

Brain Health Matters; What You Can Do To Keep Your Patients From Cognitive Decline As They Age

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Disclosures

I have no relevant relationships with ineligible companies to disclose within the past 24 months. (Note: Ineligible companies are defined as those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.)

UsAgainstAlzheimers, Brain Health Partnership Provider Leadership Group, AAPA representative

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Objectives

Identify risk factors across the life course that have been shown to be associated with increased risk for cognitive decline with age

Identify patients with high risk for cognitive decline in middle age

Describe strategies that can be used in clinical practice to improve brain health among those at higher risk for cognitive decline with increasing age

What is Brain Health?

“an emerging and growing concept that encompasses neural development, plasticity, functioning, and recovery across the life course.”

World Health Organization

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) especially among African Americans and 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

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*

Lifespan Approach to Promote Brain Health

Child

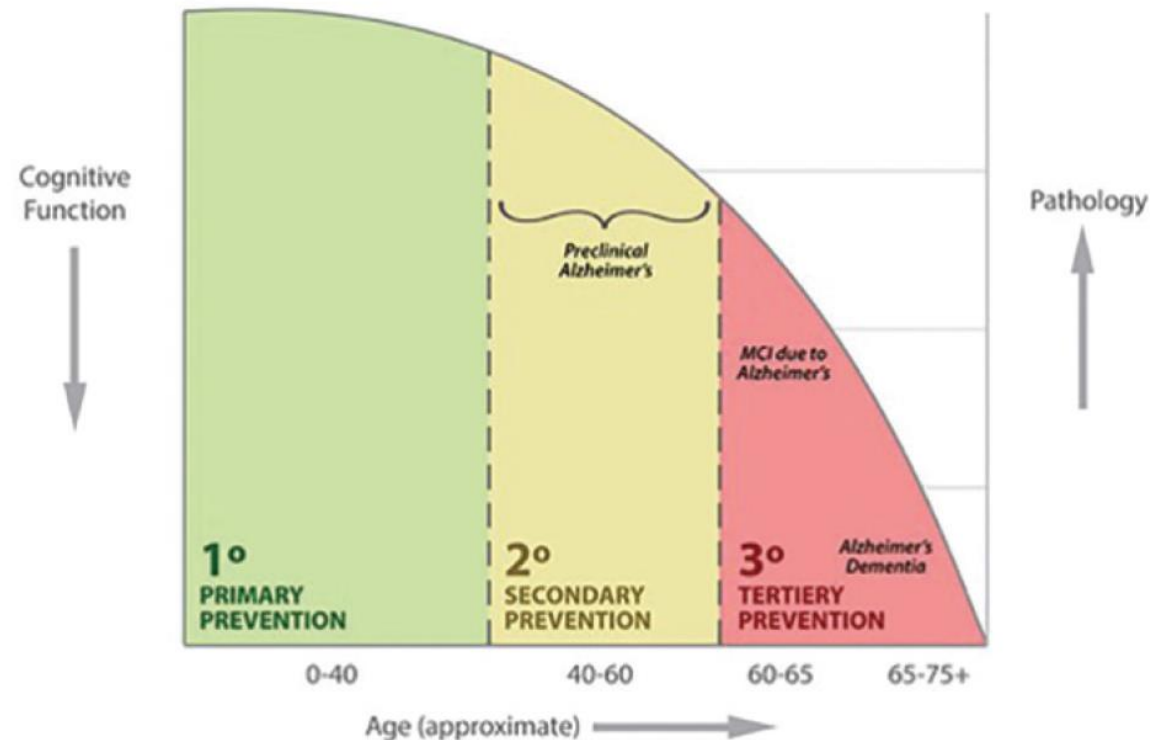
- Early education
- Obesity reduction

Adolescent/Young Adult

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

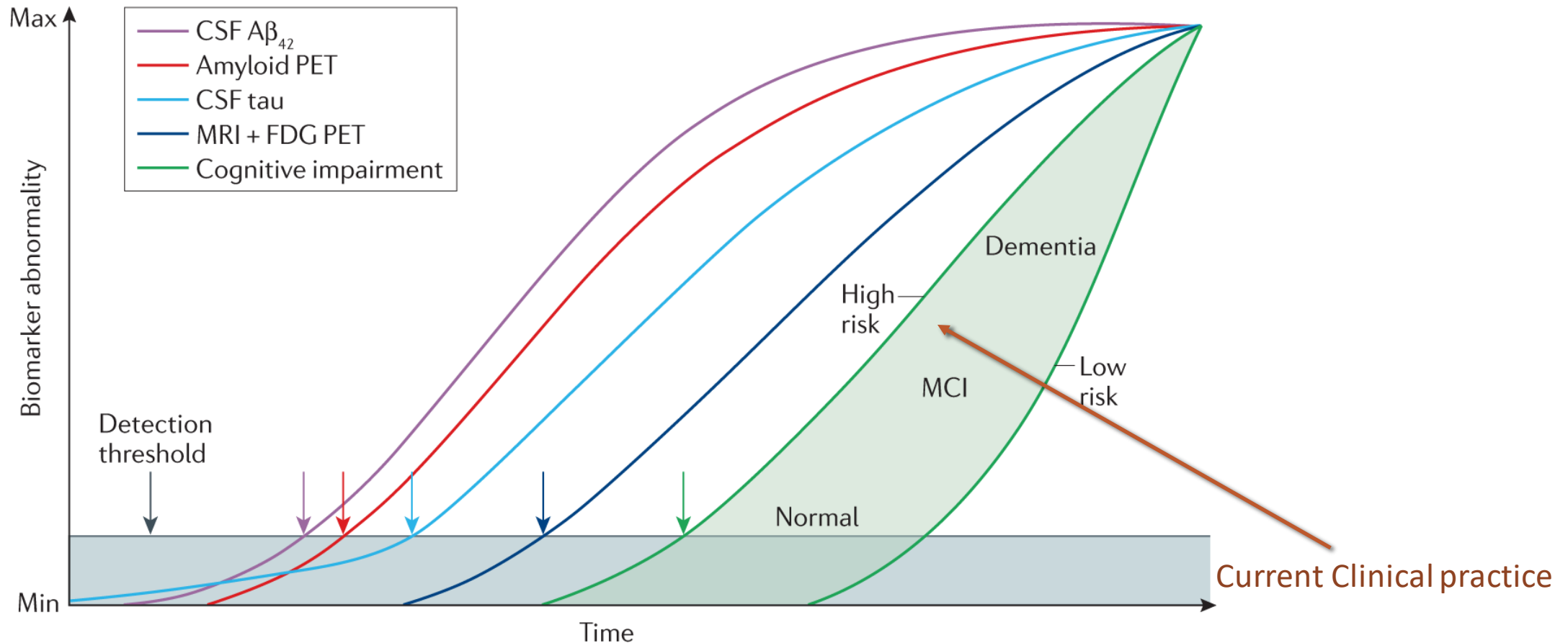
Adult

- Vascular risk factor management
- Sleep hygiene
- Treat depression



HEALTHY DIET & REGULAR EXERCISE AT ALL AGES

Neurodegenerative disease pathology (AD) begins 1-2 decades prior to cognitive symptoms



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

IDENTIFICATION OF MODIFIABLE RISK IS KEY

Risk Factors for Cognitive Decline

AGE*

Family history

- Genetics

Education level

Brain Injury (TBI)

Pesticide or toxin exposure

Physical inactivity

Social Isolation

Hearing loss

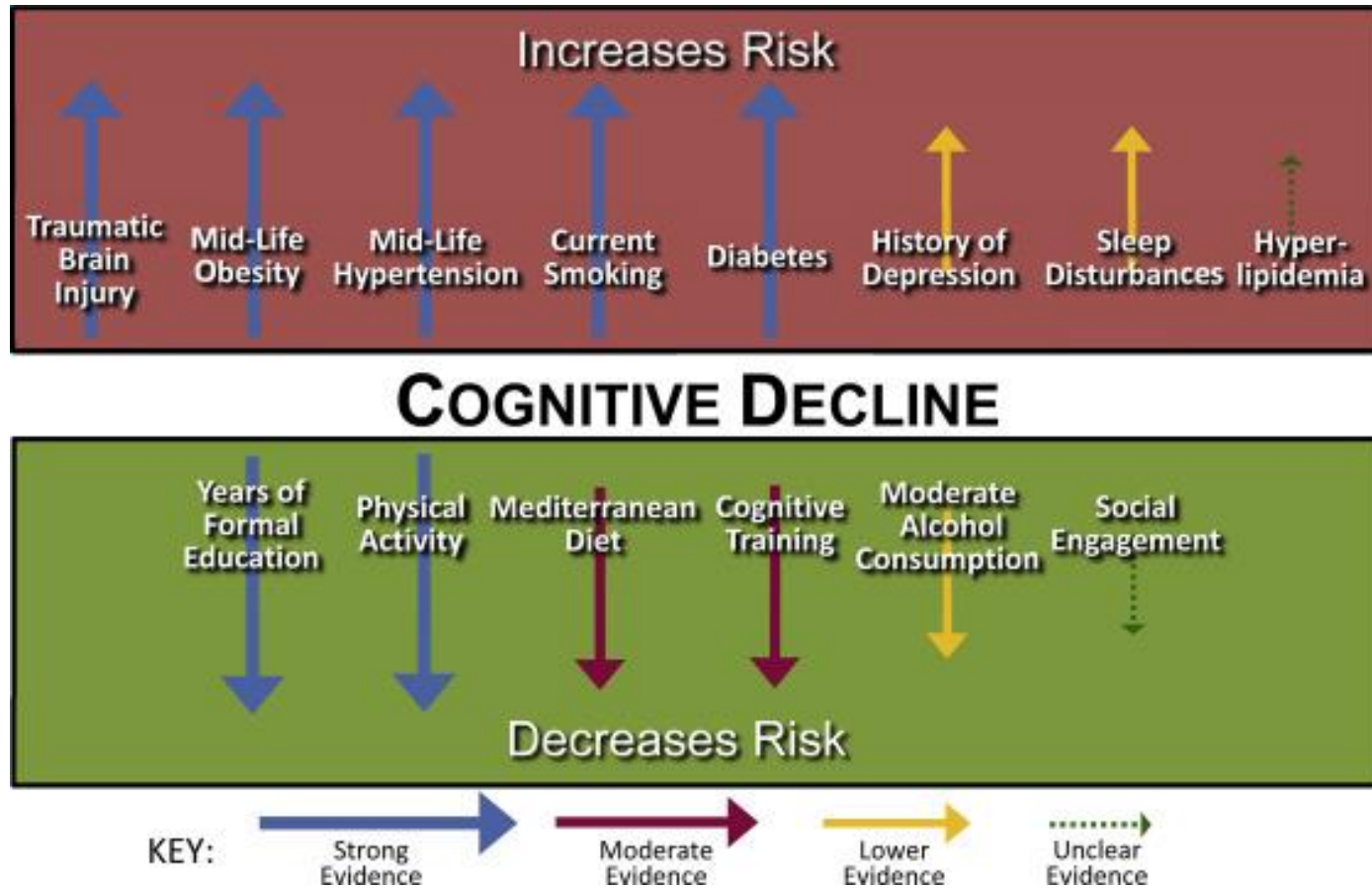
Depression

Chronic medical conditions

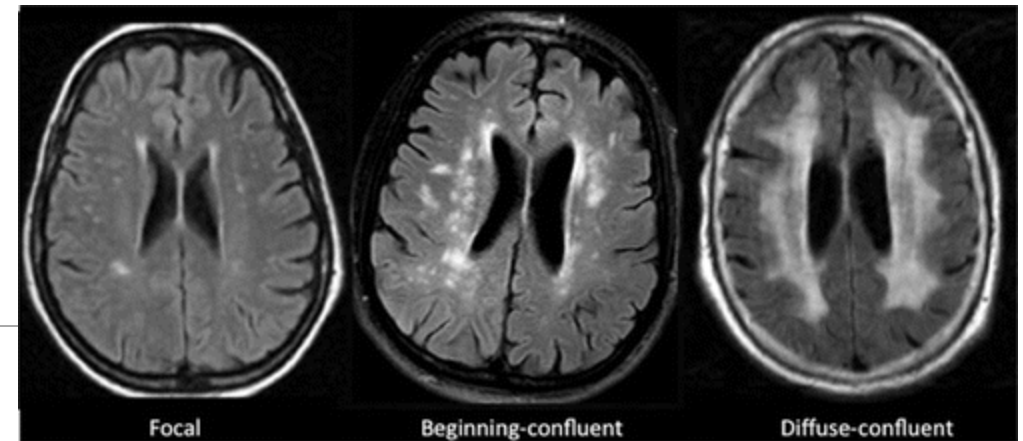
- HTN
- Diabetes (Type 2)
- Heart Disease
- Stroke
- Parkinson's disease

* No known prevention or intervention

Evidence of Risk Factor Impact on Cognition



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)

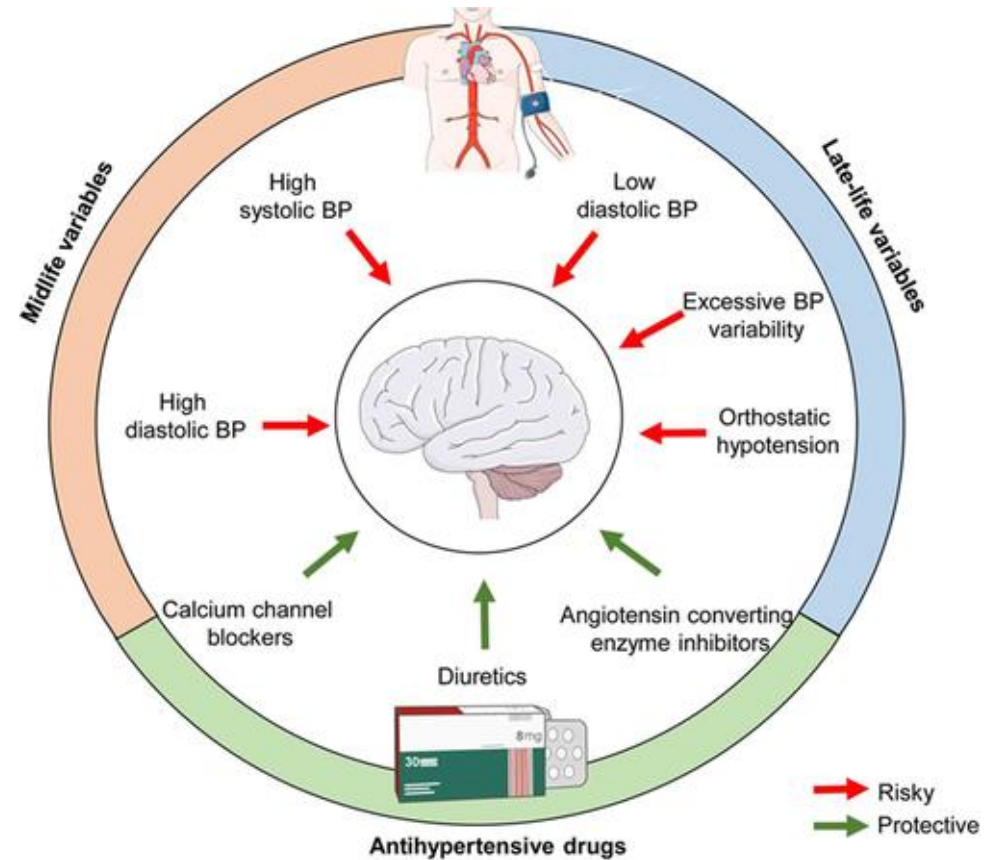
- Risk increased further if HTN persisted into later life (**HR 2.0**, mean age 69y) (Pase et al, 2016)
- People with ideal cardiovascular parameters had lower 10-yr risk of all-cause dementia (**HR 0.8**), vascular dementia (**HR 0.5**), and AD (**HR 0.8**)

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



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

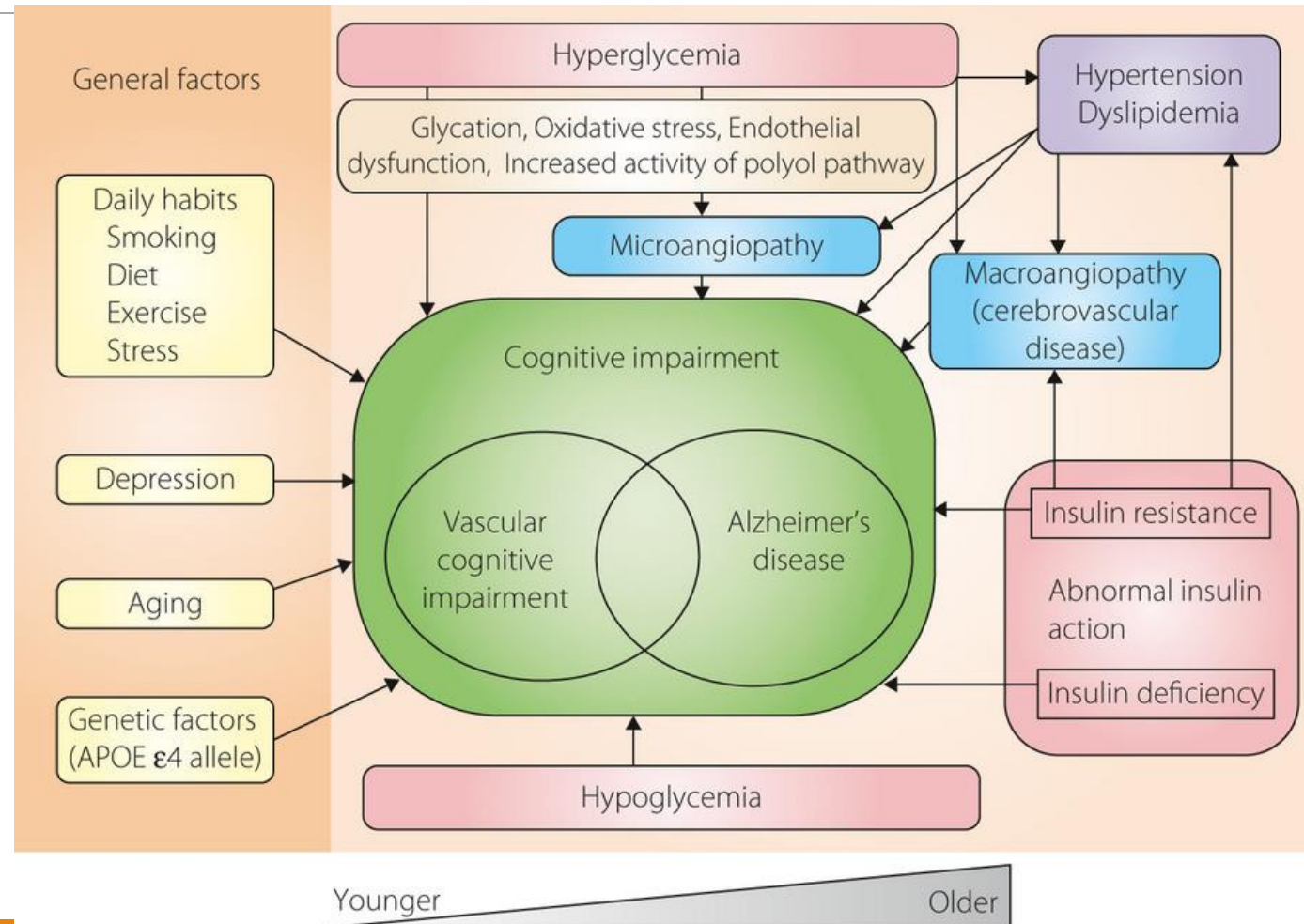
- Diagnosed diabetes <70 yrs were 24% more likely to have dementia than people without type 2 diabetes at age 70
- Younger age at diagnosis of diabetes had dementia at a younger age

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

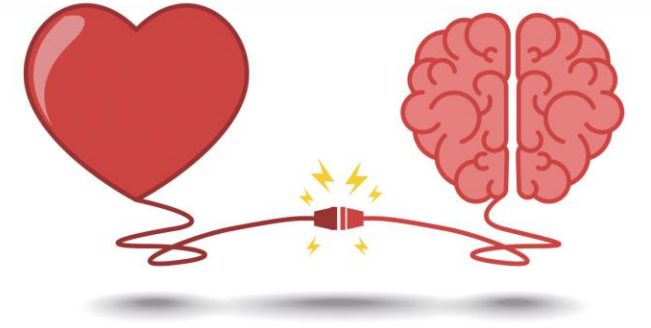
2. Rawlings et al *Ann Intern Med* 2014;161:785–793

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

Proposed mechanistic contribution to cognitive impairment in diabetes mellitus



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.

Obesity and Cognition

Obesity in mid-life is a predictor of mild cognitive impairment at old age

Negative correlation between BMI and global cognitive performance¹

Impairment in executive function and short-term memory consistently identified in obese individuals compared to normal weight counterparts²

Increased adiposity has been correlated with reduced volume in a number of brain regions

- Smaller hippocampal volumes in adolescents with metabolic syndrome³



1 Hassing et al. Dement. Geriatr. Cogn. Disord (29): 2010

2 Sabia et al. Am. J. Epidemiol (170): 2009

3 Yau et al. Pediatrics (130): 2012.

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

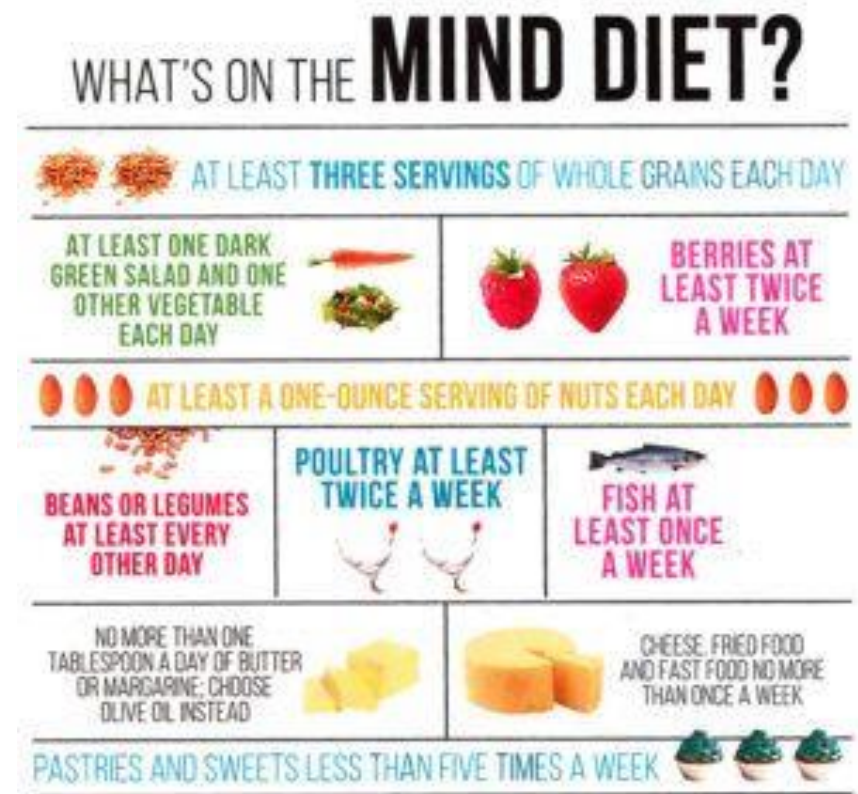
MIND* Diet (Mediterranean-DASH Intervention for Neurodegenerative Delay)

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)

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

- OSA leads to deficits in executive functions, attention, and memory.

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

RECOMMENDATION: Assess annually, avoid use of sleep medications

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

RECOMMENDATION: 150 minutes [2 ½ hours] per week of moderate intensity for adults over age 45 (ACC/AHA, 2019)

Social Activity/Engagement

Social engaged lifestyle promotes cognitive functioning in mid-life, but it may not prevent cognitive decline in older age¹

Older adults with higher social activity had less cognitive decline in later life than inactive peers²

Loneliness and social isolation in mid and late life are associated with cognitive decline³

RECOMMENDATION: Be aware of risks for social isolation, routinely inquire about social support and activities, encourage community referrals & connections

¹ Kats et al. Age and Ageing (45) 2016

² James BD et al. J Int Neuropsychol Soc 2011

³ Lara E., et al. Int J Geriatr Psychiatry (34) 2019

Change of Focus: From Dementia to Brain Health



Cognitive decline is not part of normal aging

Cognitive decline can be prevented or delayed in many individuals

Changes that result in cognitive decline begin years or decades prior to development of clinical symptoms

Changes in provider attitudes and behavior can result in delaying or preventing cognitive decline

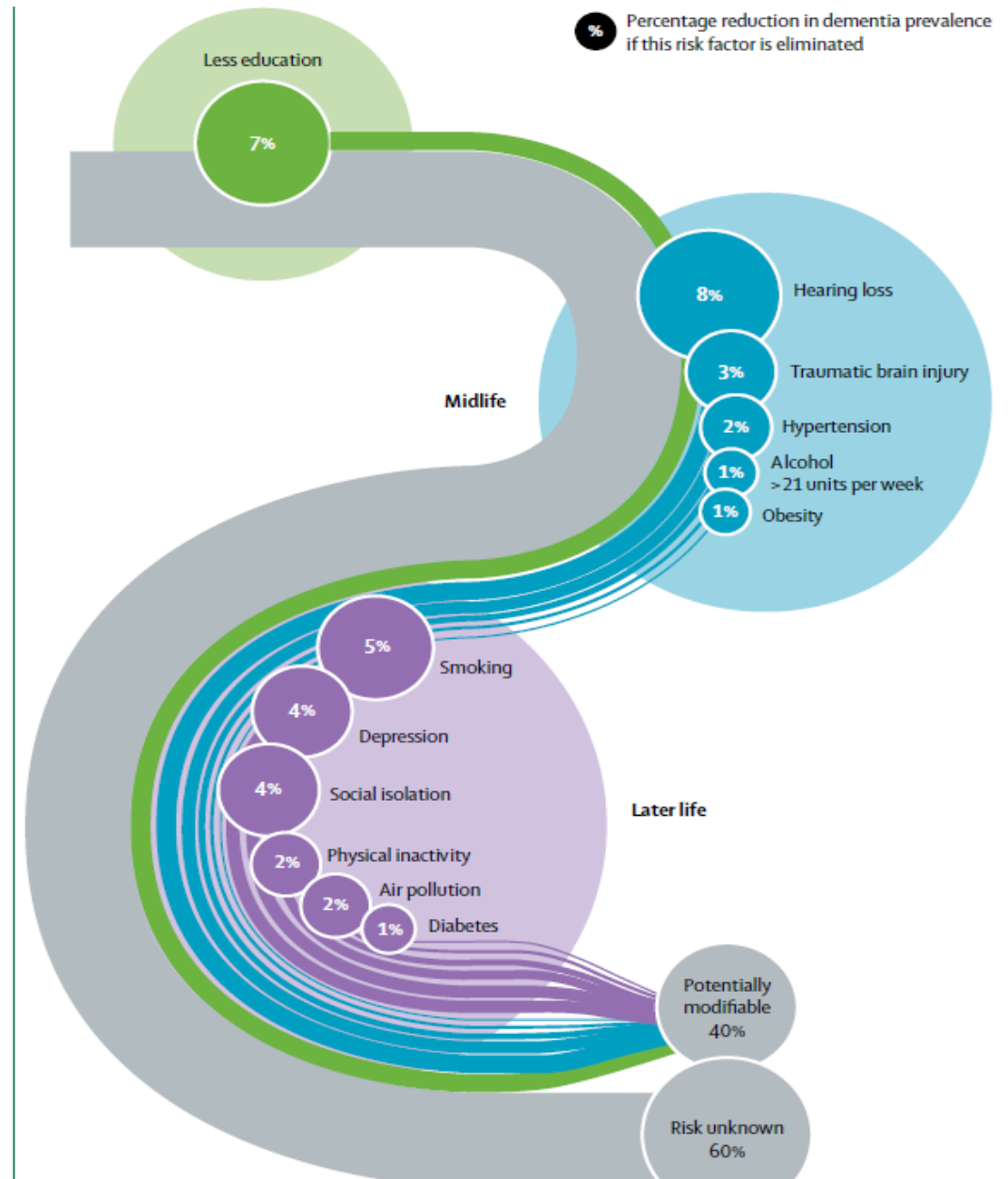
Brain Health Check-Up



Addition of a cognitive screen into routine care

- Medicare annual wellness exam
- Annual evaluation
- Chronic disease management
 - Hypertension
 - Diabetes
 - Post-stroke
 - Heart Disease

Proposed Pathway: Risk Factor Modification to Prevent/Delay Dementia



Resources

PROVIDER AND PATIENT INFORMATION TO HELP YOU MAKE
PRACTICE CHANGE

USA against Alzheimers



BrainGuide

About ▾

Resources ▾

Start your questionnaire

855-272-4641

[ENGLISH](#) | [ESPAÑOL](#)

airment (MCI), and Alzheimer's disease and other dementias. You don't need to take a questionnaire in order to access these resources, and you can explore as many categories as you like.

Keep Your Brain Healthy

Early Signs of Alzheimer's

Alzheimer's - Screening, Detection and Diagnosis

Living with Alzheimer's Disease

Caregiver Resources for Alzheimer's

Alzheimer's Resources Near You

RISK REDUCTION WORKGROUP

Recommendations

US AGAINST ALZHEIMERS

REDUCE THE RISK OF COGNITIVE DECLINE

What Clinicians Can Do to Help Patients



Neurovascular risk management

Manage established hypertension or Type II diabetes with appropriate medications; encourage optimal brain health in accordance with cardiovascular health through lifestyle interventions such as physical activity, diet, and sleep to help reduce the risk of cognitive decline.



Physical activity

Conduct annual assessment using a validated tool to identify adults who are not meeting recommended levels of physical activity (2 ½ hours per week of moderate intensity). For those individuals, develop a gradual approach that fits within a person's lifestyle.



Sleep

Routinely assess sleep quantity and quality in adult patients using a validated tool and whether they take any medications to sleep. Encourage patients to get 7-8 hours of sleep in a 24-hour period, including naps. Refer severe sleep complaints to sleep clinic when possible.



Nutrition

Annually assess dietary eating patterns and habits. For individuals who indicate a less than optimal diet, counsel patients about the value of a healthy diet and share resources with patients about brain-healthy diets such as MIND or DASH. For complicated needs, refer to a dietician.



Social activity

Annually perform an assessment using a validated tool to identify adults experiencing loneliness or social isolation. Suggest strategies for enhancing their social connection and activity and perform regular check-ins.



Cognitive stimulation

Ask adult patients about their level of cognitive stimulation or activity which may include learning new skills or other stimulating activities they practice. For individuals who indicate low levels of cognitive stimulation, make suggestions for increasing cognitive activity.

UsAgainstAlzheimer's convened a workgroup of national experts to develop recommendations and implementation guidance for primary care clinicians and general neurologists to help patients reduce their risk of cognitive decline. The six recommendations are intended for all **adults 45 and older**.

1. Recommendations for Reducing the Risk of Cognitive Decline, Risk Reduction Workgroup, 2021.

REDUCIR EL RIESGO DE DETERIORO COGNITIVO¹

Qué pueden hacer los médicos para ayudar a los pacientes



Manejo del riesgo neurovascular

Manejar la hipertensión establecida o la diabetes tipo II con los medicamentos adecuados; apoya la salud óptima del cerebro de conformidad con la salud cardiovascular a través de intervenciones de estilo de vida tales como la actividad física, la alimentación y el sueño para ayudar a reducir el riesgo de deterioro cognitivo.



Actividad física

Realice una evaluación anual utilizando una herramienta validada para identificar a los adultos que no están cumpliendo con los niveles recomendados de actividad física (2 ½ horas por semana de intensidad moderada). Para esas personas, desarrolle un enfoque gradual que se adapte al estilo de vida individual.



Dormir

Evalúe de forma rutinaria la cantidad y la calidad del sueño en pacientes adultos utilizando una herramienta validada y si toman algún medicamento para dormir. Anime a los pacientes a que tengan 7-8 horas de sueño en un periodo de 24 horas, incluyendo las siestas. Derive las quejas graves de sueño a la clínica del sueño cuando sea posible.



Nutrición

Evalúe anualmente los patrones de alimentación y los hábitos. Para las personas que indican una dieta menos que óptima, aconseje a los pacientes sobre el valor de una dieta saludable y comparta recursos con los pacientes sobre dietas saludables para el cerebro como MIND o DASH. Para necesidades complicadas, consulte a un(a) dietista.



Actividad social

Realice una evaluación anualmente utilizando una herramienta validada para identificar a los adultos que experimentan soledad o aislamiento social. Sugiera estrategias para mejorar su conexión y actividad social y realice controles regulares.



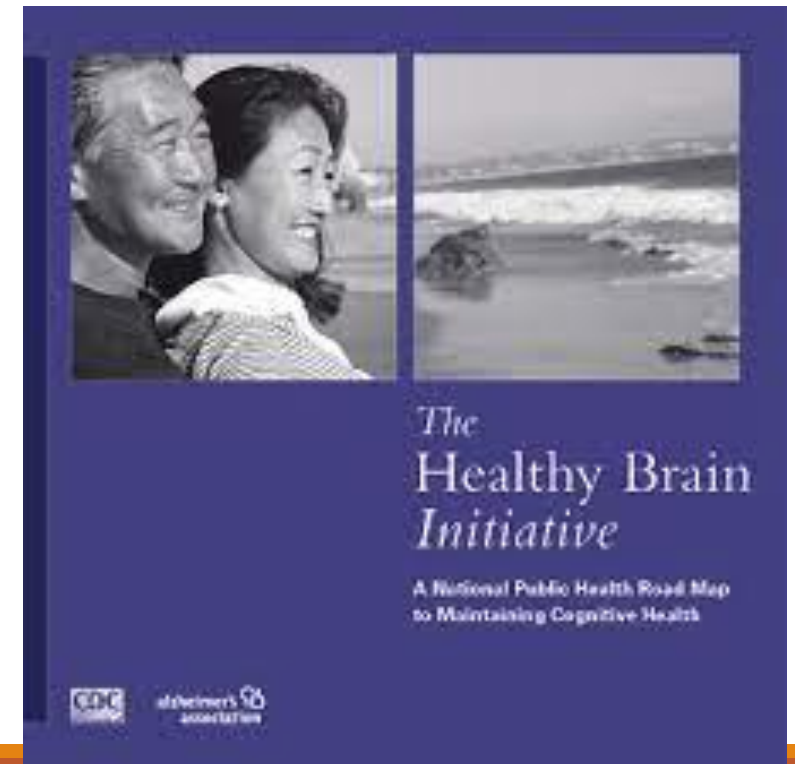
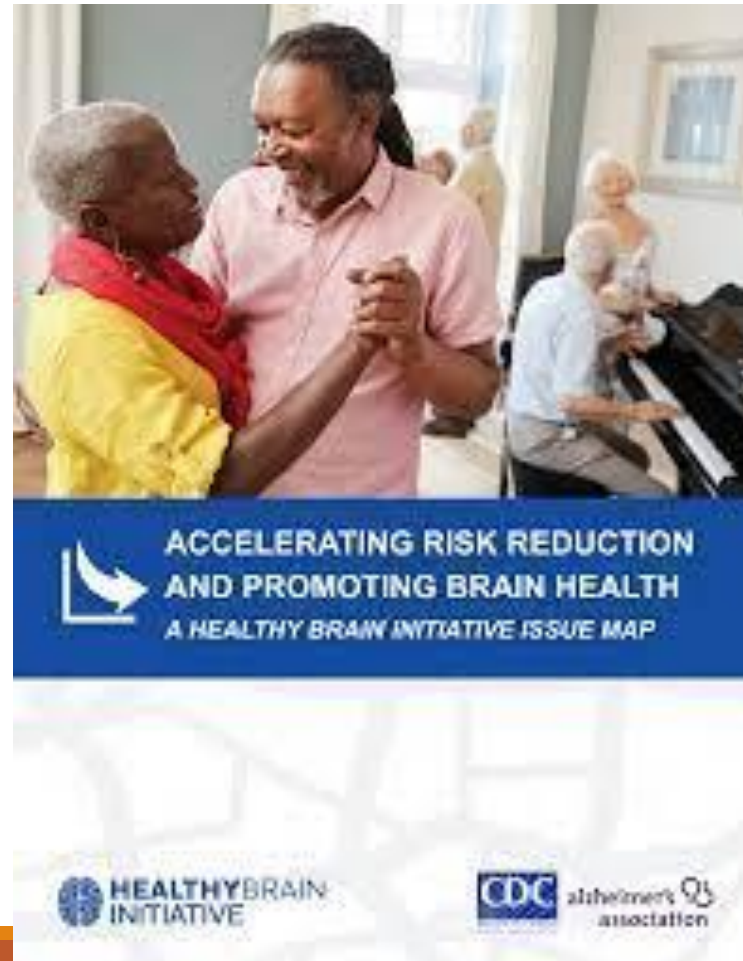
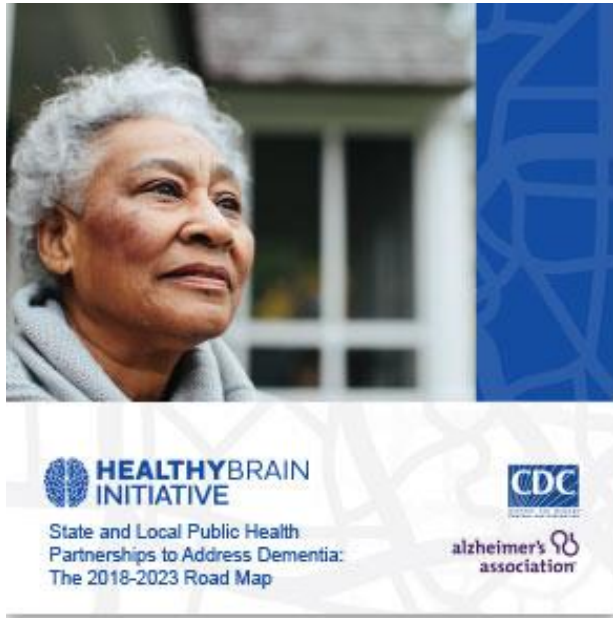
Estimulación cognitiva

Pregunte a los pacientes adultos sobre su nivel de estimulación cognitiva o actividad que puede incluir el aprendizaje de nuevas habilidades u otras actividades estimulantes que practican. Para las personas que indican niveles bajos de estimulación cognitiva, haga sugerencias para aumentar la actividad cognitiva.

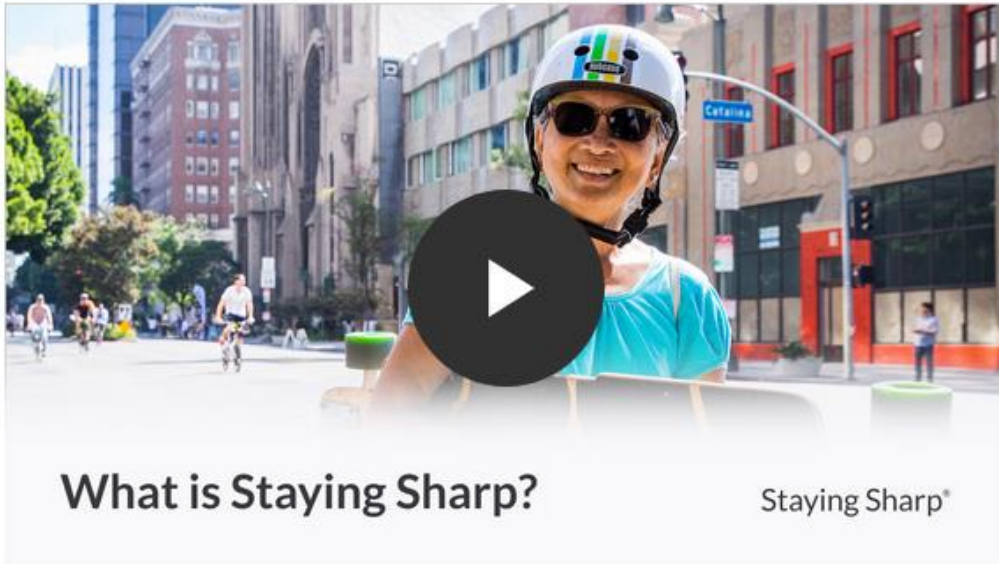
De UsAgainstAlzheimer convoco a un grupo de trabajo expertos nacionales para desarrollar recomendaciones y guías de implementación para los médicos de atención primaria y para neurólogos generales para ayudar a los pacientes reducir el riesgo de deterioro cognitivo. Las seis recomendaciones están destinadas a todos los **adultos de 45 años y más**.

1. Recomendaciones para reducir el riesgo de deterioro cognitivo, Grupo de trabajo sobre reducción de riesgos, 2021.

Healthy Brain Initiative: CDC & Alzheimers Association



AARP




What Is Staying Sharp?

Staying Sharp is a program that shows you how to incorporate the six pillars of brain health into your daily life. The pillars follow guidance from the Global Council on Brain Health whose goal is to provide simple steps people can take every day to learn about their brains and live life to the fullest.

Includes a Brain Health Assessment, healthy lifestyle videos, fun and interactive challenges/activities

References

- WHO Guidelines, 2019 [Risk reduction of cognitive decline and dementia](#)
- Lancet Commission, 2020 [Dementia prevention, intervention, and care: 2020 report of the Lancet Commission](#)
- Lancet 2015. [A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people \(FINGER\)](#)
- Journal of Neurology, Neurosurgery & Psychiatry, 2020 [Evidence-based prevention of Alzheimer's disease](#)
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- American Academy of Neurology, 2018. [Practice guideline update summary: Mild cognitive impairment](#)
- American Heart Association/American Stroke Association, 2017. [Defining Optimal Brain Health in Adults](#)
- National Academies of Sciences, Engineering, and Medicine, 2017. [Preventing Cognitive Decline and Dementia: A Way Forward.](#)

A scenic view of a beach with a harbor, mountains, and palm trees. The foreground shows modern buildings and palm trees. The middle ground features a sandy beach, waves, and a harbor with several sailboats. The background consists of a range of blue mountains under a clear sky.

**Thank You
QUESTIONS?**