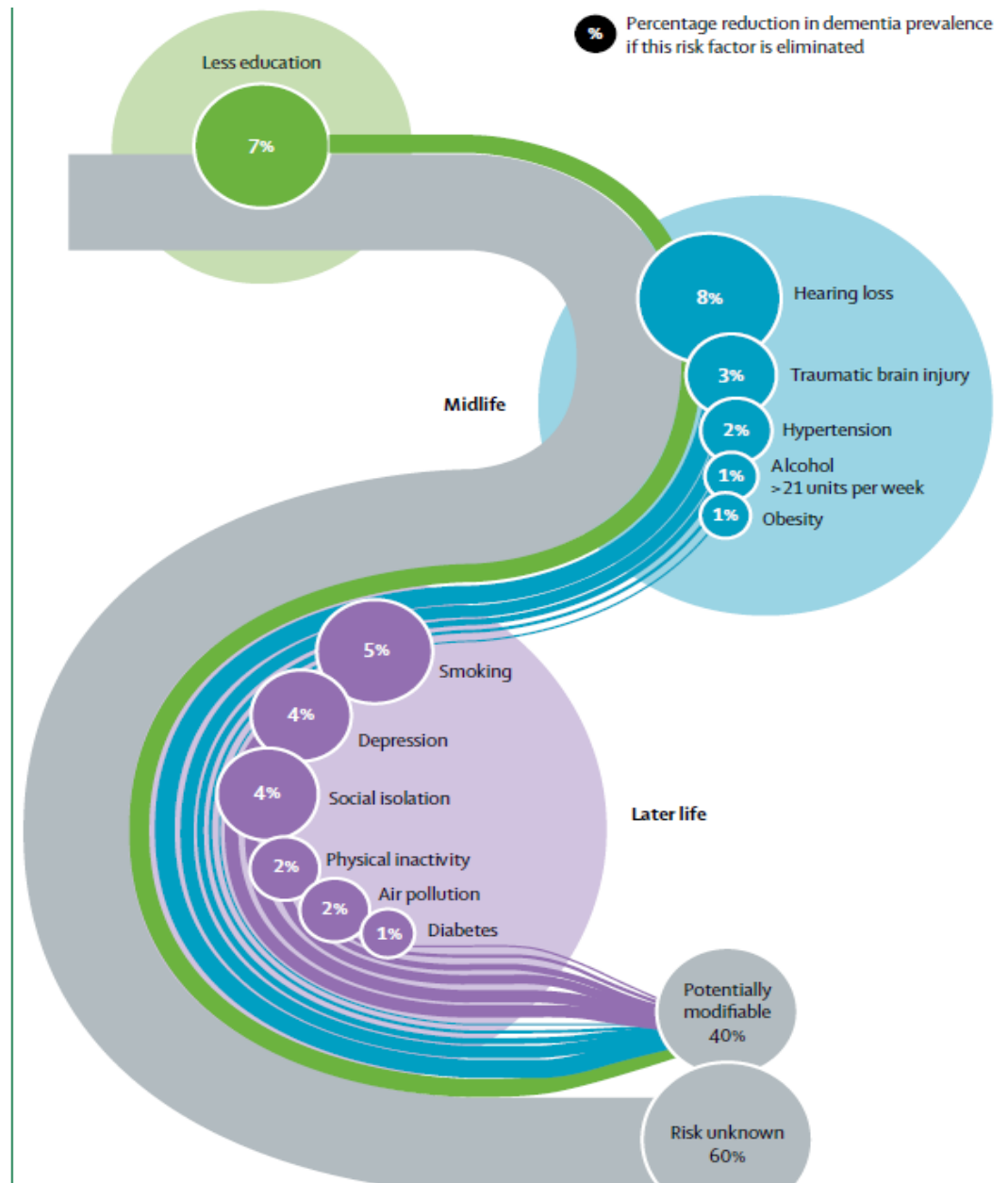
Adult

- Vascular risk factor management
- Sleep hygiene
- Treat depression



HEALTHY DIET & REGULAR EXERCISE AT ALL AGES

Proposed Pathway: Risk Factor Modification to Prevent/Delay Dementia



Resources

Alzheimers Los Angeles – www.alzheimersla.org

Alzheimers Association, So Calif Chapter – ww.alz.org/socal

UsAgainstAlzheimers, Brain Health – www.usagainstalzheimers.org/center-brain-health-equity

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QUESTIONS?

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