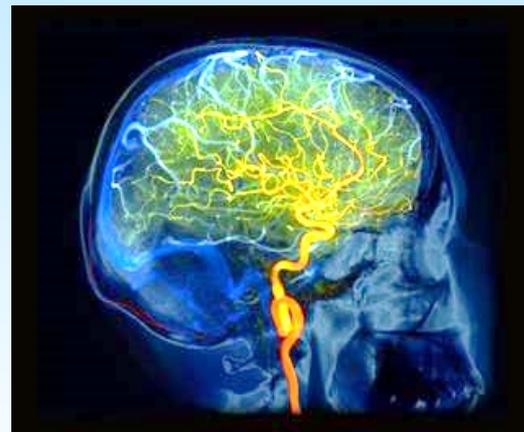


Medical Contributors to Cognitive Impairment & Dementia: Tips for Preventing Memory Loss

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Normal Cognitive Aging

- More easily distracted
- Difficulty with multi-tasking
- More time needed to process information
- Diminished working memory
- Diminished visuospatial abilities
- Verbal abilities increase

Early Signs of Dementia

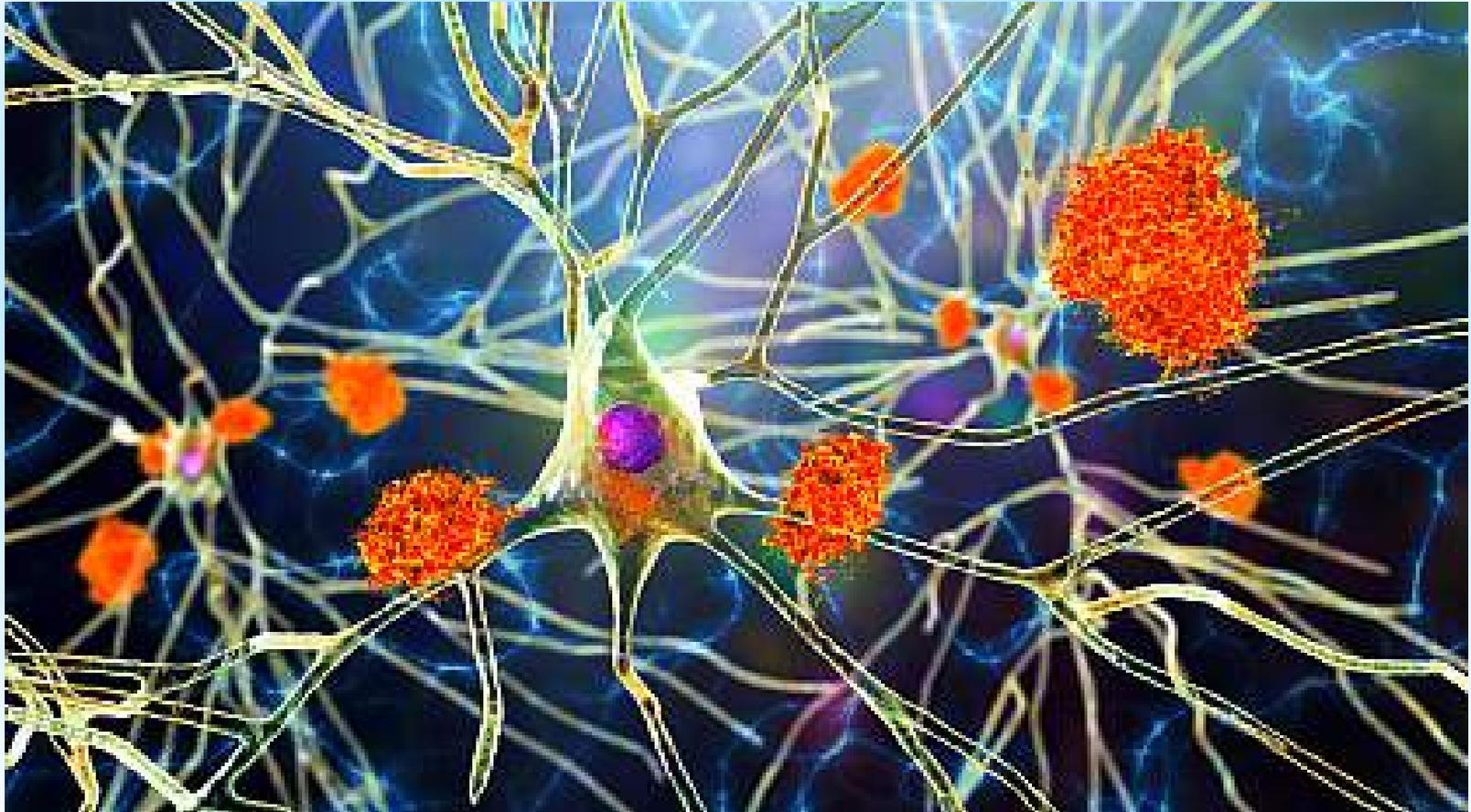
- More repetition
- Difficulty with daily tasks
- Communication difficulties
- Getting lost
- Personality changes
- Confusion about time & place
- Troubling behavior

Types of Dementia

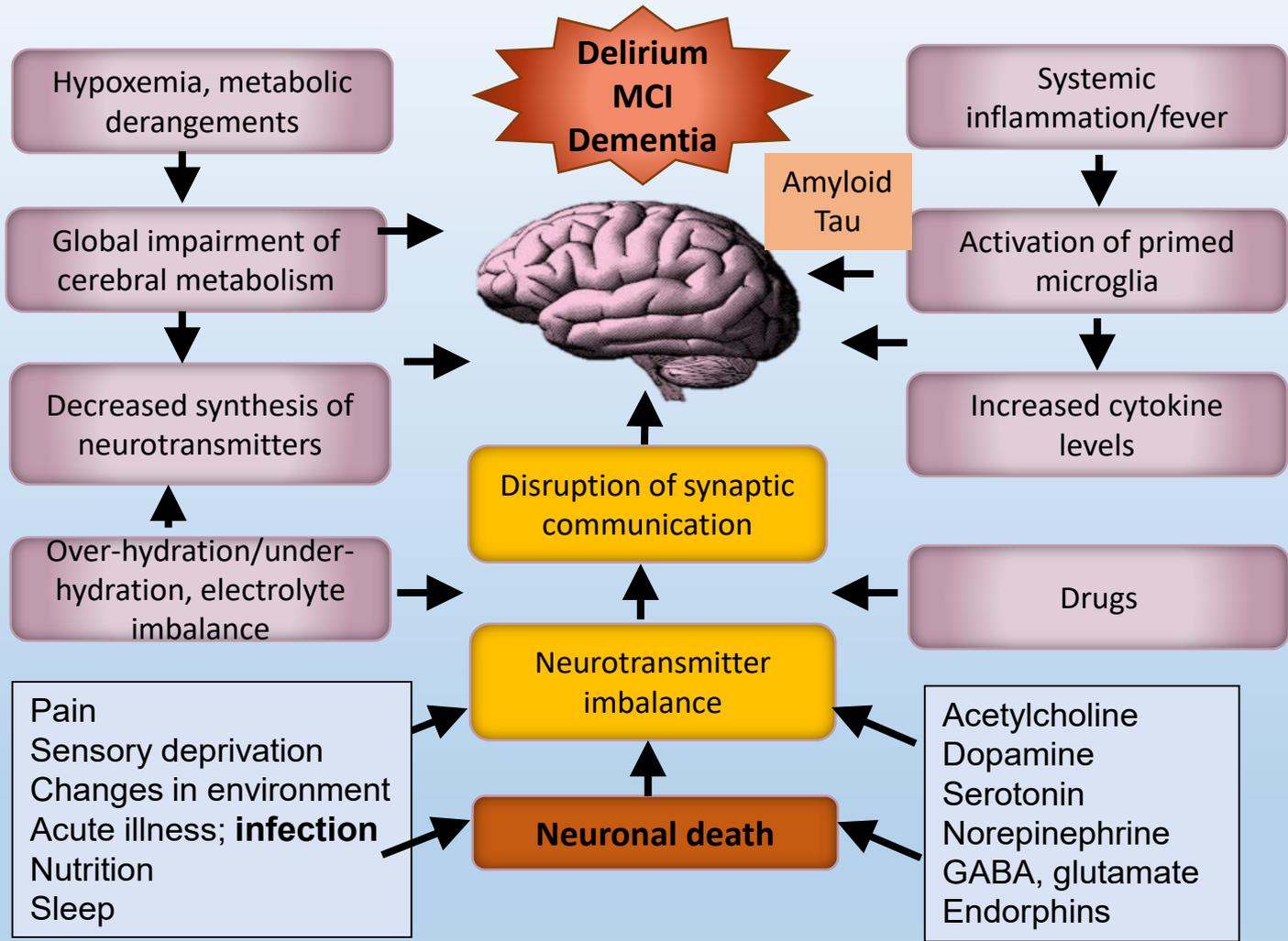
- **Alzheimer's:** 50-80%; Plaques (beta-amyloid) & Tangles (tau);
- **Vascular:** 20-40%; stroke or injury to small vessels; deep white matter changes, in the connecting "wires" among brain regions
- **Lewy Body:** 10-25%; alpha-synuclein deposits; hallucinations
- **Frontotemporal:** 10-15%, younger age (60% are btw 45-64 yrs)
- **Parkinson:** 50-80% of Parkinson patients eventually have dementia
- **LATE-Limbic-predominant age-related TDP-43 encephalopathy:** 20-50% >80 yrs



Mixed dementia: very common, > 50% (Alzheimer's, Vascular, Lewy Body)



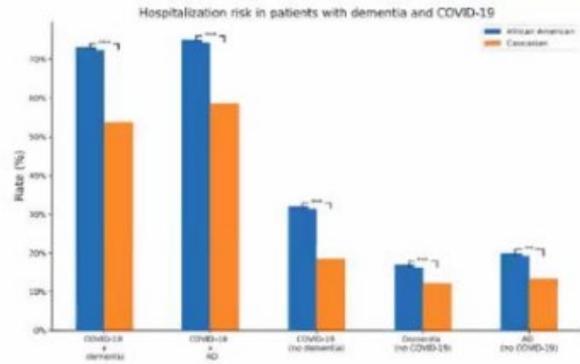
In Alzheimer's disease, amyloid beta plaques (shown in orange), collect around neurons in the brain. Women are at greater risk than men, and tend to progressively worsen faster, with symptoms in thinking, learning, and memory.



Effect of COVID-19 on People with AD & Dementia

WANG ET AL.

Alzheimer's & Dementia
THE JOURNAL OF THE ALZHEIMER'S ASSOCIATION | 1303



In 2020 there were at least
42,740
more deaths than expected
from
**ALZHEIMER'S DISEASE and
DEMENCIA**

CAREGIVERS
may receive less outside
assistance, adding to already
high levels of caregiver strain



INDIVIDUALS

living with dementia may be
especially isolated and may
have trouble communicating
virtually, potentially causing
more rapid cognitive decline

12% of Medicare beneficiaries
have been diagnosed with dementia

Yet, as of November 2020, **32%**
Medicare beneficiaries hospitalized for
COVID-19 had a dementia diagnosis

Figures adapted from: Alzheimer's Association, 2021. [Effect-of-COVID-19-on-People-with-Alzheimers-and-Dementia.pdf](#)

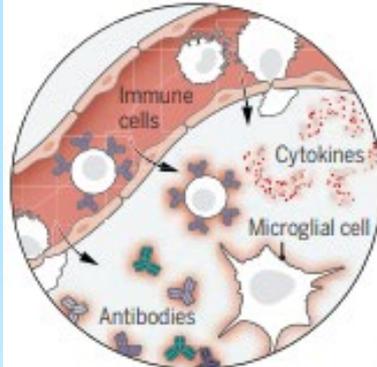
**In patients hospitalized with COVID-19, approx. 75%
develop long-haul Covid symptoms;
In those over age 60 yrs, 70% have cognitive impairment.**

• Spudich and Nather, 2022

Putative neuropathogenic effects of SARS-CoV-2

Infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) can lead to neuropsychiatric effects during acute COVID-19, including confusion, stroke, and neuromuscular disorders. These may arise from neuroinflammation, coagulopathy, neuronal injury, and possibly viral infection in the central nervous system. Causes of Long Covid symptoms affecting the nervous system may result from the emergence and persistence of these mechanisms.

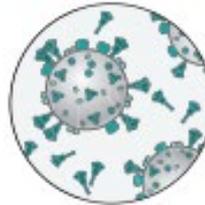
Generalized **neuroinflammation** with trafficking of immune cells, cytokines, and antibodies into the brain and activation of microglia



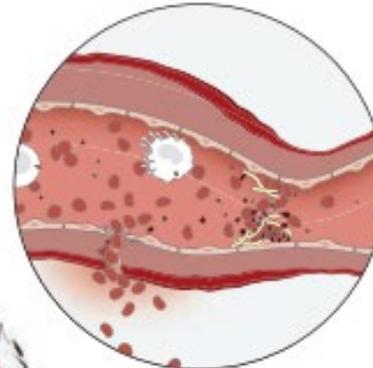
Neuroinflammation is exacerbated by **antibody production**, including antibodies to SARS-CoV-2 and autoantibodies.

Undetermined host factors for **susceptibility** (genetic, preexisting comorbidities, immune status)

Limited presence of SARS-CoV-2 spike protein or viral particles in neurons and other brain cells

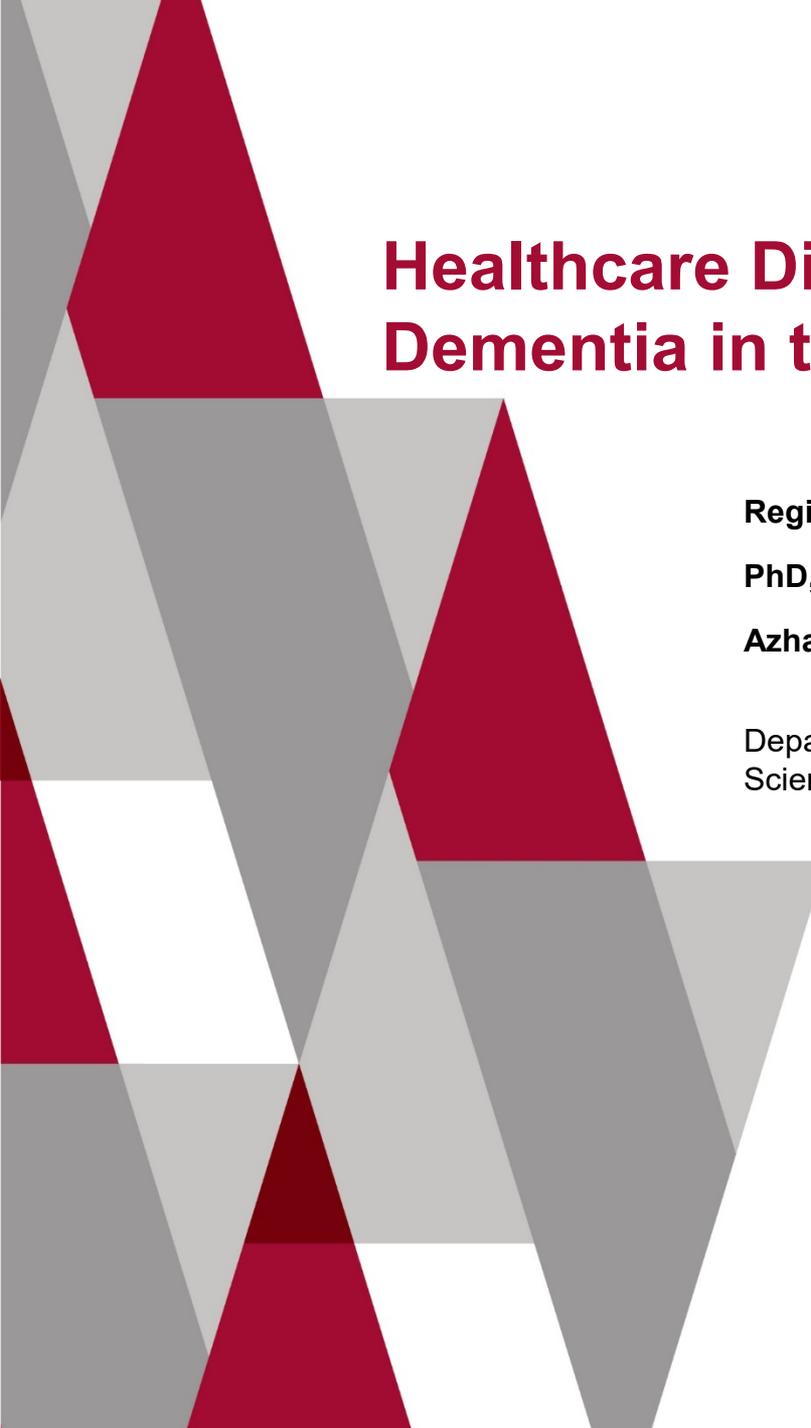


Blood vessels may be damaged by endothelial cell activation and coagulopathy, leading to vascular dysfunction, including microbleeds or stroke.



Mechanisms leading to **neuronal injury** are unknown.





Healthcare Disparity in the Assessment of Dementia in the Outpatient Setting

Regina V. Gibson, PhD, RN, Rosemary Nabaweesi, DrPH, Jeanne Wei, MD, PhD, Priya Mendiratta, MD, Jasmine Crane, B A, Troy Schmit, MHA, Gohar Azhar, MD

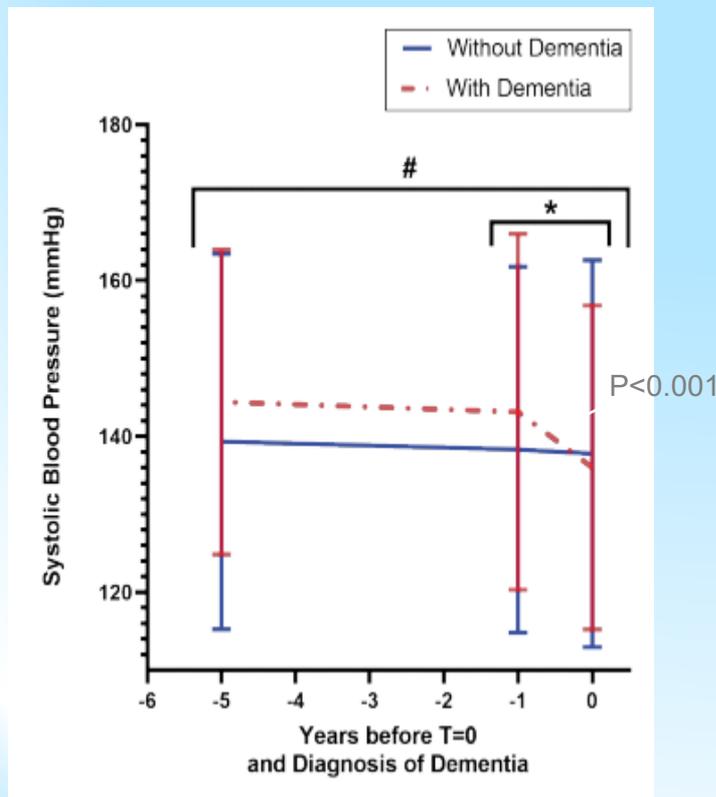
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Dizzy spells, fatigue & Memory Loss

- **Irregular rhythms (Atrial fibrillation, brady-arrhythmias) are associated with memory loss;**
- **Medications (heart, antidepressant, or anti-cholinesterase inhibitor) may cause memory loss;**
- **Low BP (Hypotension) may cause memory loss;**
- **Vessel blockage (Hypo-perfusion, Stroke), may cause memory loss.**

Hypotension and dementia

- Retrospective case-control study of n=201 patients > 60 yrs with or without dementia diagnosis.

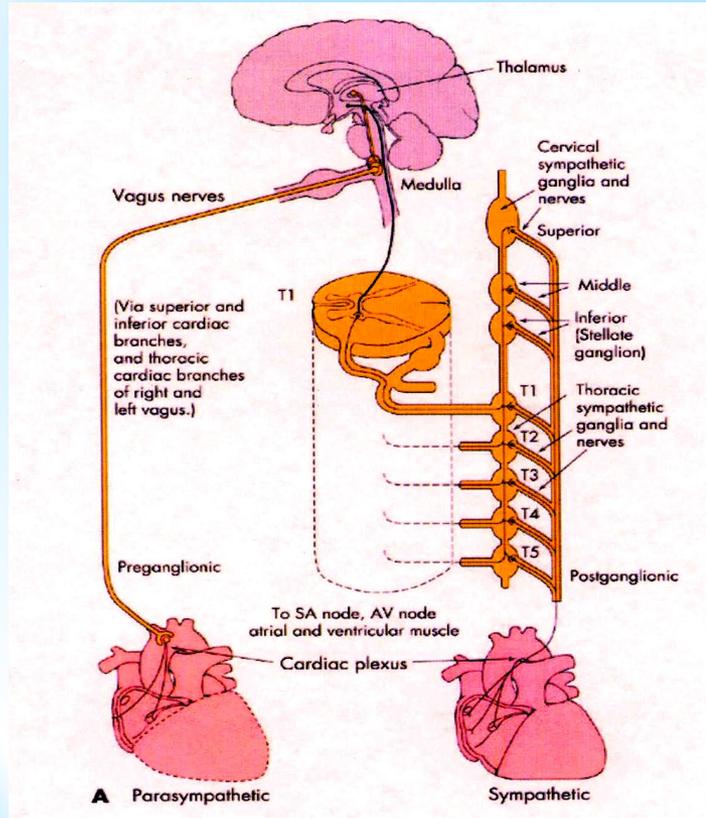


Variables	Systolic \pm SD (mmHg)
5-years prior to diagnosis	
With Dementia	-9.8 ± 24.4
Without Dementia	0.35 ± 30.0
1-year prior to diagnosis	
With Dementia	-8.13 ± 21.6
Without Dementia	-0.6 ± 21.6

Odds ratio of dementia patients to have had a declining systolic pressure over the five years preceding diagnosis was 2.35 (CI (95%), 1.21-4.45)

Heart-Vasculature-Brain Connections

The reins of the soul are the nerves in the thorax. - T. Willis, 1664



Memory Loss is associated with:

- Hypertension & Hypotension
- Arrhythmias & CHF
- Cerebral emboli & vascular insufficiency
- CAD, CABG, stents & valves



Flacker et al, 2001; Azhar et al, 2017; Carnevale et al., 2018;

Hypoxia-reoxygenation injury:

- More injury to the brain vs heart
- Earlier DNA fragmentation in brain vs heart
- More injury in the old vs young adult heart & brain

Mize et al., 2021

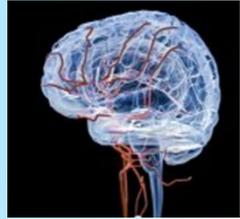


In fixing the heart, the brain may sometimes pay the price Kennedy et al, 2013; Wang et al, 2019

Aging Successfully

$\frac{1}{2}$ - $\frac{2}{3}$ of Alzheimer's & related dementias are **preventable**:

HTN, Cerebral vascular disease, dyslipidemia, T2DM, smoking, homocysteine, inactivity, sleep disruption, depression, heart disease, arrhythmias, hearing loss, head trauma, pollution, isolation.



Exercise and strength training: boost memory, maintain health and enhance longevity

Diet: MIND, veggies & fruit (eat the rainbow); low-fat, low carb, antioxidants, vitamins, proteins



Naps & Sleep: Boosts memory and cognition

