Smoking and Dementia

BRAIN HEALTH ACADEMY
UsAgainstAlzheimer's

October 18, 2023

Acknowledgements

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American Heart Association.

This course and continuing education credit is provided free of charge, with support from

AARP®

Eisai

Presenter

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Course Description

Smoking can affect nearly every organ of the body, leading to diseases such as cancer, stroke, heart disease, and lung diseases. It is also among the top risk factors for dementia. This course provides strategies and resources to address smoking and build cognitive resilience.

Learning Objectives

- Participants will be able to list 6 or more modifiable risk factors for dementia.
- Participants will be able to summarize the link between smoking and dementia.
- Participants will be able to identify effective interventions and strategies to address smoking.
- Participants will be able to identify special considerations for high-risk populations.

Facts: Alzheimer’s and related dementias (ADRD)

Scope of the Epidemic (U.S.)[1]

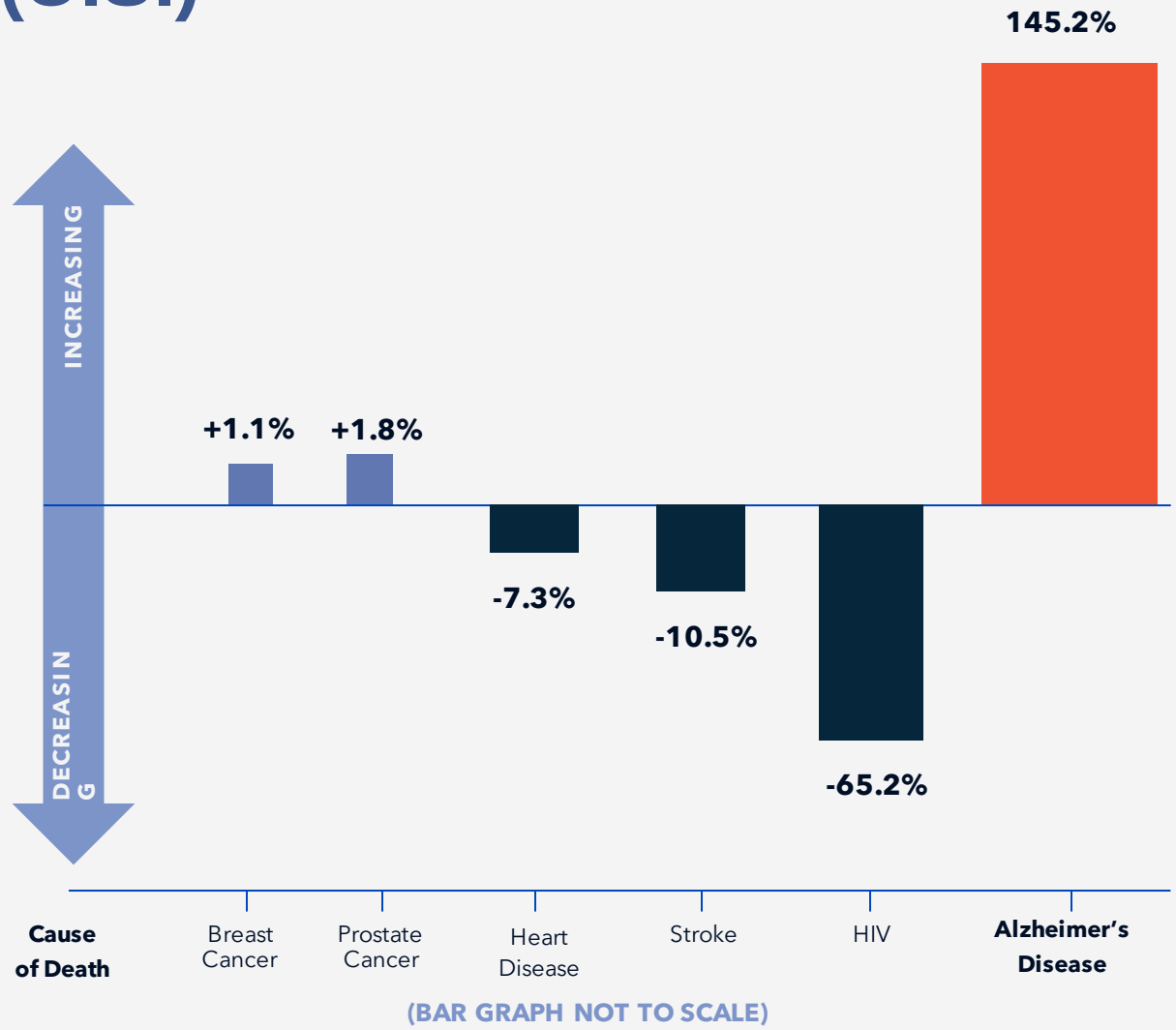
6.5 million adults

1 in 9 adults age ≥65

1 in 3 adults age ≥85

2/3 are women

Alzheimer's deaths increased 145% from 2000-2019, while other top causes of death have declined



Inequities in Brain Health[5,12,22]

African American people are
2X AS LIKELY
to have Alzheimer's

Latino people are
1.5X AS LIKELY
to have Alzheimer's

Less likely than White patients to receive a timely diagnosis;

More likely to report experiencing racial discrimination along their patient and caregiver journeys;

Less likely to be enrolled in cutting-edge Alzheimer's and brain health research.

Modifiable Risk Factors for Dementia

Alzheimer's: Non-Modifiable Risk Factors

Age

Number one risk factor is advancing age.

Risk doubles every 5 years after age 65.[2]

Family History

Genetics vs environmental factors. [1]

Education

Fewer years of formal education and lower levels of cognitive engagement may be risk factors.[3]

Sex

2/3 of those with Alzheimer's are women.

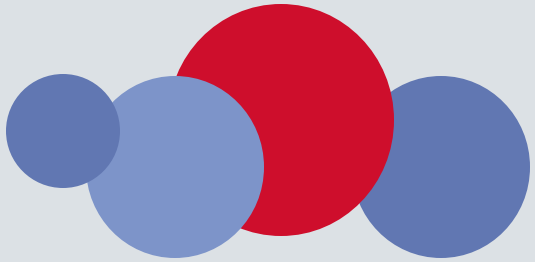
16% of women age ≥ 71 (11% of men).

After age 65, have more than 1 in 5 chance (1 in 11 for men). [19]

Modifiable Risk Factors[20]

40%

of dementia cases could be prevented by addressing these lifestyle factors



INCREASE

- Healthy Diet
- Physical Activity
- Mental Activity
- Cognitive and social activity

DECREASE

- Hypertension
- High cholesterol
- Uncontrolled diabetes
- Obesity
- Smoking
- Depression
- Excessive Alcohol Intake
- Head Injury
- Air Pollution
- Hearing Loss

The link between Smoking & Alzheimer's and related dementias

Smoking and Dementia Link

- Smoking is associated with increased risk of Alzheimer's dementia and vascular dementia.[4]

- A review of 37 studies found that compared to never smokers, current smokers had:
  30% increased risk of all-cause dementia
  40% increased risk for Alzheimer's disease[25]

- A 2017 Lancet Commission on dementia risk ranked smoking third among 9 modifiable risk factors for dementia.[16]

Smoking and Dementia Link

	Population prevalence	Relative risk (95% CI)	PAR (confidence range)	Number of cases attributable (thousands; confidence range)
USA				
Diabetes mellitus	8·7%	1·39 (1·17–1·66)	3·3% (1·5–5·4)	174 (77–288)
Midlife hypertension	14·3%	1·61 (1·16–2·24)	8·0% (2·2–15·1)	425 (119–798)
Midlife obesity	13·1%	1·60 (1·34–1·92)	7·3% (4·3–10·8)	386 (226–570)
Depression	19·2%	1·90 (1·55–2·33)	14·7% (9·6–20·3)	781 (506–1078)
Physical inactivity	32·5%	1·82 (1·19–2·78)	21·0% (5·8–36·6)	1115 (308–1942)
Smoking	20·6%	1·59 (1·15–2·20)	10·8% (3·0–19·8)	574 (159–1050)
Low education	13·3%	1·59 (1·35–1·86)	7·3% (4·4–10·3)	386 (236–544)
Combined (maximum)	..	..	54·1%	2 866 951*

PAR=population attributable risk. *Absolute number.

Others: Hearing loss, alcohol consumption, social isolation, pollution

Lancet Neurol 2011; 10: 819–28

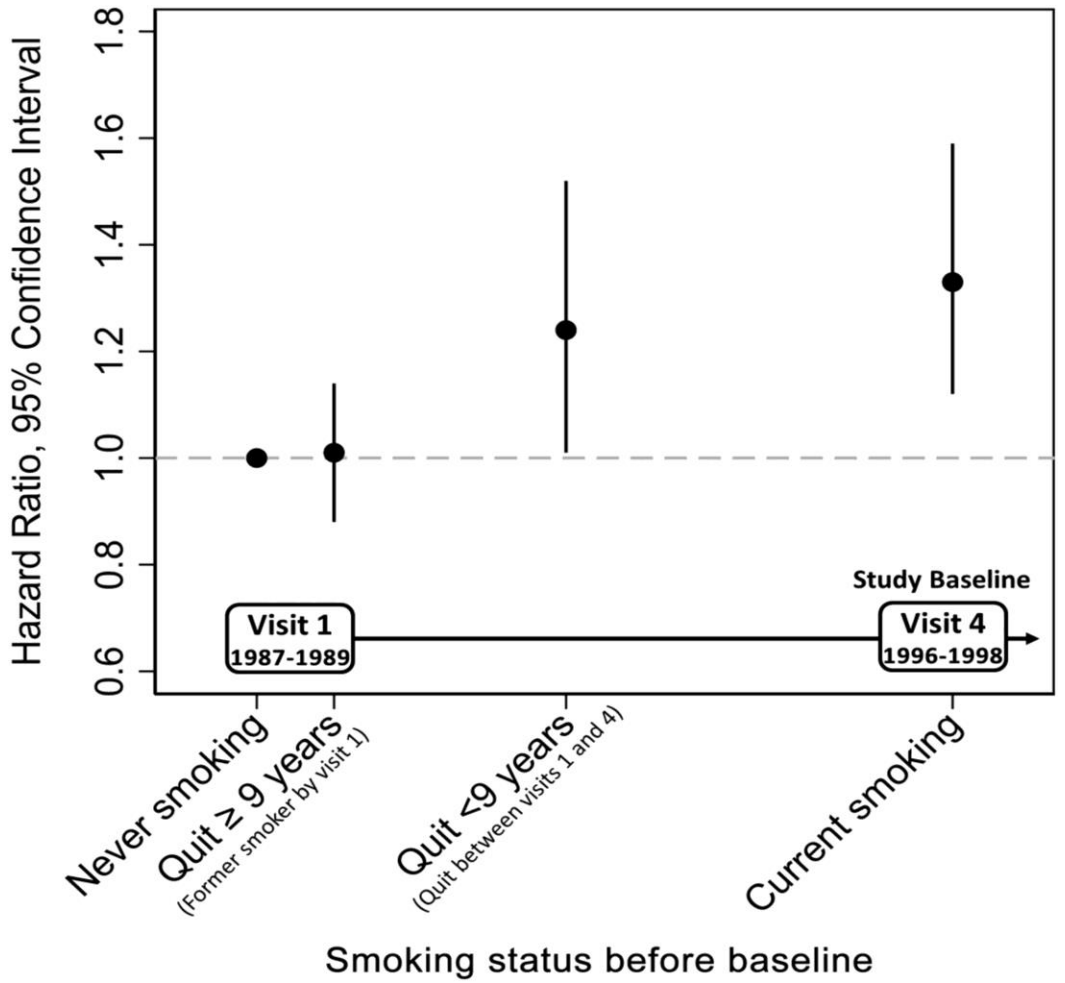
Smoking and Dementia Link

- There is a “dose response” relationship between smoking and risk of dementia.[23]

- The effects of smoking on dementia diminish after cessation.
  Those who quit within the past 10 years have no increased risk compared with nonsmokers.[10]

- There are no protective effects of smoking on dementia, despite earlier suggestions of this from studies supported by the tobacco industry.[8]

Relationship of Cigarette Smoking and Time of Quitting with Incident Dementia and Cognitive Decline



J American Geriatrics Society, Volume: 68, Issue: 2, Pages: 337-345, First published: 01 November 2019, DOI: (10.1111/jgs.16228)

Smoking and Dementia Link

- The effects of tobacco smoking on cognition begin in midlife.[6]
- The effects of smoking on dementia persist even after accounting for earlier death among smokers from other causes.[15]
- Childhood exposure to secondhand tobacco smoke is associated with increased risk of dementia.[26]

Smoking and Dementia Link [6]

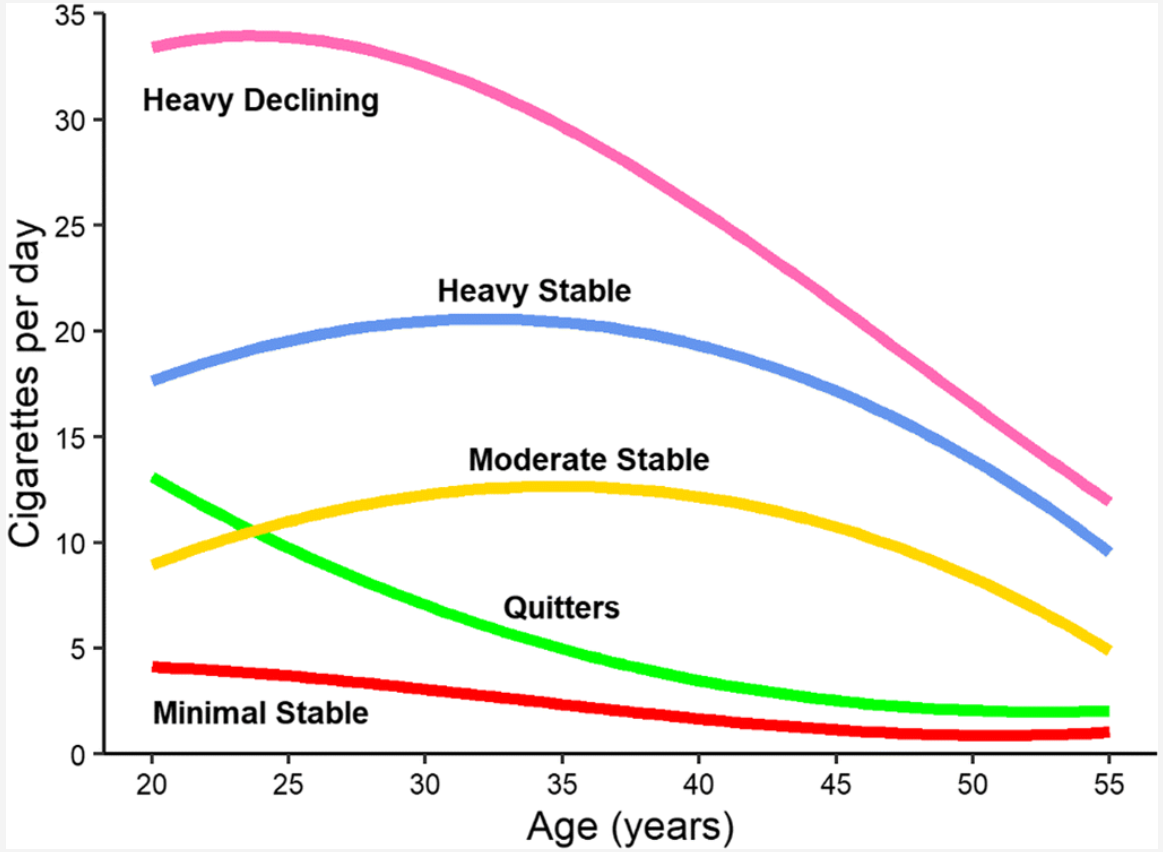
Early to Midlife Smoking Trajectories are Associated with Cognitive Function in Middle-Aged US Adults: the CARDIA Study

Smoking trajectories of ever smokers

N= 1638 ever smokers in Coronary Artery Risk Development in Young Adults study

- Mean age 50 at time cognitive assessment

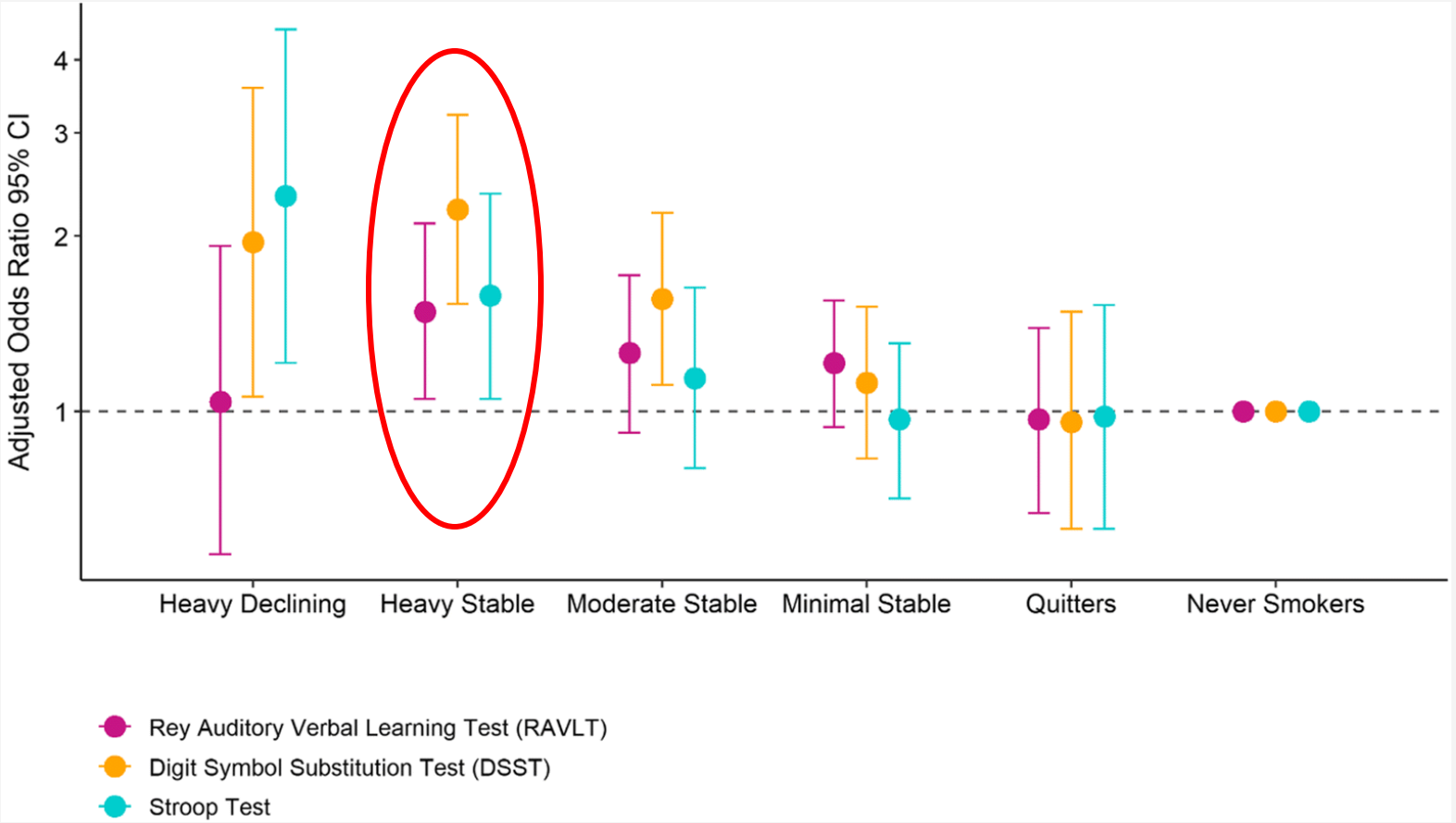
- heavy declining (*n* = 86; 5.2%)
- heavy stable (*n* = 248; 15.1%)
- moderate stable (*n* = 646; 39.4%)
- minimal stable smokers (*n* = 324; 9.7%)
- quitters (*n* = 324 [9.7%]).



Early to Midlife Smoking Trajectories Are Associated with Cognitive Function in Middle-Aged US Adults: the CARDIA Study [6]

N= 3364 CARDIA (Coronary Artery Risk Development in Young Adults study) participants.

Adjusted logistic regression models controlled for age, race, sex, education, income, hypertension, diabetes, physical activity, depression, age started smoking, and alcohol and marijuana use.



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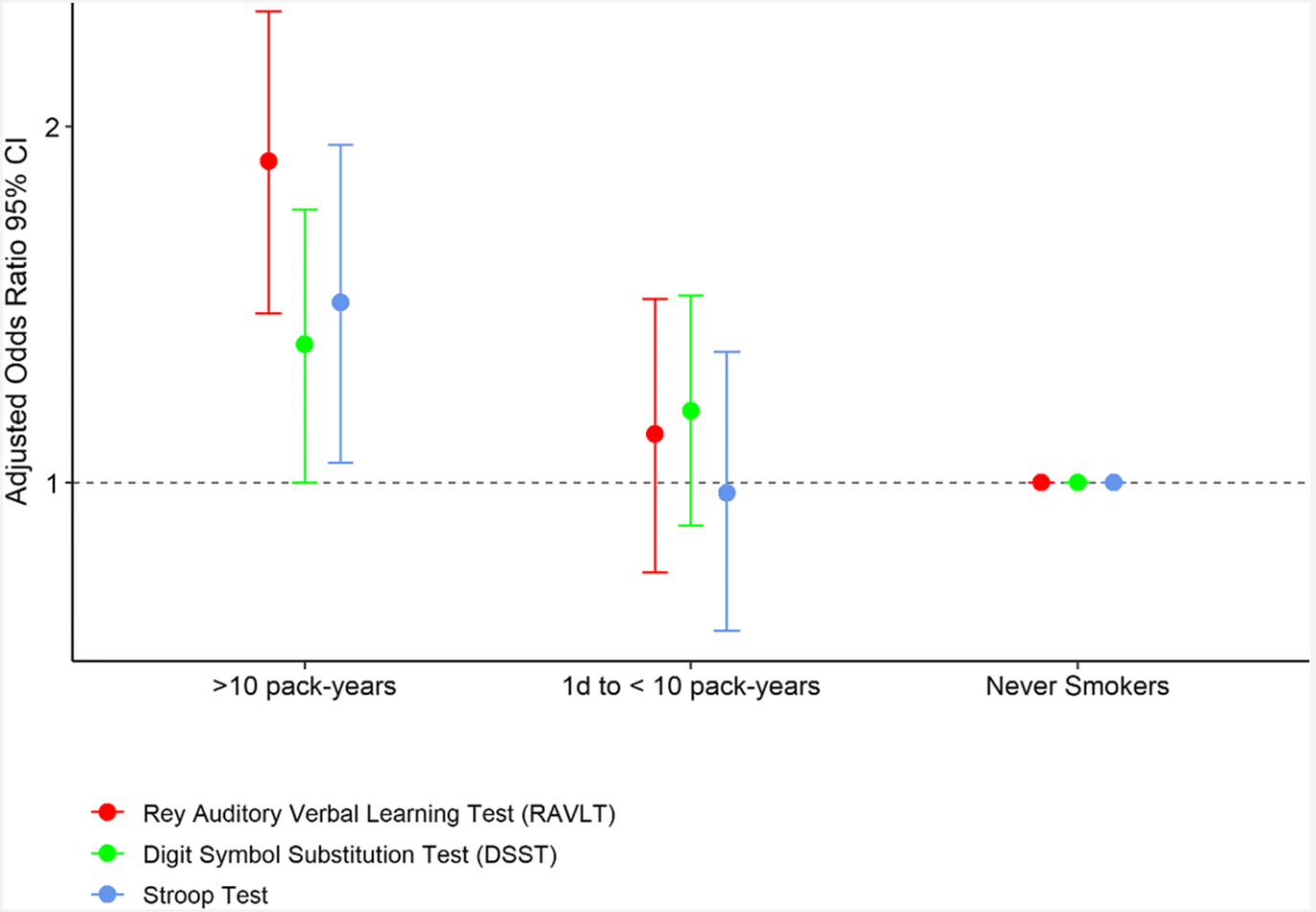
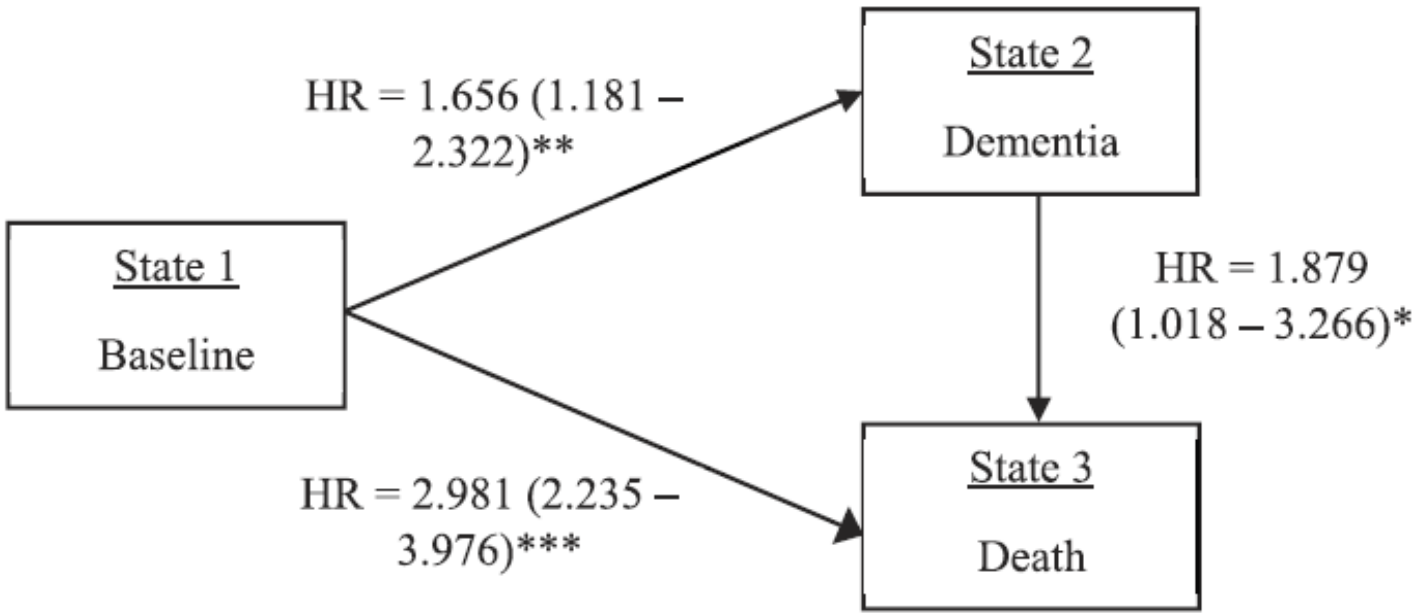
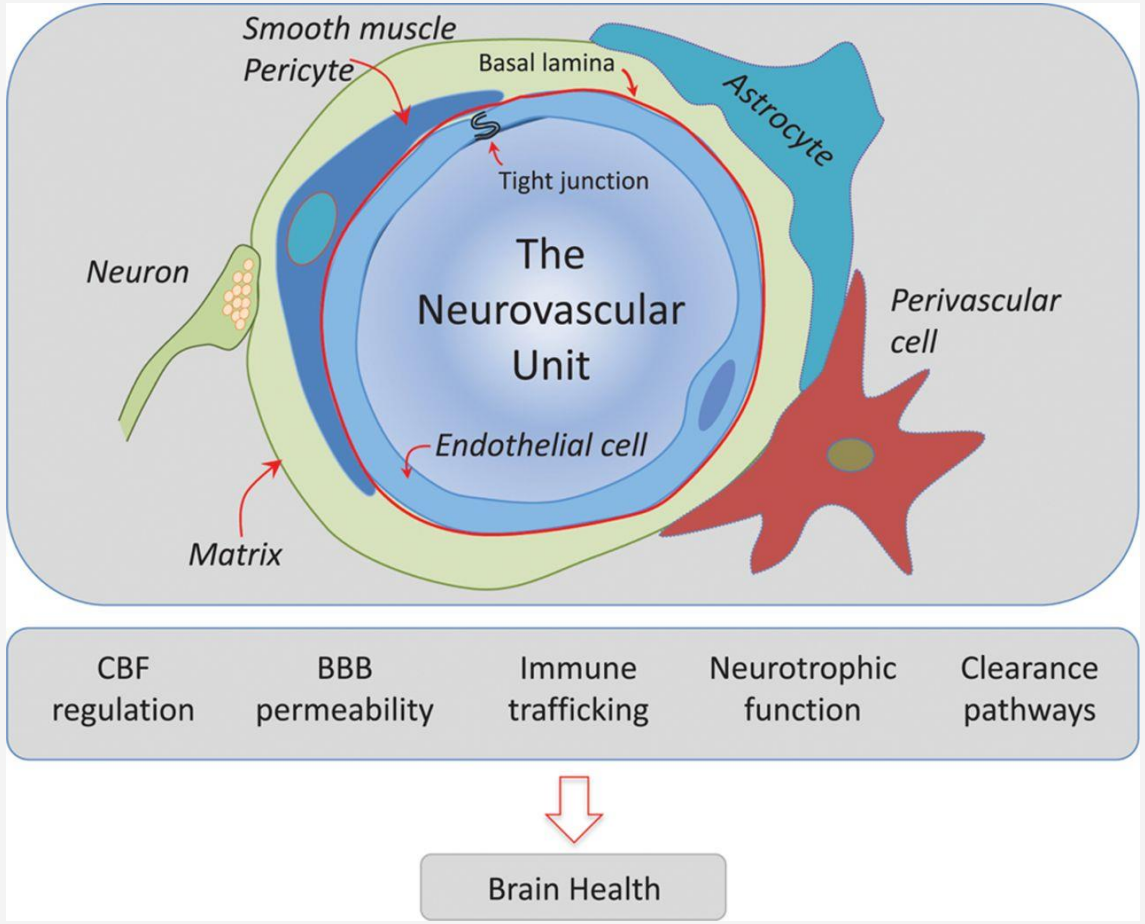


National Alzheimer's Coordinating Centers (NACC) Uniform Data Set (UDS): Current smokers compared to never smokers [14]



$*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

Mechanisms Linking Smoking and Dementia [13]



Defining Optimal Brain Health in Adults: A Presidential Advisory From the American Heart Association/American Stroke Association, Volume: 48, Issue: 10, Pages: e284-e303, DOI: (10.1161/STR.0000000000000148)

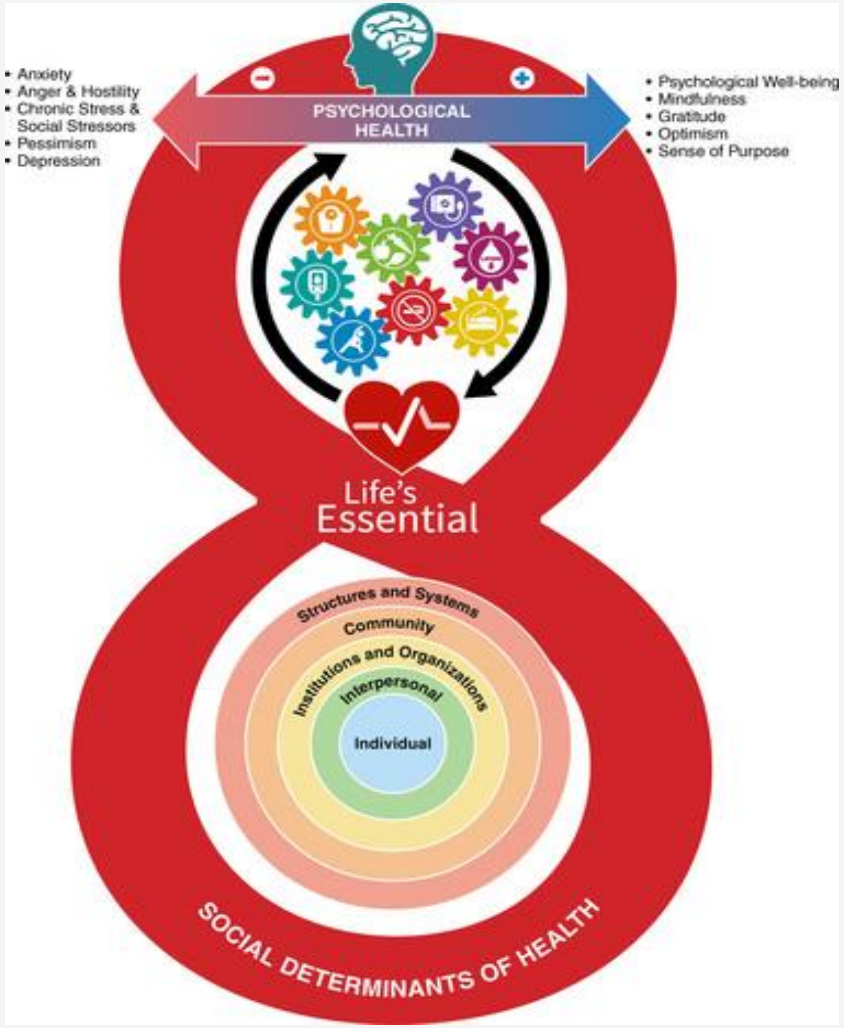
Mechanisms Linking Smoking and Dementia [13]

- Oxidative stress
- Inflammation
- Endothelial dysfunction
- Increased risk of other vascular risk factors (hypertension, diabetes, etc.)
- Stroke
- Others

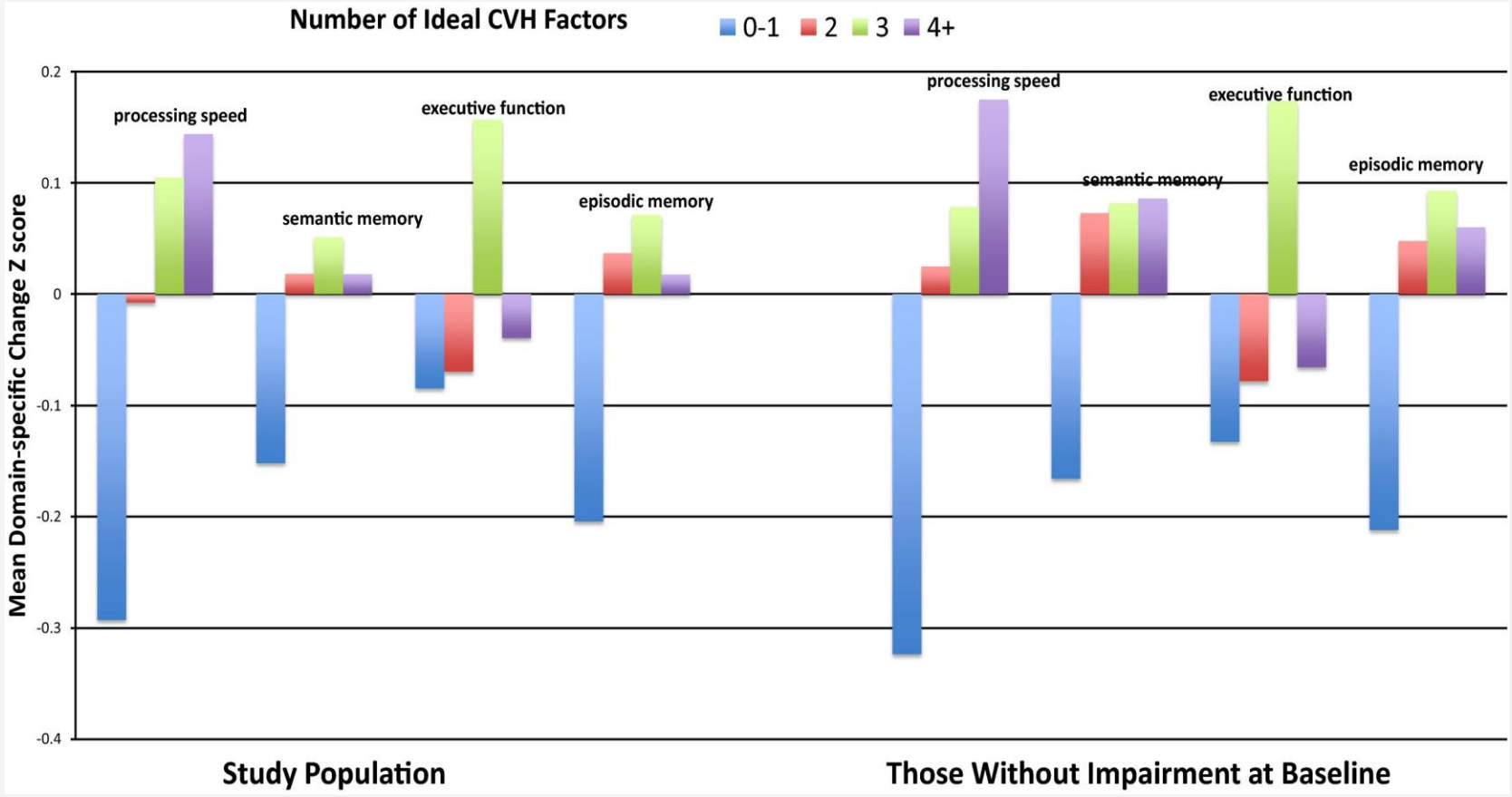
Smoking prevention and treatment

AHA Life's Essential 8[16]

Blood pressure
Cholesterol
Blood sugar
Sleep
Healthy weight
Diet
Exercise
Tobacco



Those with less ideal cardiovascular health have faster cognitive aging: Northern Manhattan Study [12]



Gardener H et al. JAHA. 2016;5.

Smoking Cessation [23]

- The most effective smoking cessation interventions include both individual and group behavioral counseling combined with use of FDA-approved smoking pharmacotherapy.
  - While this intervention is most effective, access to these services may be impacted by limited availability of counseling and limited coverage for medications.
- Services such as telephone quitlines and web-based cessation programs are more effective than quitting "cold turkey" and are widely available and free of charge.
- As with treatment of other addictions, smoking cessation is a process that may include relapse, so every quit attempt is important for the ultimate goal of quitting for good.
- AHA cautions against using e-cigarettes as a cessation aid due to their unknown long-term health effects and the potential to sustain long-term nicotine addiction and tobacco use.

Smoking Cessation

1. Set your “Quit Day” and take a No Smoking or Vaping pledge.
2. Choose your method for quitting.
3. Talk with your doctor and decide if you’ll need medicines or other help to successfully quit.
4. Make a plan for your Quit Day and afterward.
5. And finally, quit tobacco for good on your Quit Day!

Smoking Cessation

1. **Set your "Quit Day" and take a No Smoking or Vaping pledge.**

- Choose a date within the next seven days when you'll stop using tobacco products– that's now your "Quit Day."
- Make a pledge or commitment in front of people who will support you on your path to quitting.
- Use the time until your Quit Day to prepare and to gradually cut down on the number of cigarettes you smoke or how much you vape or use other tobacco products.
- Take the pledge: "I promise to not smoke or use any tobacco products after my Quit Day. I know it is a serious danger to my (and my family's) health. I will also try to stay away from secondhand smoke and encourage and support others to quit smoking and using tobacco products."

Smoking Cessation

2. Choose your method for quitting.

There are three ways to quit smoking. You can choose one or use them in combination – whatever you think will work best for you.

1. "Cold turkey." Stop smoking or vaping all at once on your Quit Day.
2. Cut down the number of cigarettes you smoke each day or how many times you vape until you stop completely. Keep track on a calendar. By your Quit Day, stop smoking completely.
3. Smoke only part of each cigarette, reducing the amount until you stop smoking completely. Count how many puffs you normally take from each cigarette, then reduce the number of puffs every two to three days. Keep track on a calendar. On your Quit Day, stop smoking completely.

Smoking Cessation

3. Talk with your doctor and decide if you'll need medicines or other help to quit.

Nicotine replacement medicines

Nicotine chewing gum or lozenges, patch, or spray

Non-nicotine prescription medicines

Bupropion hydrochloride

Varenicline

4. Make a plan for your Quit Day and afterward.

- Have healthy snacks available.
- Find enjoyable ways to fill the time when you may be tempted to smoke.
- Get rid of every cigarette, vape, match, lighter, ashtray and any other tobacco product in your home, office and car.

5. Quit tobacco for good on your Quit Day!

American Heart Association.

American Heart Association®
Certified Professional
Tobacco Treatment

- The American Heart Association is launching a renewable, nationally-recognized certification program for Tobacco Treatment Specialists.
- Tobacco Treatment Specialists are professionals who possess the skills, knowledge and training to provide effective, evidence-based interventions for tobacco dependence across a range of intensities.
- These individuals receive training from institutions that are accredited by the Council for Tobacco Treatment Training Programs.
- Our certification will help improve patient outcomes by ensuring members of the Tobacco Treatment Specialists field maintain strong competency in evidence-based smoking cessation interventions.

Other benefits of addressing smoking

Benefits of Smoking Cessation

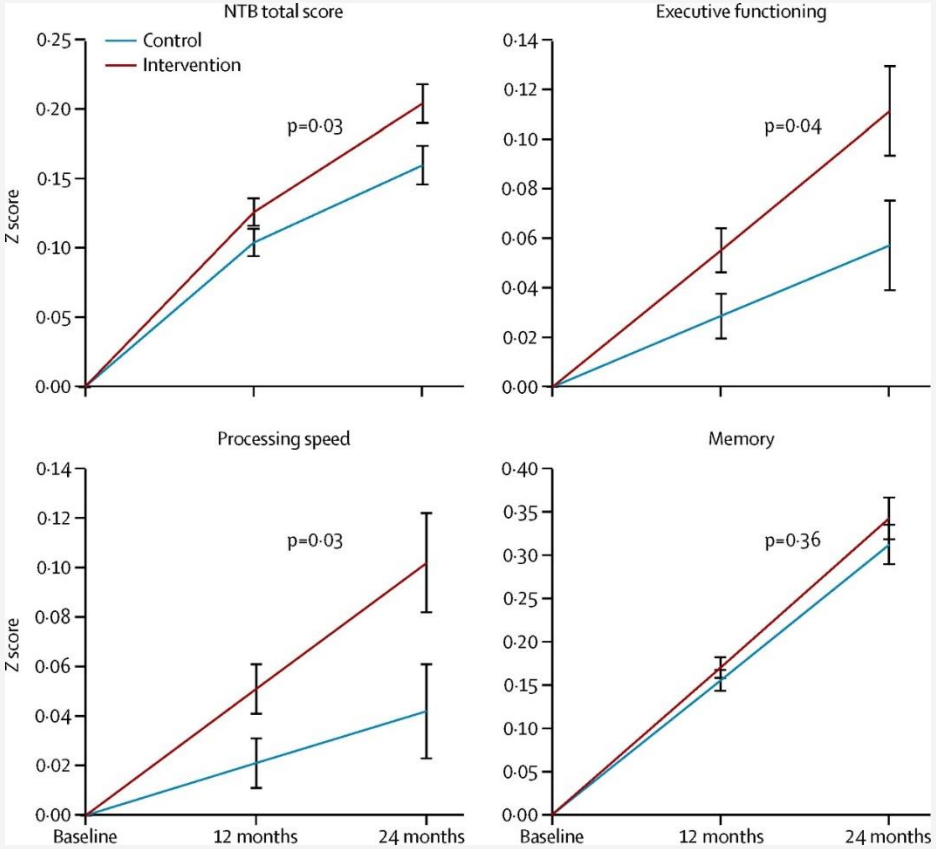
- Cardiovascular health
- Exercise tolerance
- Decreased risk of:
  - Heart attack (MI)
  - Heart failure
  - Stroke
  - Subarachnoid hemorrhage
  - Sudden death
- Lower risk of cancer: lung, oral, esophagus, pancreas, bladder, cervical
- Less respiratory illness
- Less risk of secondhand smoke exposure to family members
- Reduced risk of fire
- Clothes, hair, body, car and home smell better.
- Sense of taste and smell will return to normal.
- Stains on teeth and fingernails start to fade.
- Save hundreds of dollars annually

Considerations for implementation

Implementation

- Be extra vigilant to look for neurovascular risk factors in:
  - women
  - persons from racial and ethnic groups who are at greater risk for developing Alzheimer Disease and related dementias.
- Follow USPSTF recommendations to screen for:
  - high BP in adults aged 18 years or older (Grade: A);
  - statin use for primary prevention of cardiovascular disease (Grade: B); and
  - screening for abnormal blood glucose and type 2 diabetes (Grade: B).
- Follow ACC/AHA primary prevention guidelines

The FINGER randomized controlled trial: 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[18]



Patient Resources

- If just beginning to have these conversations with patients, consider handouts like this to help them remember that brain health equals heart health: https://www.aarp.org/content/dam/aarp/health/brain_health/2020/02/gcbh-heart-health-infographic-english. DOI.10.26419-2Fpia.00099.002.pdf
  - Available in Spanish, French, Arabic, and Chinese translations

- AHA's "Life's Essential 8" tools highlight key areas for optimal brain health related to cardiovascular care. Sharing patient-facing tools might help them achieve desired goals: https://www.heart.org/en/healthy-living/healthy-lifestyle/lifes-essential-8

Patient Resources

Quitlines

- The North American Quitline Consortium is a network of toll-free hotlines and websites. Find your state quitline and resources at map.naquitline.org.

US Residents

- English: 1-800-QUIT-NOW (1-800-784-8669) or www.smokefree.gov
- Spanish: 1-855-DEJELO-YA (1-855-335-3569) or espanol.smokefree.gov
- Chinese: 1-800-838-8917 or www.asiansmokersquitline.org
- Korean: 1-800-556-5564 or www.asiansmokersquitline.org
- Vietnamese: 1-800-778-8440 or www.asiansmokersquitline.org
- Veterans: 1-855-QUIT VET (1-855-784-8838) or www.publichealth.va.gov/smoking
- TTY: 1-800-332-8615

Patient Resources

Online resources

These organizations offer good information online and may have local resources in your area:

- **American Heart Association**: 1-800-AHA-USA1 or www.heart.org
- **American Cancer Society**: 1-800-ACS-2345 (1-800-227-2345) or www.cancer.org/healthy/stay-away-from-tobacco
- **American Lung Association**: 1-800-LUNGUSA (1-800-586-4872) or www.lung.org/stop-smoking
- **National Cancer Institute**: 1-877-44U-QUIT (1-877-448-7848) or www.smokefree.gov
- **Truth Initiative's Become An Ex**: www.becomeanex.org

Smoking disparities & the impact of social determinants of health

Disparities in Smoking Cessation

- Compared to White smokers, Black and Hispanic smokers are less likely to:
  a) be asked about tobacco use by a clinician,
  b) be advised to quit by a clinician, and
  c) to have used smoking-cessation aids during quit attempts.
- Men are less likely than women to receive smoking cessation assistance in U.S. primary care clinics.
- Uninsured patients are significantly less likely to receive smoking cessation counseling and medication.
- Smokers in the Southern and Western regions of the U.S. are less likely to receive smoking cessation assistance.
- Younger smokers (age 30 or younger) are less likely to receive smoking cessation assistance than older smokers.

Structural racism as a determinant of health [8]

Circulation

AHA PRESIDENTIAL ADVISORY

Call to Action: Structural Racism as a Fundamental Driver of Health Disparities

A Presidential Advisory From the American Heart Association

ABSTRACT: Structural racism has been and remains a fundamental cause of persistent health disparities in the United States. The coronavirus disease 2019 (COVID-19) pandemic and the police killings of George Floyd, Breonna Taylor, and multiple others have been reminders that structural racism persists and restricts the opportunities for long, healthy lives of Black Americans and other historically disenfranchised groups. The American Heart Association has previously published statements addressing cardiovascular and cerebrovascular risk and disparities among racial and ethnic groups in the United States, but these statements have not adequately recognized structural racism as a fundamental cause of poor health and disparities in cardiovascular disease. This presidential advisory reviews the historical context, current state, and potential solutions to address structural racism in our country. Several principles emerge from our review: racism persists; racism is experienced; and the task of dismantling racism must belong to all of society. It cannot be accomplished by affected individuals alone. The path forward requires our commitment to transforming the conditions of historically marginalized communities, improving the quality of housing and neighborhood environments of these populations, advocating for policies that eliminate inequities in access to economic opportunities, quality education, and health care, and enhancing allyship among racial and ethnic groups. Future research on racism must be accelerated and should investigate the joint effects of multiple domains of racism (structural, interpersonal, cultural, anti-Black). The American Heart Association must look internally to correct its own shortcomings and advance antiracist policies and practices regarding science, public and professional education, and advocacy. With this advisory, the American Heart Association declares its unequivocal support of antiracist principles.

Keith Churchwell, MD, FAHA, Chair
Mitchell S.V. Elkind, MD, MS, FAHA
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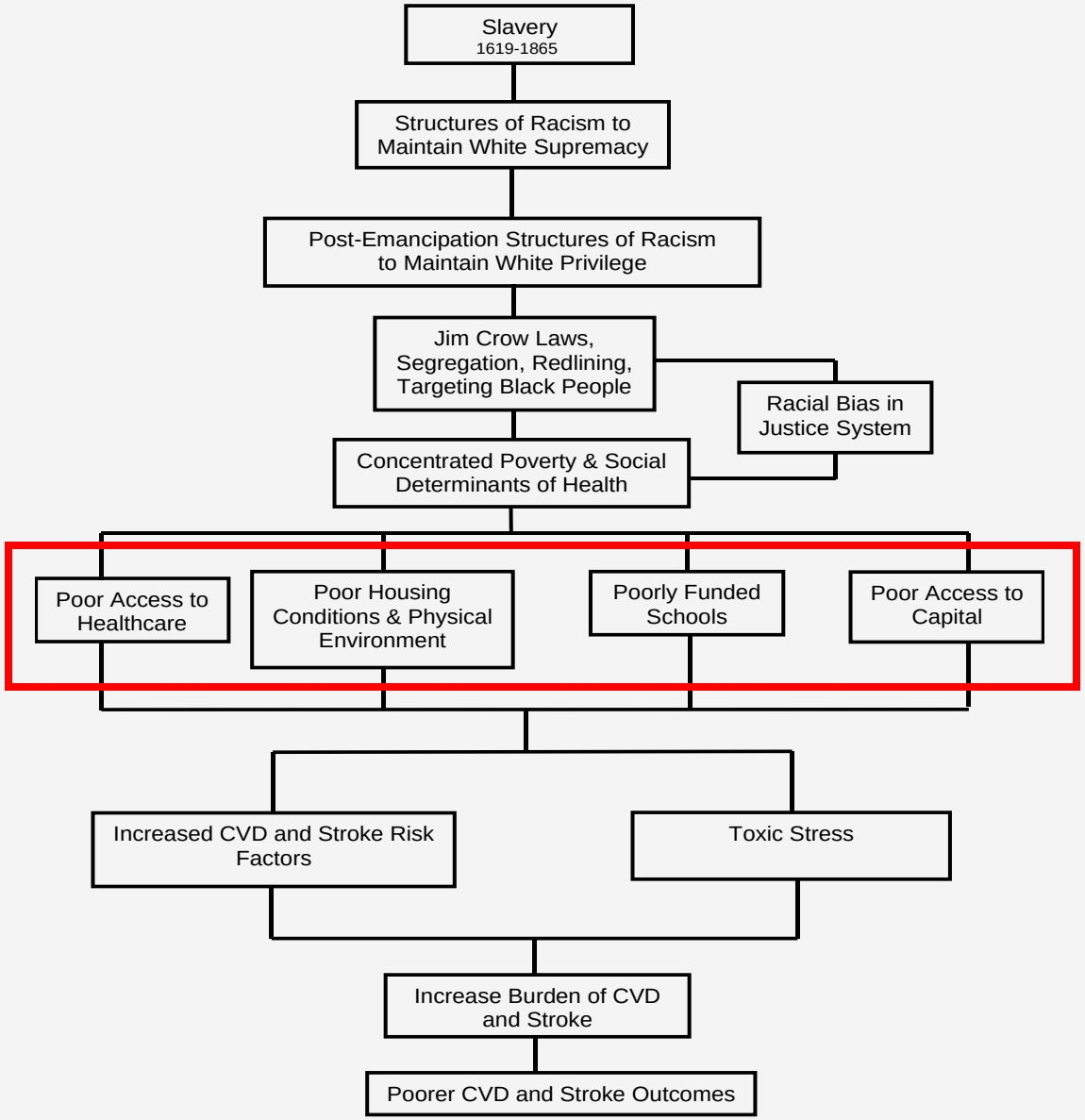
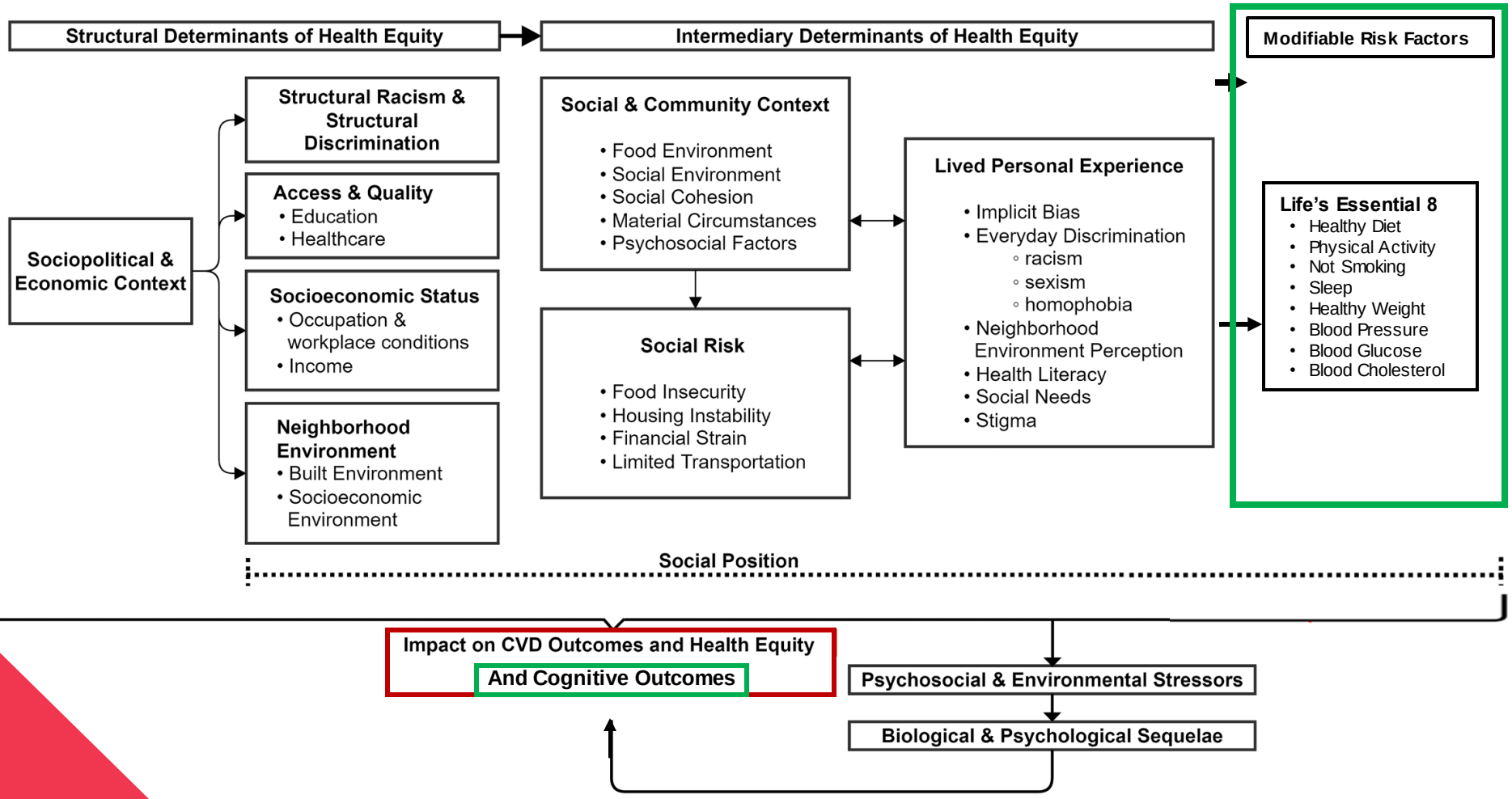
Eduardo Sanchez, MD, MPH
Anjail Z. Sharrief, MD, MPH, FAHA
Mario Sims, PhD, MS, FAHA
Olajide Williams, MD, MS
On behalf of the American Heart Association

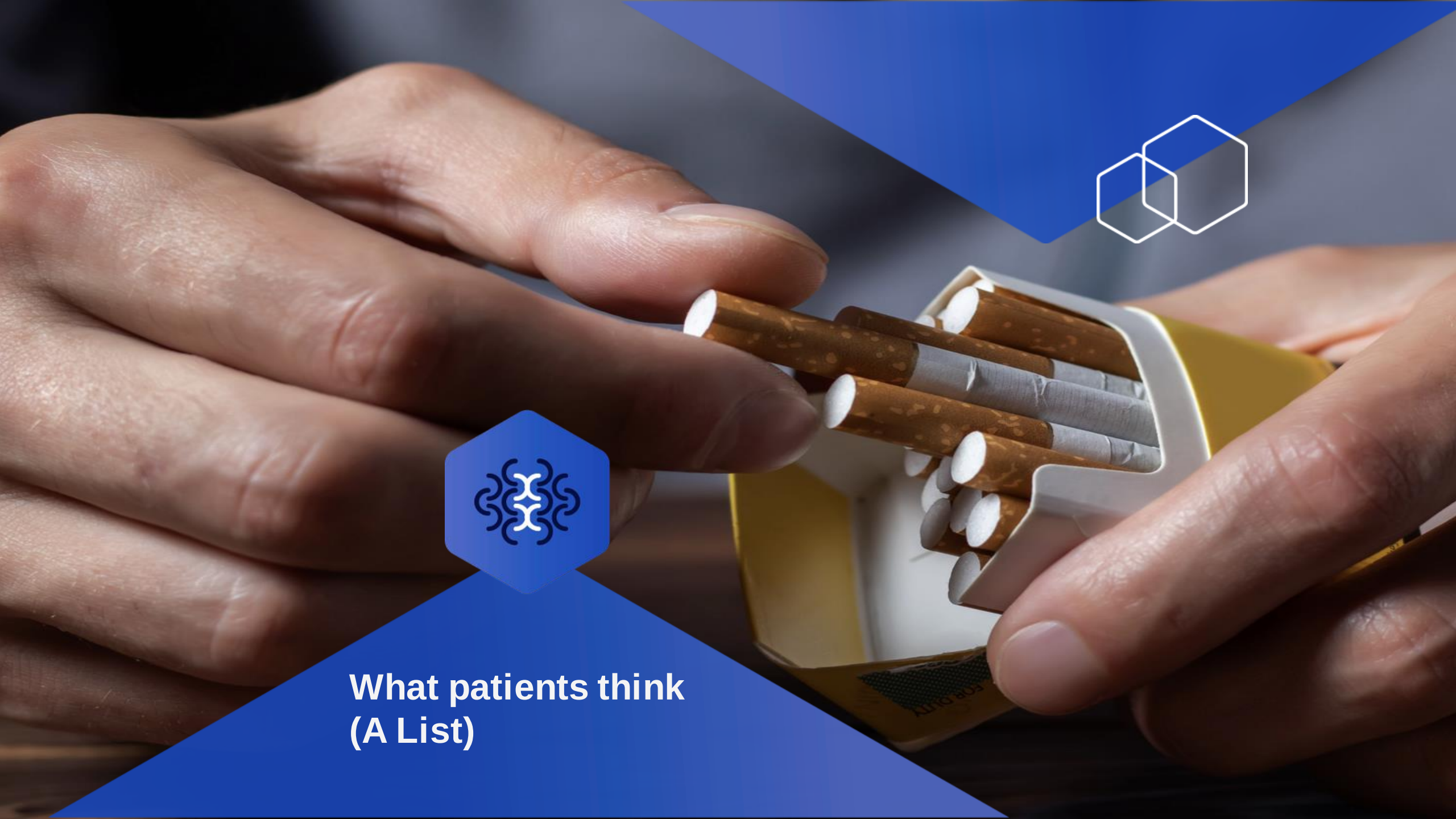


Historical Context of Structural Racism: Linking Anti-Black Racism to Poor Health Outcomes[8]

A Critical Framework of Social Determinants of Health (adapted)

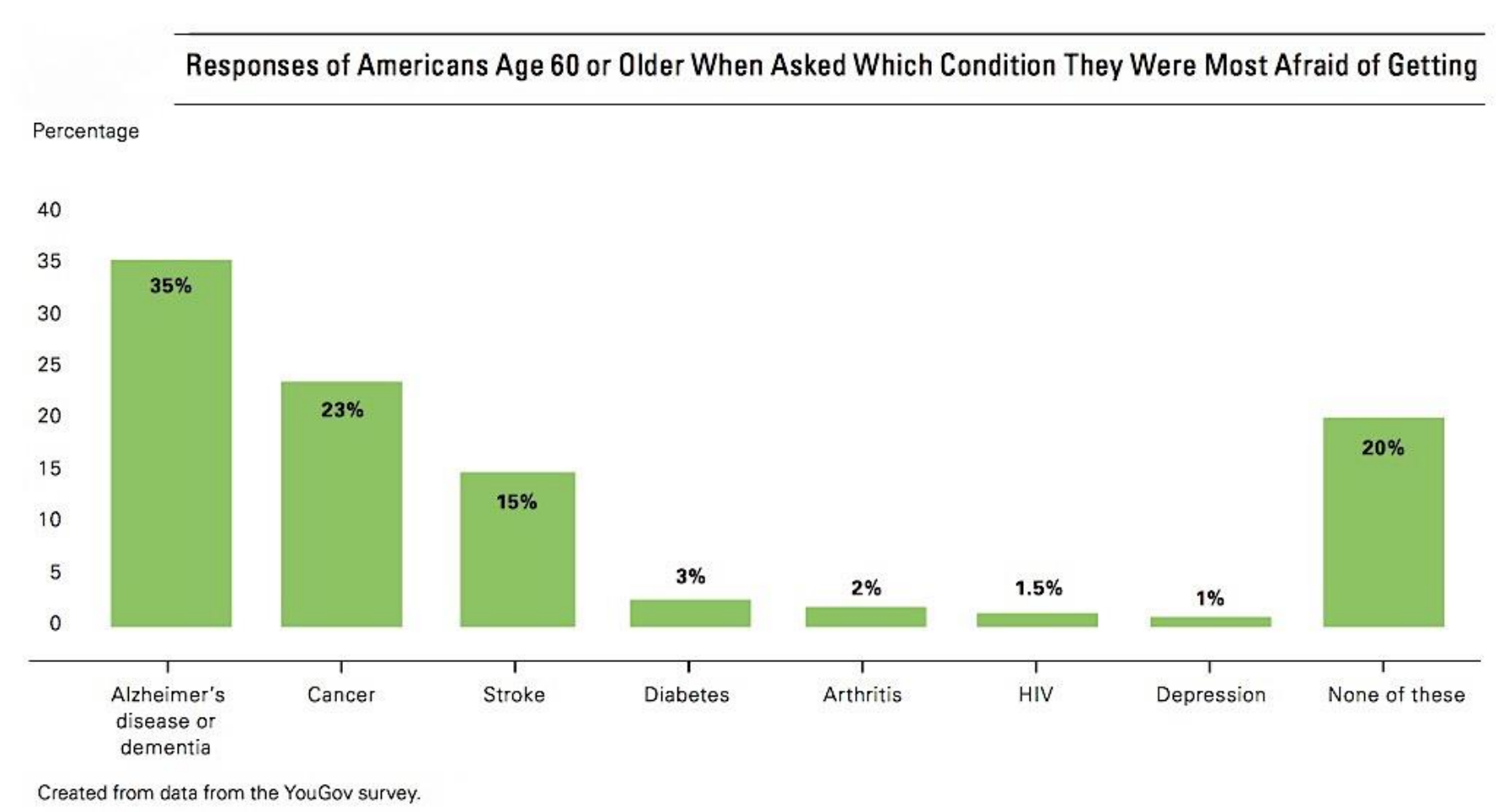


Adapted from: Powell-Wiley et al. 2022; *Circulation Research*



What patients think (A List)

Patients fear dementia above other conditions

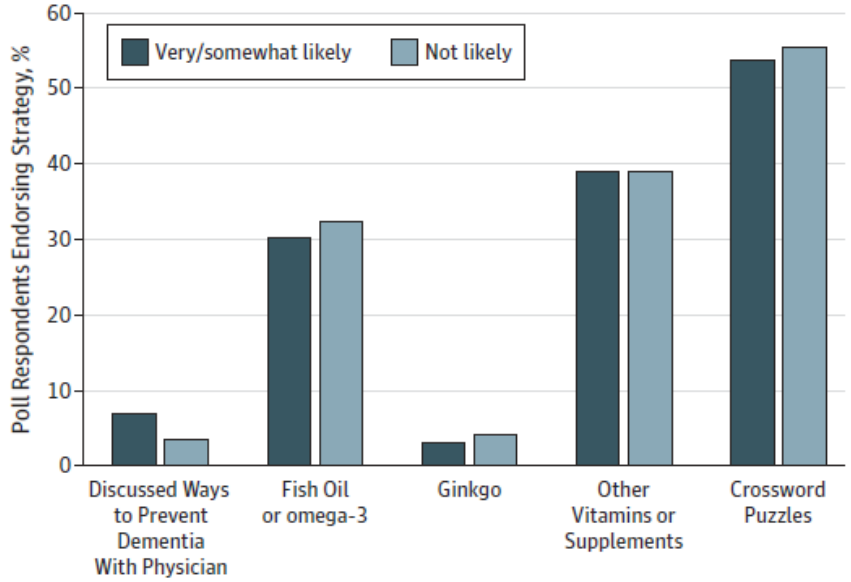


"O let me not be mad, not mad, sweet heaven!"
King Lear, *1.5*

Primary Care Practice: Conversation about risk factors and dementia not taking place [17]

- University of Michigan National Poll on Healthy Aging
- Survey of 1,019 respondents between 50 – 64 yo
  - Only 5.2% had discussed dementia prevention
  - Black patients perceived their risk as lower, rather than higher
  - Respondents did not perceive physical health as a risk factor for dementia
  - Few discussions about managing risk factors to reduce dementia risk
  - Respondents were engaging in strategies that were not evidence-based

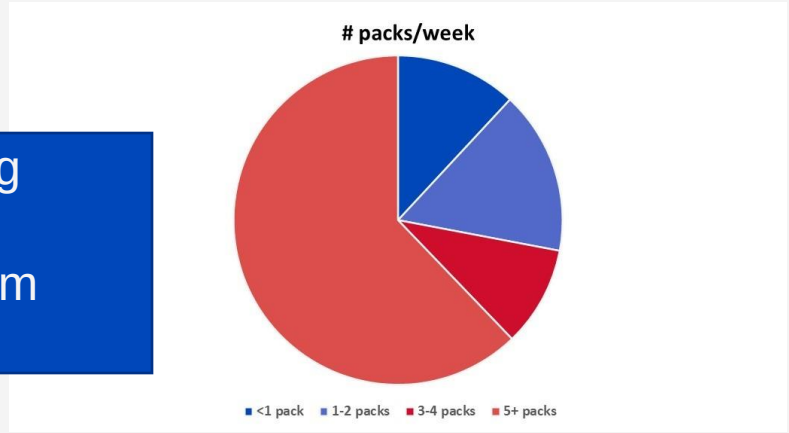
Figure. Actions Taken to Prevent Memory Loss by Perceived Likelihood of Developing Dementia



The percentage of poll respondents who endorsed specific strategies in response to the following question: "Do you take or do any of the following to maintain or improve your memory?" Responses are grouped by perceived likelihood of developing dementia (somewhat/very likely vs not likely). A χ^2 test was used to compare particular strategies endorsed by perceived likelihood of developing dementia. All comparisons were nonsignificant with the exception of discussion with a physician, which was endorsed more frequently by those who believed they were at least somewhat likely to develop dementia (7.1% [95% CI, 5.1%-9.8%] vs 3.6% [95% CI, 2.2%-5.7%]; $P = .02$).

What Matters Most Insights Survey: Tobacco Use

- **77%** believe that tobacco use affects the brain and brain health with **54%** saying the impact is significant
- **87%** think those effects are long-term
- **4%** smoke tobacco and **1%** vape
- **29%** have smoked/vaped routinely in past



- 25% feel totally uninformed about smoking/vaping effects
- Information largely obtained online (61%) and from HCPs (37%)

Respondents largely over age 65 (67%), Caucasian (92%), female (78%), college educated or greater (73%)

USAGAINSTALZHEIMER'S A-LIST

N=628 (ADRD/MCI diagnosis: 54; high risk for ADRD: 164; current caregivers: 71; former caregivers: 187; general interest in brain health: 152)

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