



Social Determinants,
Health Equity
and Hypertension



Research

JAMA | **Original Investigation**

Trends in Blood Pressure Control Among US Adults With Hypertension, 1999-2000 to 2017-2018

Paul Muntner, PhD; Shakia T. Hardy, PhD; Lawrence J. Fine, MD; Byron C. Jaeger, PhD; Gregory Wozniak, PhD; Emily B. Levitan, ScD; Lisandro D. Colantonio, MD, PhD

IMPORTANCE Controlling blood pressure (BP) reduces the risk for cardiovascular disease.

OBJECTIVE To determine whether BP control among US adults with hypertension changed from 1999-2000 through 2017-2018.

 Editorial

 Related article

 Supplemental content

**Controlled BP defined as SBP <140 mm Hg and DBP <90 mm Hg.
Treatment defined by self-reported antihypertensive medication use**

Source: [Muntner et al.: JAMA. doi:10.1001/jama.2020.14545](https://doi.org/10.1001/jama.2020.14545) Published online September 9, 2020

Blood Pressure Control among Adults with Hypertension* in the US



| Characteristic | Prevalence (%) |
|---------------------------|----------------|
| 45 – 64 years old | 49.7 |
| 64-74 years old | 51.7 |
| ≥ 75 years old | 37.3 |
| Female | 48.5 |
| Male | 45.0 |
| Non-Hispanic White | 48.2 |
| Non-Hispanic Black | 41.5 |
| Non-Hispanic Asian | 41.1 |
| Hispanic | 40.5 |

Source: [Muntner et al.: JAMA. doi:10.1001/jama.2020.14545](https://doi.org/10.1001/jama.2020.14545) Published online September 9, 2020
Hypertension defined as BP ≥ 140/90

Blood Pressure Control among Adults with Hypertension* in the US



| Characteristic | Prevalence (%) |
|--|----------------|
| Less than high school graduation | 40.5 |
| High school and some college | 46.2 |
| College graduation | 48.0 |
| < \$20,000 annual household income | 39.4 |
| \$20,000 - \$44,999 annual household income | 45.1 |
| \$45,000 - \$74,999 annual household income | 49.2 |
| > \$75,000 annual household income | 50.2 |
| Private health insurance | 48.2 |
| Medicare | 53.4 |
| Medicaid | 41.1 |
| Uninsured | 24.1 |
| Usual/no usual health care facility | 48.4/26.5 |
| No health care in past 12 months | 8.0 |

Source: [Muntner et al.: JAMA. doi:10.1001/jama.2020.14545](https://doi.org/10.1001/jama.2020.14545) Published online September 9, 2020
Hypertension defined as BP \geq 140/90



- Socioeconomic Position
- Race/ethnicity (=racism?)
- Social Support
- Culture and Language
- Access to Care
- Residential Environment

AHA Scientific Statement

Social Determinants of Risk and Outcomes for Cardiovascular Disease

A Scientific Statement From the American Heart Association

Edward P. Havranek, MD, FAHA, Chair; Mahasin S. Mujahid, PhD, MS, Co-Chair;
Donald A. Barr, MD, PhD; Irene V. Blair, PhD; Meryl S. Cohen, MD, FAHA;
Salvador Cruz-Flores, MD, FAHA;

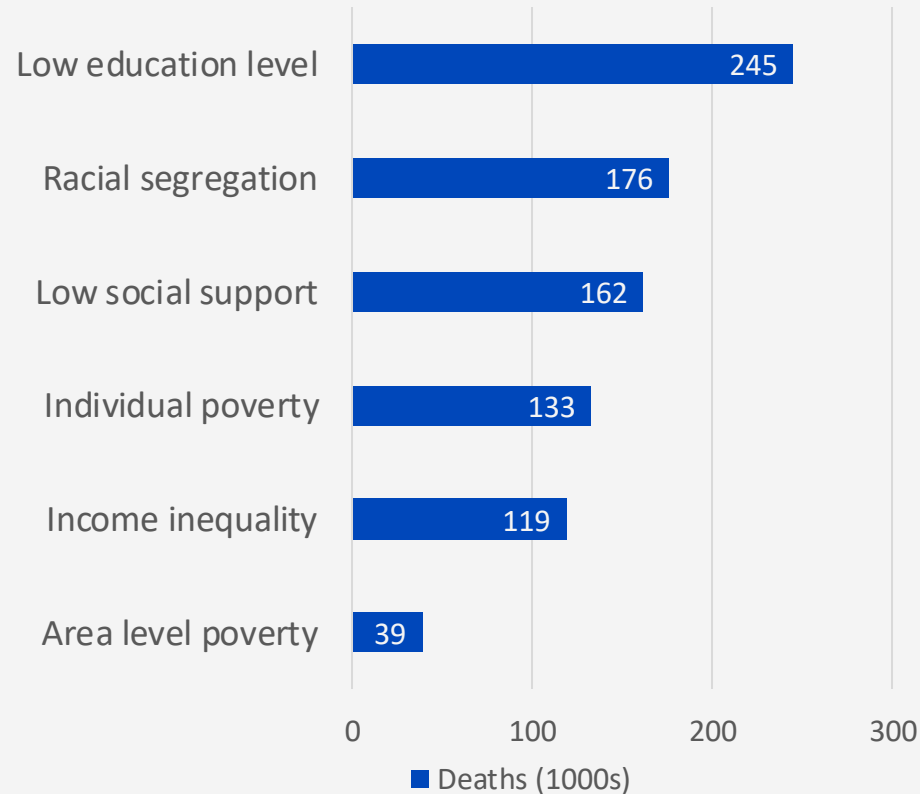
George Davey-Smith, MA(Oxon), MD, BChir(Cantab), MSc(Lond);

Cheryl R. Dennison-Himmelfarb, RN, PhD, FAHA; Michael S. Lauer, MD, FAHA;
Debra W. Lockwood; Milagros Rosal, PhD; Clyde W. Yancy, MD, FAHA; on behalf
of the American Heart Association Council on Quality of Care and Outcomes Research,
Council on Epidemiology and Prevention, Council on Cardiovascular and Stroke Nursing,
Council on Lifestyle and Cardiometabolic Health, and Stroke Council

Source: [Havranek et al. 2015: Circulation](#)



Relationship between Social Determinants and Mortality (2000)



Source: [Galea et al. Estimated Deaths Attributable to Social Factors in the United States. AJP. August 2011. Vol 101. No. 8.](#)

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.

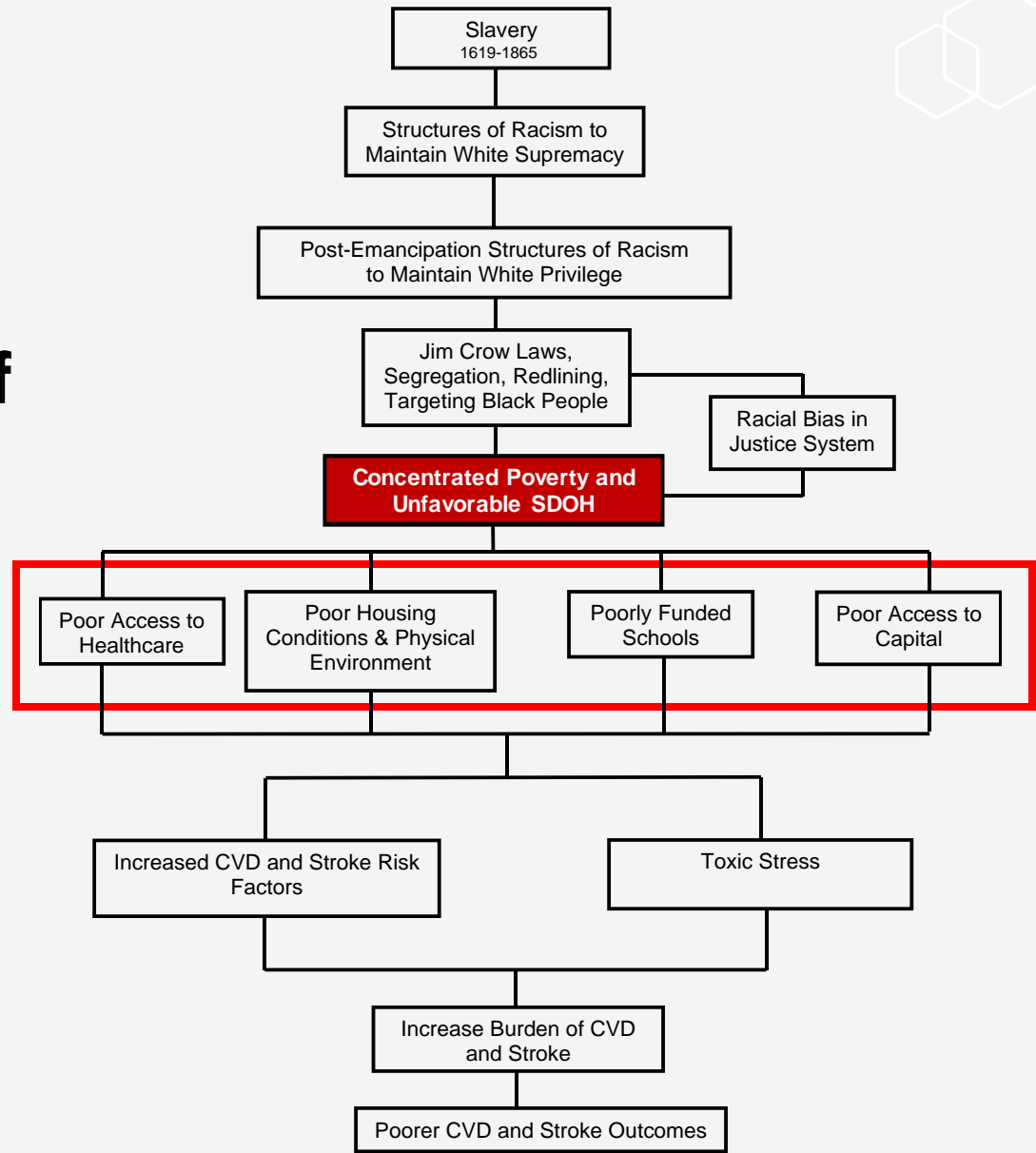
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FAHA, Chair
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On behalf of the
American Heart
Association

Source: [Churchwell et al. 2020: Circulation](#)



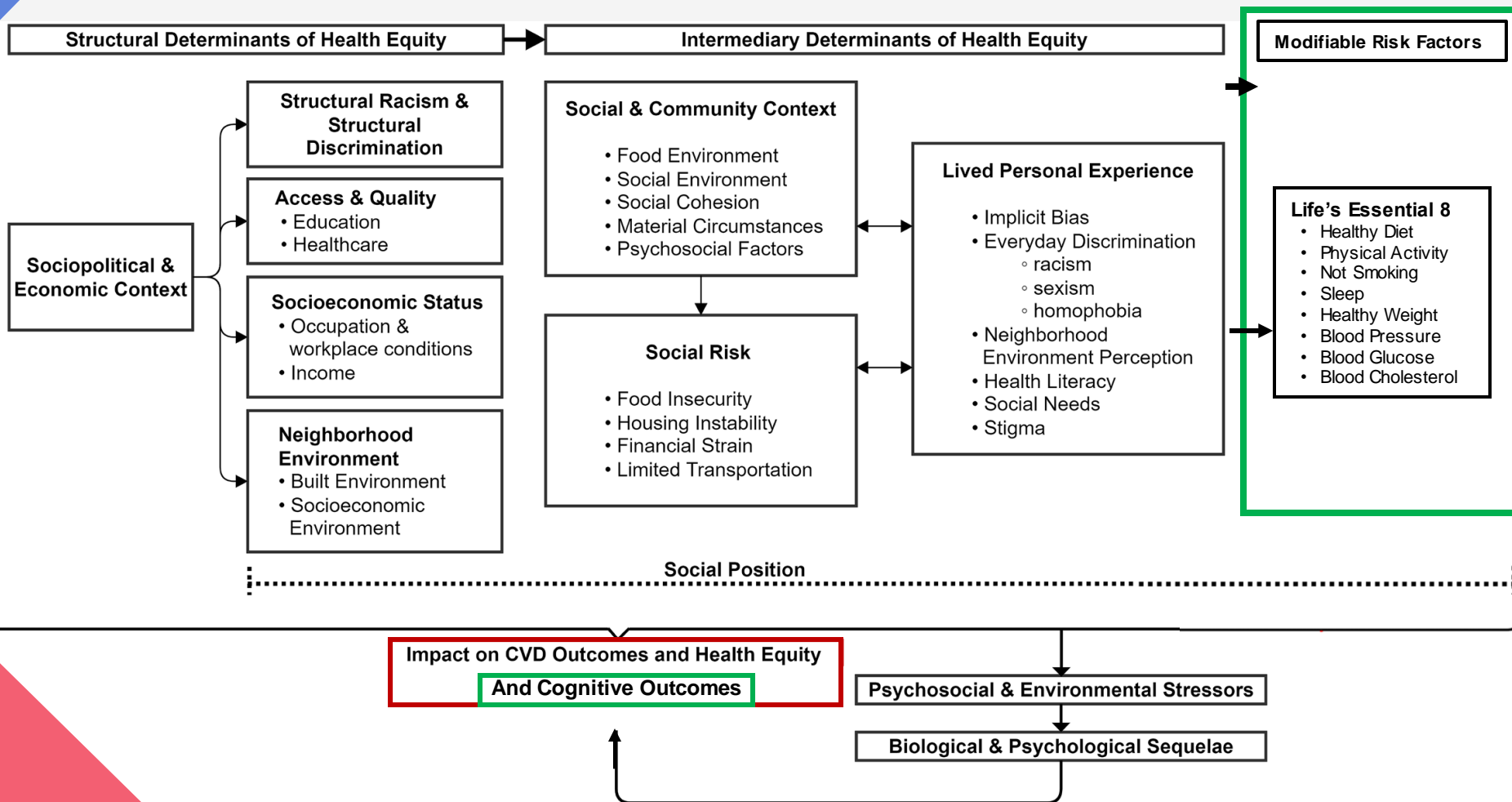
Historical Context of Structural Racism

Linking Anti-Black Racism to Poor Health Outcomes



Source: [Churchwell et al. 2020: Circulation](#)

A Critical Framework of Social Determinants of Health (adapted)

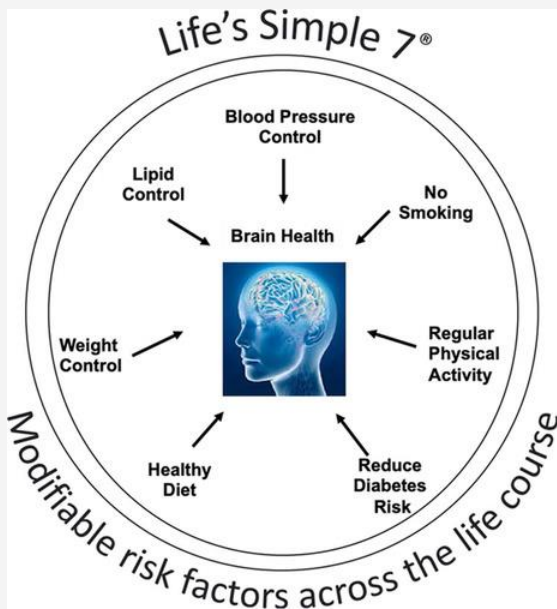


Adapted from: [Powell-Wiley et al. 2022; Circulation Research](#)

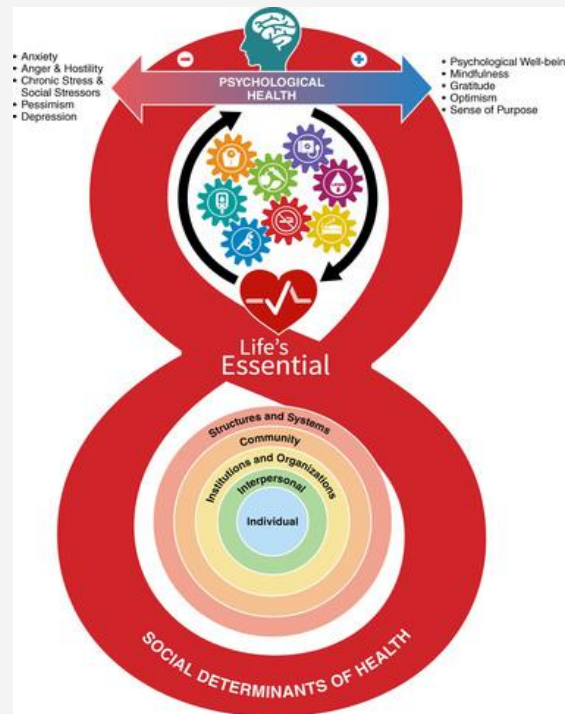


Hypertension
Interventions

American Heart Association Approach to Primary and Primordial Prevention



Lazar RM et al. A Primary Care Agenda for Brain Health: A Scientific Statement From the American Heart Association, *Stroke* 2022;52: e295-e308.



Lloyd-Jones DM et al. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association, *Circulation* 2022;146: e18-e43.

Defining Optimal Brain Health In Adults

A Presidential Advisory from the AHA/ASA



Table 3. Recommendations for Promotion and Maintenance of Optimal Brain Health

| |
|---|
| Individual¹⁶⁸ |
| Check health status with AHA's Life's Simple 7 (http://www.heart.org) |
| Remain physically active |
| Eat a healthy diet; evidence suggests that a Mediterranean-style diet preserves cognitive function better than a low-fat diet |
| Address vascular risk factors, if present, with a primary care practitioner |
| Pursue cognitively stimulating and rewarding activities |
| Address mental health concerns with a primary care practitioner or specialist as needed |
| Healthcare practitioners |
| Apply primordial and primary preventive care for cardiovascular disease and stroke according to AHA/ASA guidelines ^{9,124,142,163,164} |
| Diagnose and treat symptomatic stroke according to AHA/ASA guidelines ¹⁶⁵⁻¹⁶⁷ |
| Administer brief screens to monitor cognitive status |

Source: [Gorelick et al. 2017: Stroke](#)

Primary Care guidelines already address 5 of 8 of Life's Essential 8...



Screening and treatment recommendations for:

- BP
- Glucose
- Cholesterol
- Smoking status
- Weight

For 3 other elements, no specific screening recommendations but guidelines recommend:

- Healthy diet: counseling to eat well
- Physical activity: exercise a minimum of 150 min/week

Others:

- Sleep
- Hearing loss (test in patients who report hearing loss/have hearing loss)
 - National Institute for Health and Care Excellence guidelines recommend regular hearing assessment in patients with cognitive impairment.

Source: [Gorelick et al. 2017: Stroke](#)

Pleiotropic effects of exercise

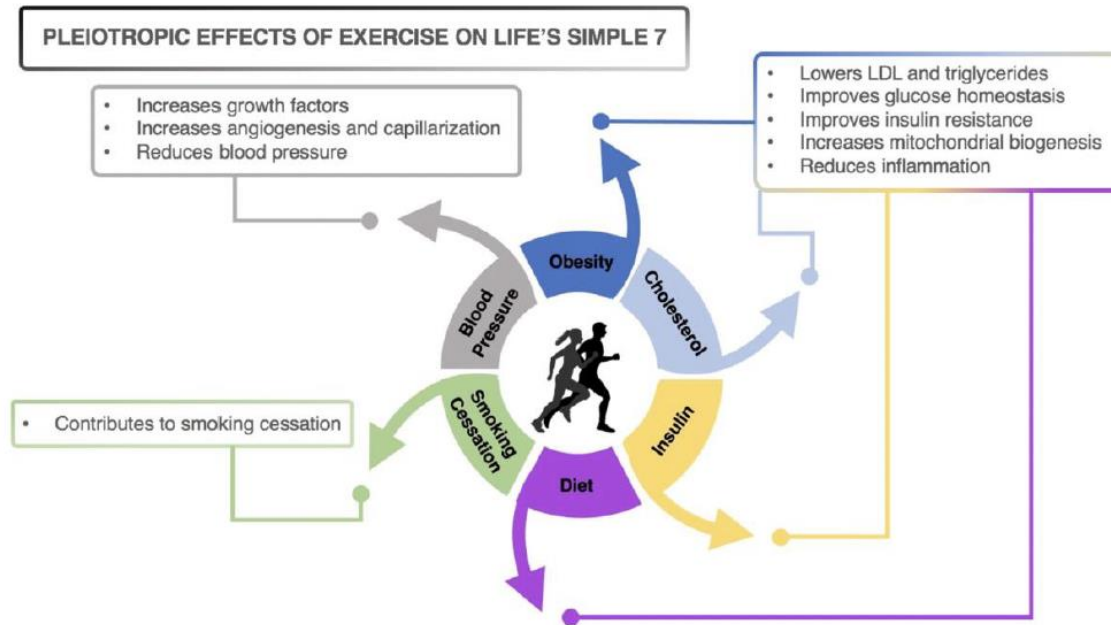
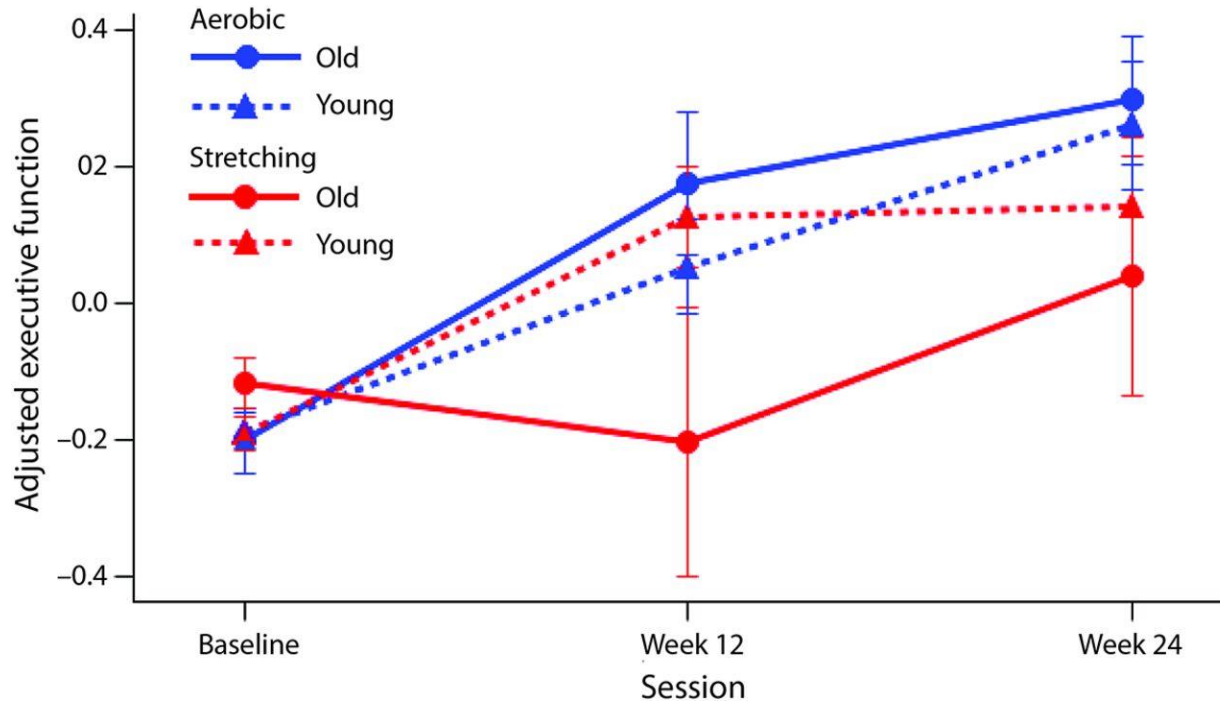


Figure 1. Pleiotropic effects of exercise on Life's Simple 7.

Norling, Buford, Lazar, *Aging*, 2021

Randomized trial: Aerobic exercise is associated with a change in executive function



Yaakov Stern et al. *Neurology* 2019;92:e905-e916



Going Beyond the Individual



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| Administer brief screens to monitor cognitive status |

| |
|---|
| Health systems |
| Support patients by providing access to preventive care and lifestyle modification |
| Support good-quality care for stroke ¹⁶⁹ and for primary prevention of cardiovascular disease ¹⁷⁰ |
| Public health, health policy, private sector^{2,168} |
| Disseminate knowledge of potentially modifiable risk factors for cognitive decline and dementia |
| Provide tools and resources to maintain healthy lifestyles such as the AHA Healthy for Good program ¹⁷¹ |
| Provide opportunities for stimulating cognitive, physical, and social activities |
| Maintain a healthy environment, including neighborhoods that promote cognitive and physical activity |
| Fund research on risk factors for cognitive decline and dementia and how to intervene to reduce risk |

AHA indicates American Heart Association; and ASA, American Stroke Association.

Source: [Gorelick et al. 2017: Stroke](#)

Hypertension Interventions¹¹



- Sources support treatment of hypertension for those over the age of 45 to reduce the risk of dementia, specifying a target systolic blood pressure of <130 mm Hg in midlife.¹⁷
- For adults (aged 45+) with established hypertension or type 2 diabetes, clinicians should manage their conditions according to guidelines with appropriate medications to help reduce the risk of cognitive decline, and clinicians should encourage optimal brain health in the same way they encourage cardiovascular health through other modifiable risk factors (or lifestyle interventions) such as physical activity, diet, and sleep to reduce the risk of cognitive decline
- Clinicians should rely on existing practice guidelines for the secondary prevention through medication management or other interventions.

Hypertension Interventions¹¹



- Patients who are hypertensive should be closely monitored for cognition changes to safeguard against decline.¹⁹ Because treatment of these co-morbidities, through modification of behavioral risk factors, may reduce the risk of cognitive decline,^{9, 12, 16, 20} individuals with these conditions should be made aware of their dementia risk and clinicians should share strategies with them for reducing that risk and optimizing their brain health. T
- Clinicians to discuss optimal brain health in conjunction with heart health, as the two go hand in hand.



Considerations for Implementation

When Should Intervention Begin?

- ❑ **CARDIA :** (B/W Adults enrolled 18 – 30 yo) Blood glucose variability (below the threshold for DM) 25 years later was associated with worse memory, processing speed, language fluency in mid-life.

Bancks et al, *Diabetes Care*, 2018

- ❑ **Insight 46 :** (Born in 1946): higher diastolic BP and change in diastolic BP in the period of 36 to 43 years of age were associated with smaller hippocampal volumes and greater white matter hyperintensity volumes at 70 years of age.

Lane et al, *Lancet Neurol*, 2019

- ❑ **ARIC :** (B/W enrolled at 40–65 yo) prospective cohort study showed that midlife hypertension, diabetes, poor dietary patterns were associated with increased risk of later-life dementia.

Rawlings et al, *Ann Int Med*, 2014
Dearborn-Tomazos et al, *JAMA Netw Open*, 2019
Knopman et al, *Alzheimers Dement*, 2018

Considerations for Implementation¹¹



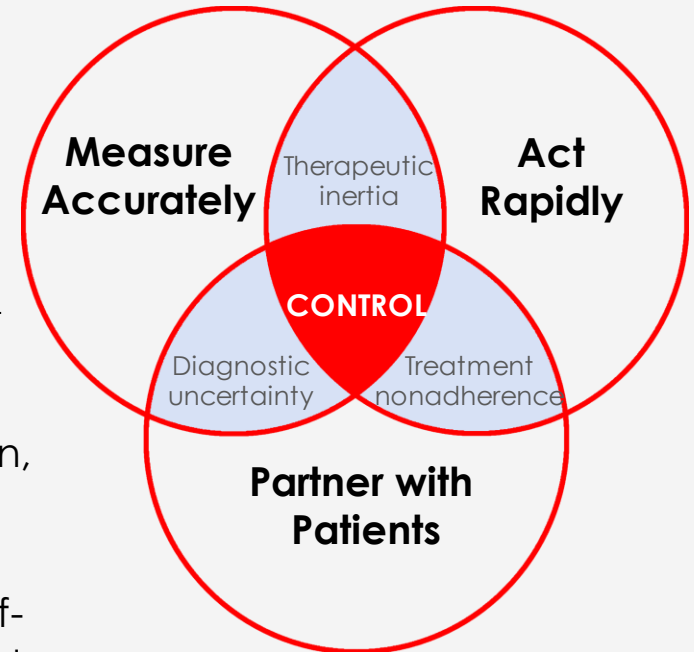
- Be extra vigilant to look for neurovascular risk factors in women and persons from racial and ethnic groups who are at greater risk for developing ADRD.
 - TargetBP.org includes tools and resources designed to help improve blood pressure control in clinical care settings with a focus on accurate blood pressure measurement to achieve blood pressure control.
- Follow USPSTF recommendations to screen for high blood pressure in adults aged 18 years or older (Grade: A);^b for statin use for primary prevention of cardiovascular disease (Grade: B);^c and for screening for abnormal blood glucose and type 2 diabetes (Grade: B).^d
- Follow ACC/AHA hypertension guidelines for a target systolic blood pressure <130.^{e,f, e,f}



Considerations for Implementation

Clinical Care Settings: M.A.P. Framework for Blood Pressure Control

All 3 are critical for control



M **Measure Accurately** every time to obtain accurate, representative BPs, reducing clinical uncertainty

A **Act Rapidly** to diagnose and treat hypertension, reducing diagnostic and therapeutic inertia

P **Partner with patients** to activate patients to self-manage and self-monitor (self-measured blood pressure) and promote adherence to treatment

Source: [TargetBP.org](https://targetbp.org); Accessed 9/21/22



Patient Resources

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.^a Sharing patient-facing tools might help them achieve desired goals: <https://www.heart.org/en/healthy-living/healthy-lifestyle/lifes-essential-8>

Thank you!



PHYSICAL ACTIVITY ALLIANCE
MOVE WITH US



This presentation and related resources are available at:
<https://www.usagainstalzheimer.org/nutrition-and-dementia>

Please register for additional courses at:
<https://www.usagainstalzheimer.org/brain-health-academy>

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|--|---------------------------------------|-------------------------------------|
| <p>Understanding Inequities in Alzheimer's & Other Dementias</p> | <p>Nutrition and Dementia</p> | <p>Sleep and Dementia</p> |
| <p>On Demand Enroll Today</p> | <p>On Demand Enroll Today</p> | <p>August 17 Enroll Today</p> |
| <p>Social Isolation, Loneliness and Dementia</p> | <p>Physical Activity and Dementia</p> | <p>Hypertension and Dementia</p> |
| <p>September 14 Enroll Today</p> | <p>October 19 Enroll Today</p> | <p>November 16 Enroll Today</p> |

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