



Aging of the Brain and Dementia

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VA



U.S. Department of Veterans Affairs

Veterans Health Administration

Geriatric Research, Education, and Clinical Centers





Objectives

- Discuss the differences between dementia, mild cognitive impairment and normal aging of the brain
- List at least 3 modifiable risk factors for cognitive decline in aging
- Describe proactive behaviors older adults can engage in to promote healthy brain aging

What happens to our brains as we age?

- About 1 in 100 have no cognitive decline throughout life.
- Normal aging
- Mild cognitive impairment
- Dementia

Normal Aging of the Brain

- Patient more concerned than family
- Can describe details of forgetfulness and able to compensate
- Intact memory for important recent events
- Misplacing objects
- Word finding difficulties
- Slower processing speed
- Forgetting names of acquaintances
- Function is preserved

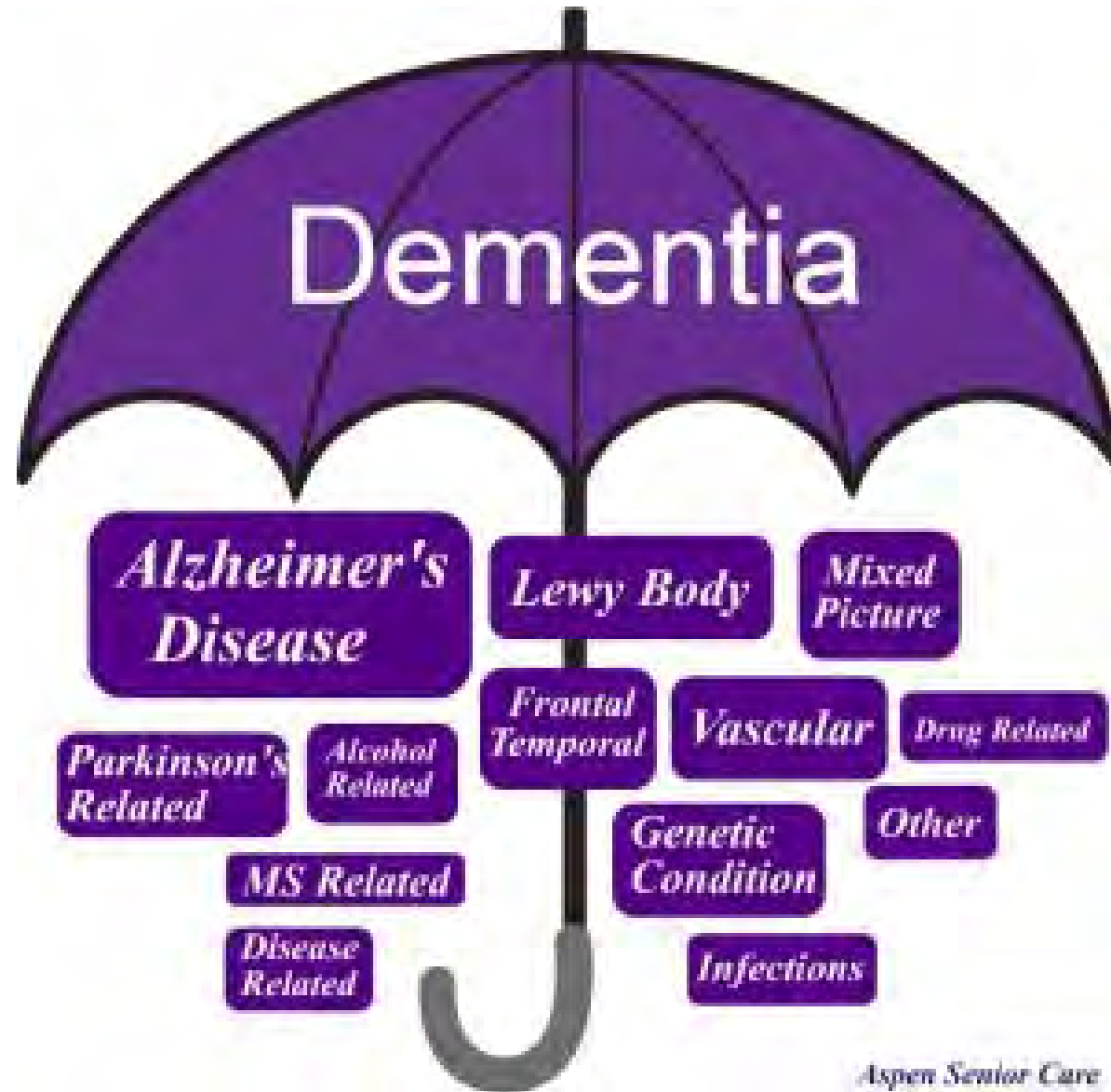
Mild Cognitive Impairment

- Intermediate state between normal aging and dementia
- A decline from previous cognitive functioning
- Examples: forgetting important information (appointments, recent phone conversations), events normally of interest (like a sports fan forgetting the outcome of a big game)
- Functioning is preserved
- Prevalence is 10-20% of adults >65%
- 10% of patients with MCI per year progress to dementia
- Monitor annually, encourage exercise, manage underlying medical problems

Dementia

- Decline in cognition severe enough to interfere with independence and daily life.

Dementia



Reversible Causes of Cognitive Impairment

- Depression – memory complaints common in older adults
- Delirium
- Medications
- Hypo/hyperthyroid
- Alcohol and drug use
- Normal pressure hydrocephalus
- B12 and D deficiencies



Myth: Dementia can be prevented



Image: PenCLAHRC - NIHR



Approaches to Dementia Prevention

What are the top risk factors?

- Can't change **age**



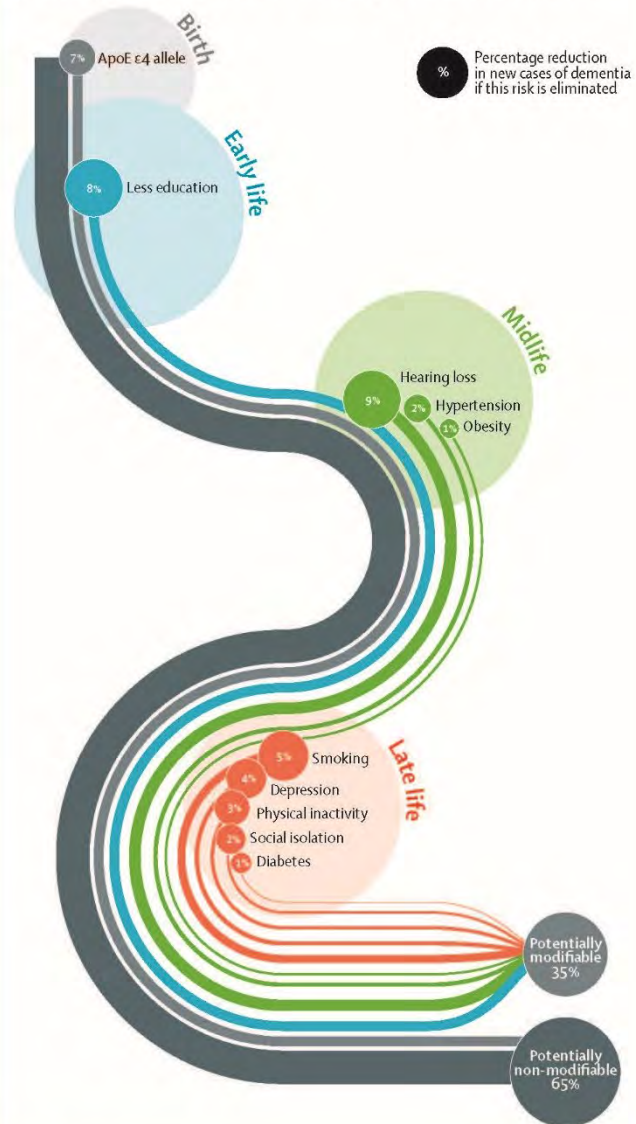
Approaches to Dementia Prevention

What are the top risk factors?

- Can't change **age**
- Can't change **genetics**
- Focus on modifiable risk factors

Risk factors for dementia

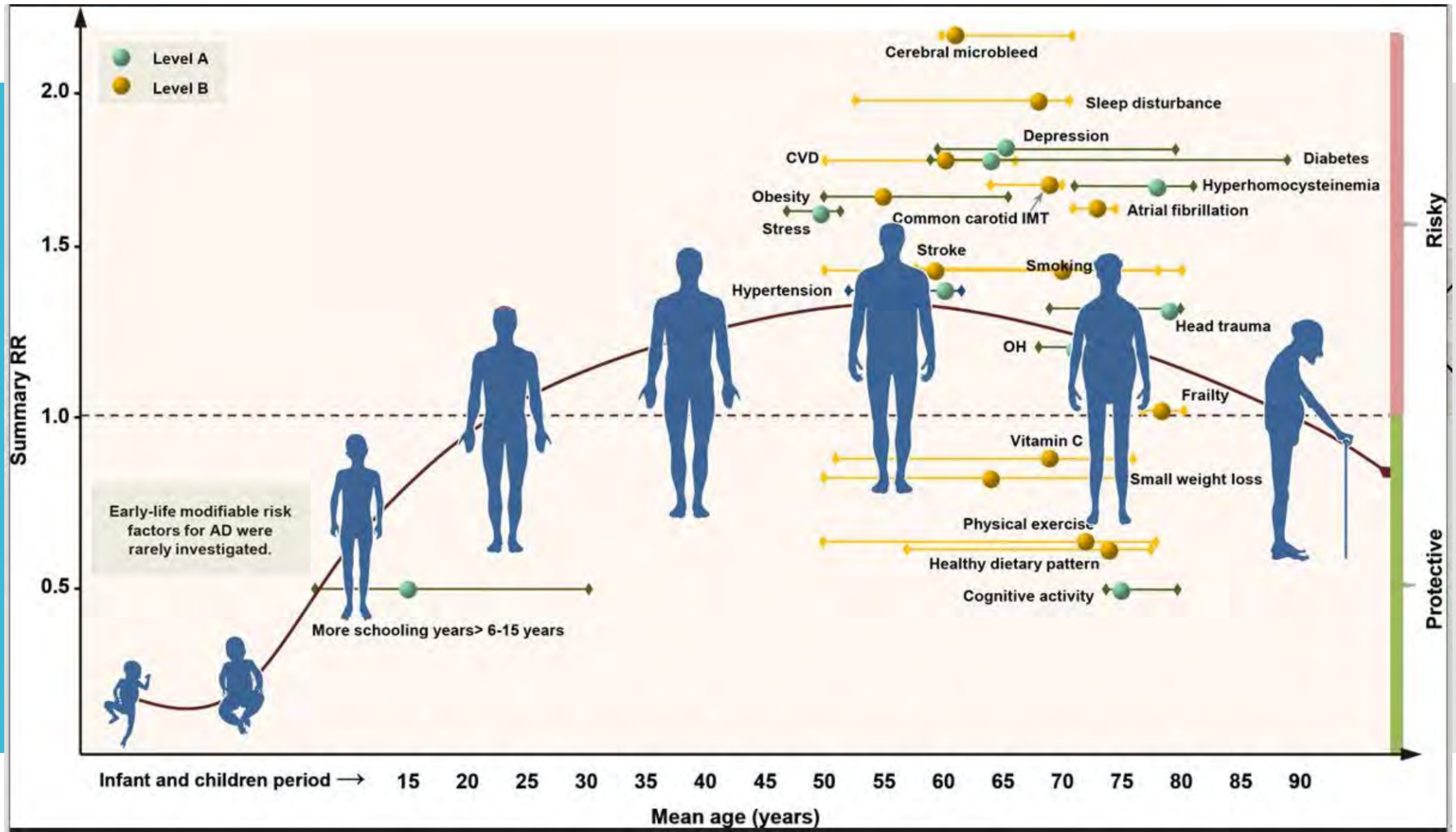
The Lancet Commission presents a new life-course model showing potentially modifiable, and non-modifiable, risk factors for dementia.



THE LANCET

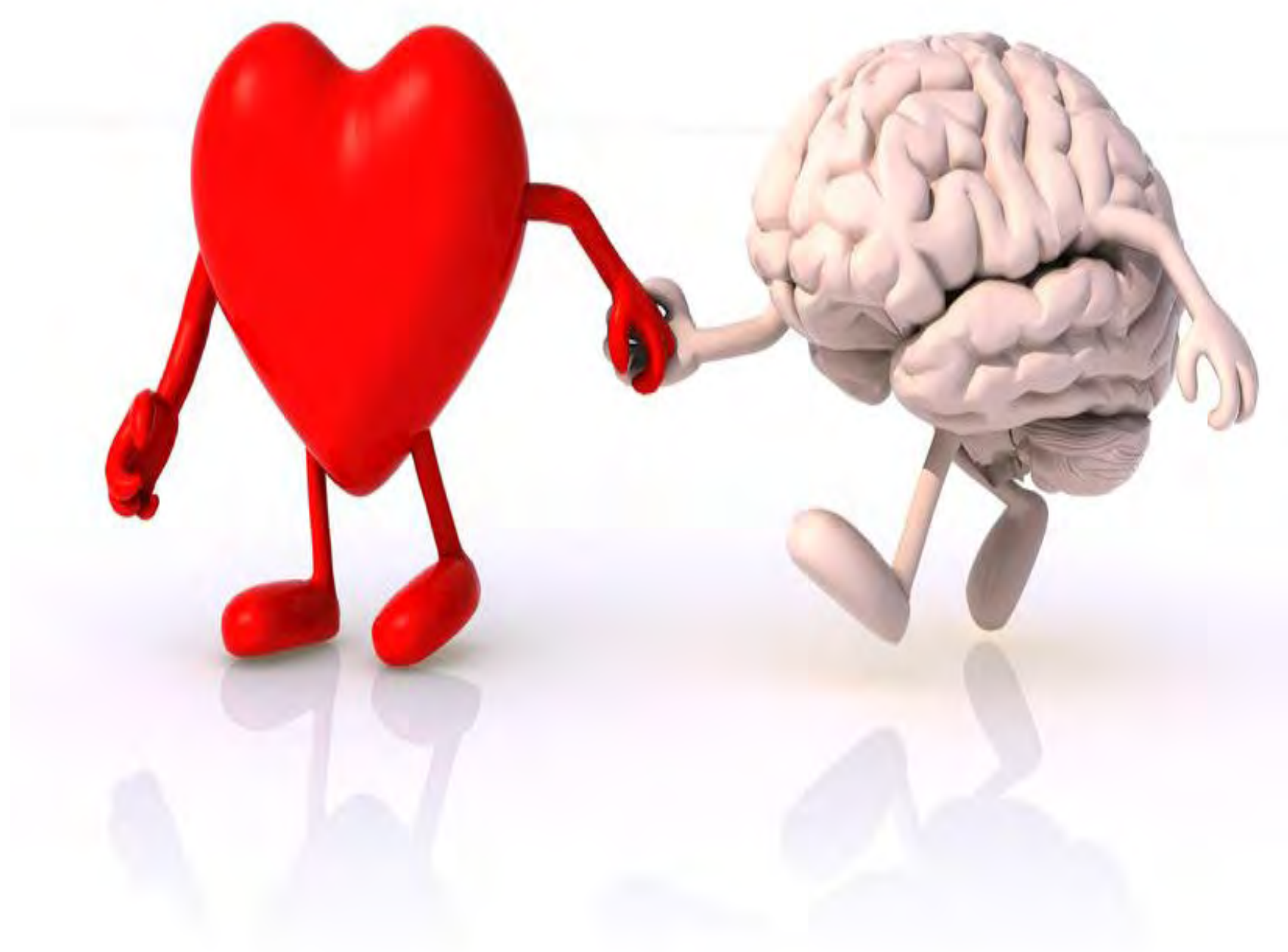
The best science for better lives

- Potentially modifiable: 35%
 - Less education (8%)
 - Hearing loss (9%)
 - Hypertension (2%)
 - Obesity (1%)
 - Smoking (5%)
 - Depression (4%)
 - Physical inactivity (3%)
 - Social isolation (2%)
 - Diabetes (1%)
- Potentially non-modifiable: 65%
 - ApoeE ε4 allele (7%)

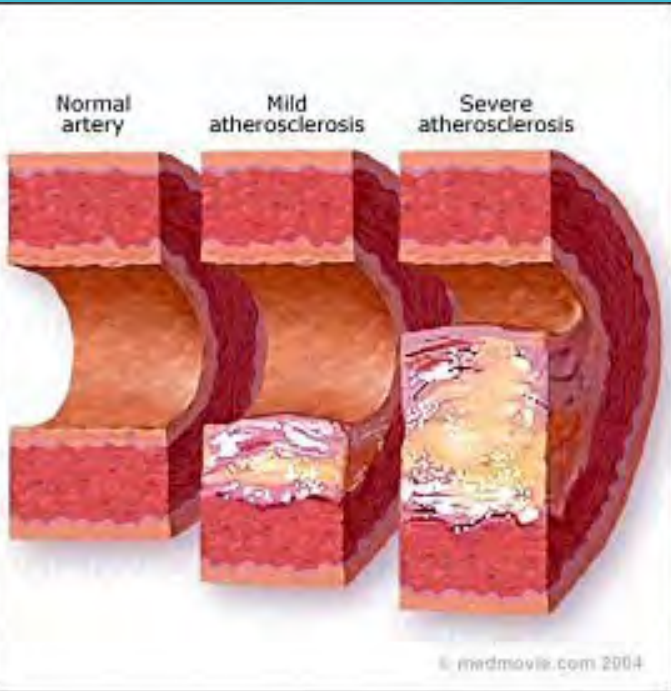




Tools: Healthy Brain Aging



Vascular Disease

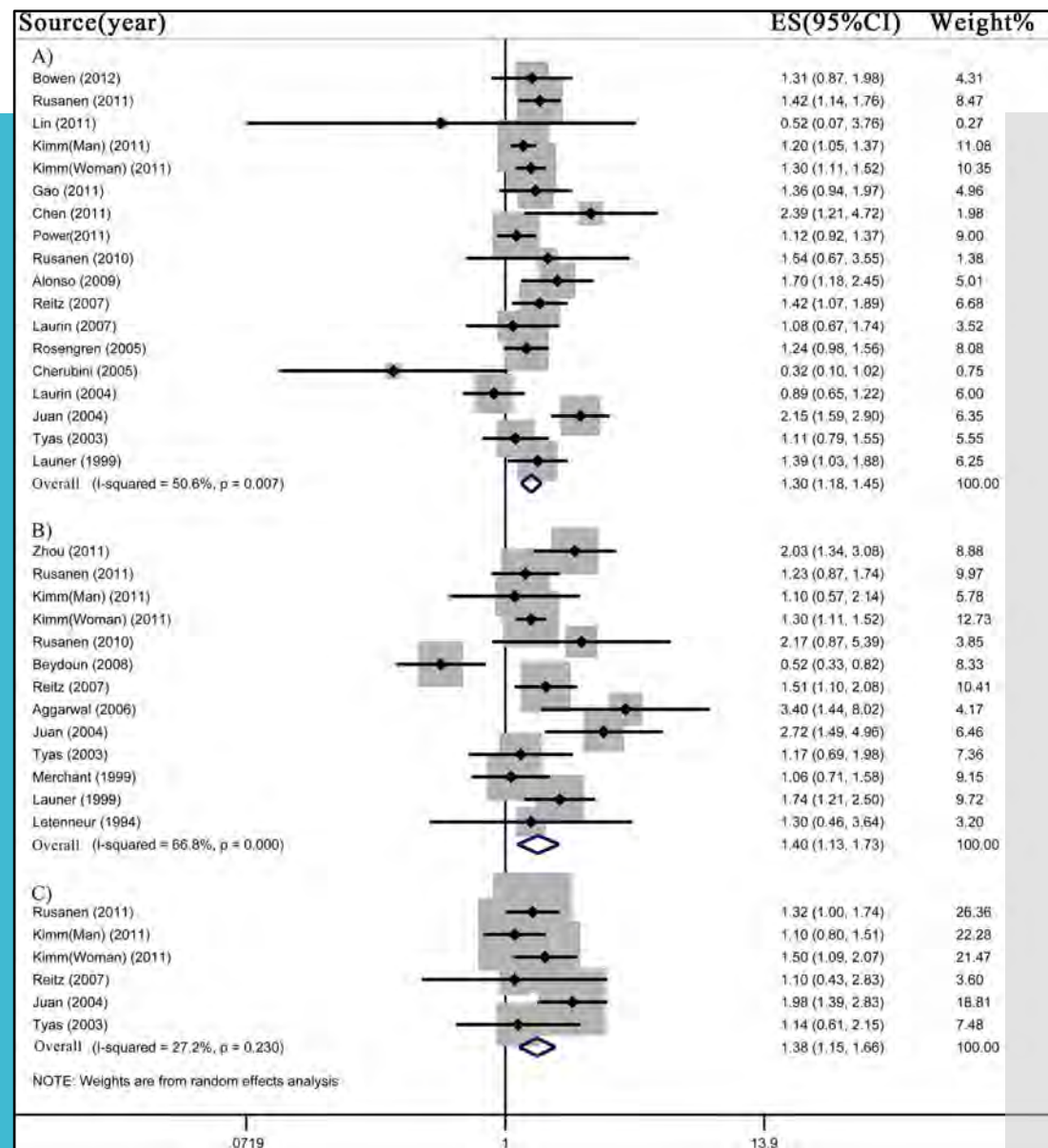


Hypertension/Atherosclerosis

- Longitudinal studies have suggested that high blood pressure in midlife is associated with a higher incidence of both Alzheimer's and vascular dementia in later life
- Long-standing hypertension may lead to severe atherosclerosis and impaired cerebrovascular autoregulation
- Decline in BP in later life may contribute to diminished cerebral perfusion which may in turn lead to increased beta-amyloid
- Some studies suggest that hypotension; especially low diastolic blood pressure in late-life is also associated with an increased risk of Alzheimer's

Smoking

Smokers have an increased risk of dementia, and smoking cessation decreases the risk to that of never smokers.





Diabetes

- Diabetes Type 1 and 2 are associated with cognitive impairment
 - Processing speed and flexibility (DM I & II)
 - Learning and Memory (DM II)
- Faster rate of decline in older adults with DM II
- Fairly consistent finding that Diabetes is related to higher risk of “any dementia”



Mental Health Conditions



Image: www.socialworker.com

Depression

- Early-onset depression before age 65 years and recurrent depression, may constitute long-term risk factors for development of dementia
- Late-onset depressive symptoms may be a feature of prodromal phase of dementia
- Recent studies suggest that long-term treatment with antidepressants may decrease the risk
 - Kessing, *Curr Opin Psychiatry*, 2012

Post-traumatic stress disorder (PTSD)

- Double the risk in Veteran groups studied
 - Yaffe, et al, 2010; Quereshi, et al, 2010

Anxiety

- Not associated with the risk of dementia or cognitive decline: the Rotterdam Study.
 - de Bruijn, et al, *Am J Geriatr Psychiatry*, 2014



Myth:
Healthy brain
aging means
no change





Promote Brain Health

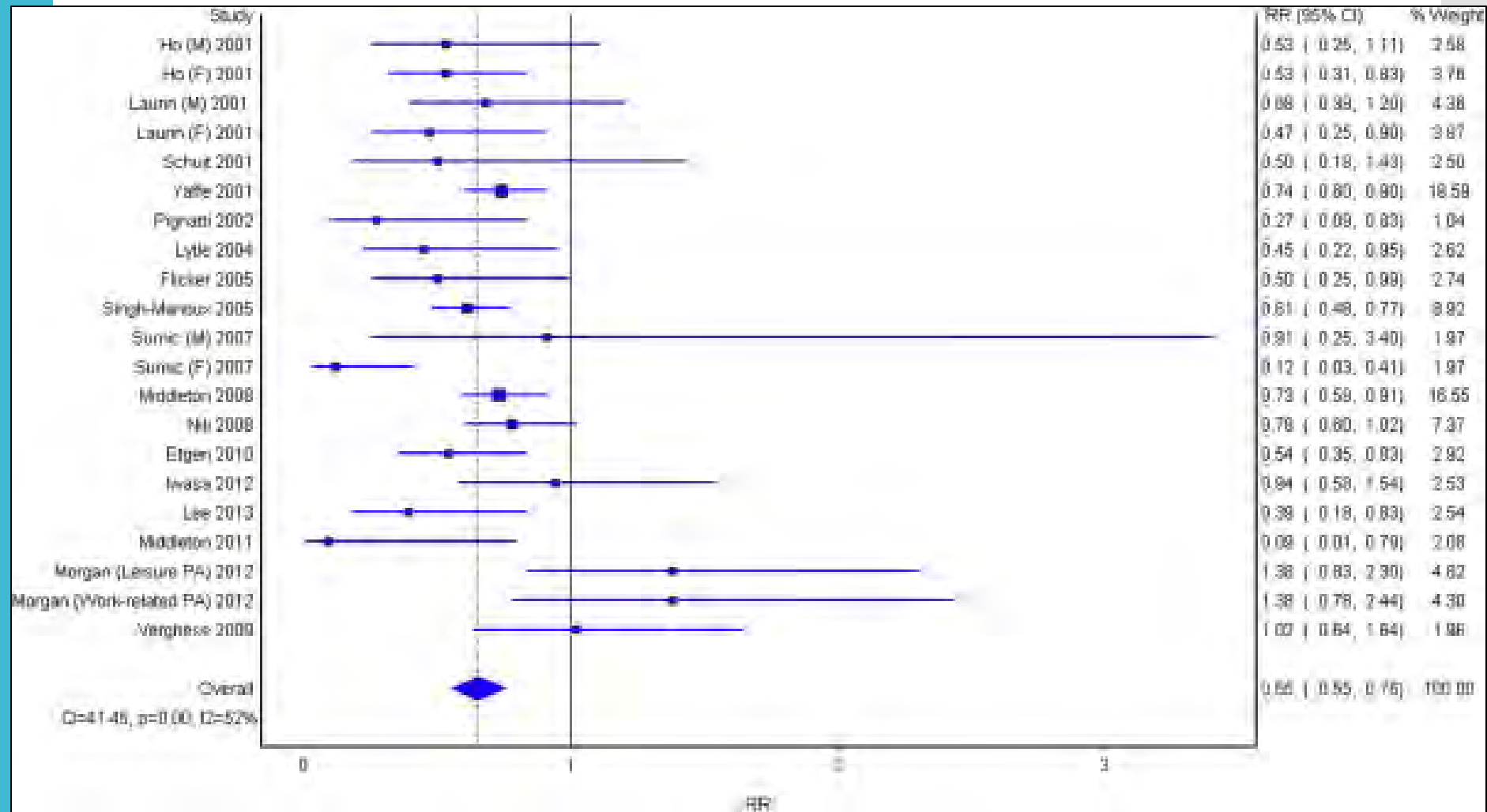
- Be physically active
- Engage socially
- Stimulate cognition
- Improve sleep
- Eat better
- Maximize sensory input
- Treat mental health conditions
- Limit alcohol



Promoting Brain Health

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Brain Health: Be Physically Active





Brain Health: Be Physically Active

Physical activity benefits for adults and older adults

- BENEFITS HEALTH**
- IMPROVES SLEEP**
- MAINTAINS HEALTHY WEIGHT**
- MANAGES STRESS**
- IMPROVES QUALITY OF LIFE**

REDUCES YOUR CHANCE OF

Type II Diabetes	-40%
Cardiovascular Disease	-35%
Falls, Depression and Dementia	-30%
Joint and Back Pain	-25%
Cancers (Colon and Breast)	-20%

What should you do?

For a healthy heart and mind

Be Active

VIGOROUS	MODERATE
RUN	WALK
SPORT	CYCLE
STAIRS	SWIM

MINUTES PER WEEK

75 OR 150

VIGOROUS INTENSITY
(BREATHING FAST
DIFFICULTY TALKING)

MODERATE INTENSITY
(INCREASED BREATHING
ABLE TO TALK)

OR A COMBINATION OF BOTH

To keep your muscles, bones and joints strong

Sit Less

TV
SOFA
COMPUTER

BREAK UP SITTING TIME

To reduce your chance of falls

Build Strength

GYM
YOGA
CARRY BAGS

Improve Balance

DANCE
TAI CHI
BOWLS

2 DAYS PER WEEK

Something is better than nothing.
Start small and build up gradually:
just 10 minutes at a time provides benefit.
MAKE A START TODAY: it's never too late!



Brain Health: Be Physically Active

There is an exercise for everyone!

- Walk
 - Sidewalks
 - School Track
 - Shopping mall
- Swim
- Water aerobics
- Bike
 - Street
 - Stationary
 - Recumbent
- Tai Chi
- Yoga
- Dancing
- Low-impact aerobics
- Pilates
- Weight-lifting
- Resistance bands
- Stretching
- Armchair exercises
- Arm bike
- Jog / Run
- Rowing
- Gardening/yard work



Promoting Brain Health

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- **Stimulate cognition**
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Brain Health: Stimulate cognition

Cognitively-stimulating leisure activities

- Relationship between leisure activities and the risk of dementia was studied in a France
- Activities studied included doing crossword puzzles, playing cards, attending organizations, going to the cinema or theatre, and practicing an artistic activity at least twice a week.
- Results:
 - Stimulating leisure activities contributed to cognitive reserve independently of other well-known proxies (e.g., education, occupation).
 - However, passive leisure activities (watching TV, listening to the radio or music, and knitting or sewing) do not contribute to cognitive reserve in the same way.

Promoting Brain Health

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Brain Health: Improve Sleep

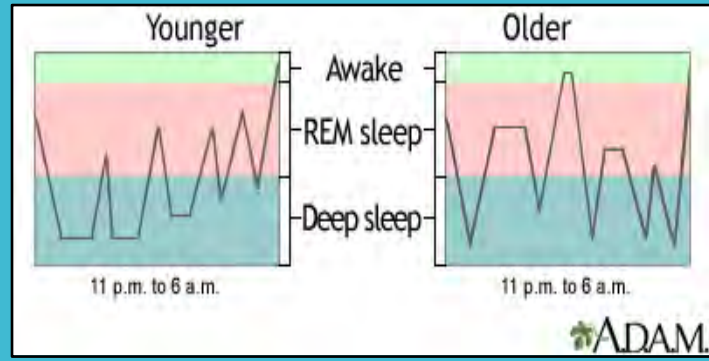
Sleep is key for optimal health and well-being

- During sleep, the brain is involved with restorative functions:
 - Clears away waste
 - Engages in functions that support learning and memory
 - Helps regulate mood and appetite

Myth: Older adults need less sleep than younger adults

Fact: Adults require 7 to 8 hours of sleep in 24 hours

- Poor sleep has negative effects on: Attention, Memory, Mood





Brain Health: Improve Sleep

SLEEP HYGIENE

PRACTICES



Medical journals and sleep experts have identified certain habits that negatively affect sleep and others that improve it. Follow some of these sleep hygiene tips to make the best out of your time sleeping.

- 01 Go to sleep at the same time every night 
- 02 Keep daytime naps below 20 minutes 
- 03 Avoid phones and other electronic screens at least 30 minutes before bedtime 
- 04 Keep your bedroom pitch black at night 
- 05 Maintain your bedroom temperature between 60°F and 67°F 
- 06 Only use your bed for sleep and sex 
- 07 Wear socks to help signal the body that it's bedtime 
- 08 Avoid large meals before sleeping 
- 09 Add some white noise to your bedroom 
- 10 Avoid alcohol and narcotics 

For the full list of updated sleep hygiene practices to sleep better, visit

RestedLife.com

Promoting Brain Health

- Be physically active
- Engage socially
- Stimulate cognition
- Improve sleep
- **Healthy diet**
- Maximize sensory input
- Treat mental health conditions
- Limit alcohol



Brain Health: Eat better



Mediterranean Diet

- High intake of vegetables, fruits, nuts, legumes, and unrefined grains
 - High intake of olive oil, but low intake of saturated fats
 - Moderately high intake of fish
 - Low intake of dairy, meat, and poultry
 - Moderate intake of wine with meals
- Observational studies: In addition to reduced mortality, reduced chronic disease, including cardiovascular disease¹ – increased healthy aging²

1. Trichopoulou, et al, *N Engl J Med*, 2003, 2. Samieri, et al, *Ann Intern Med*, 2013.



Promoting Brain Health

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Healthy Brain: Maximize Sensory Input

Vision and Hearing: Our eyes, ears, and brain work as a team

- The brain receives information from the eyes and ears. If this information is not clear, the brain has to work harder.
- Even with glasses, we need 2-3 times more light to see as we did in our 20's.
- It can be harder to see things that do not have sharp contrast.
- During aging, it becomes harder to hear what people are saying; they may sound muffled.
- Listening in noisy environments takes extra concentration.

What is recommended for older adults:

- Keep routine audiologist and **annual eye doctor appointments**; make sure vision and hearing are at their best
- Optimize lighting, and use visual aids
- Limit background noise and wear hearing aids
- Ask talkers to face you, and to speak slowly and clearly
- Repeat what people say to make sure you understood them and to help you remember



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Healthy Brain: Limit Alcohol



- Alcohol can be a Primary or Secondary cause of dementia
- Long-term, excessive drinking of alcohol is known to cause damage to the brain – resulting in neurological damage and impaired cognitive function
 - Alcohol-related dementia
 - Wernicke-Korsakoff syndrome
- Drinking more than recommended amounts increases risk of developing common types of dementia
- Increases risk of stroke and heart disease
- 2-10% of older adults abuse alcohol or are alcohol dependent
- Increases the risk of many other potential geriatric syndromes: falls, head injury, delirium

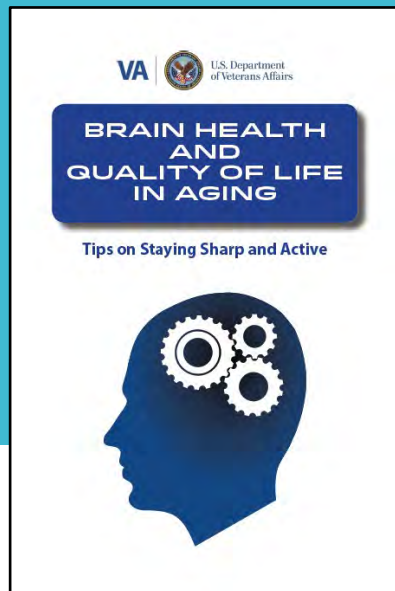
Healthy Brain: Limit Alcohol



Aging and Alcohol

- Lower alcohol tolerance due to decreased metabolism and blood flow, decreased lean body mass and decreased water

Tools: Healthy Brain Aging



VA Workgroup on Aging

- Developing products and tools to assist VA Providers working with Veterans interested in proactive healthy brain aging and supporting cognitive abilities

Brain Health and Quality of Life in Aging: Tips on Staying Sharp and Active pamphlet and pocket cards which address the following topics:

- Sleep, Mental health, PTSD, Loneliness, Physical activity, Side effects, Vision and hearing, Medical Problems, What you can do
 - 1-sheet handouts with expanded information on topics
 - 1-sheet handout on Cognitive Changes in Normal Aging
- Visit www.va.gov/geriatrics/brain



Tools: Healthy Brain Aging

R_x for Healthy Brain Aging

- Engage in exercise* such as walking 30 minutes per day, 3 times per week
**check with your doctor for activities that are safe for you*
- Stay mentally active through reading, doing puzzles, volunteer work, etc.
- Stay socially connected to prevent loneliness and isolation
- Take medications as prescribed for good control over medical conditions (e.g., diabetes, hypertension, thyroid disorders)
- Get regular checks of vision and hearing; wear glasses and/or hearing aids
- Improve sleep quality & quantity; maintain a consistent sleep schedule
- Eat a healthy diet, drink enough fluids, and avoid fast or processed foods
- Use alcohol in moderation / stop drinking alcohol (circle one)
- Ask your doctor/pharmacist to review your medications for potential side effects, especially if cognitive problems begin after a med change
- Seek help from a mental health provider if you experience depression, anxiety, or PTSD symptoms
- Decrease stress levels/seek help to improve stress management skills

Comments:

IMPORTANT: Talk to your doctor if you experience changes in your memory/thinking skills that do not improve or get worse

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Tools: Healthy Brain Aging

- Be savvy consumers and steer clear of predatory products
- What are predatory products?
- They are supplements or other products that are sold with claims that they can protect the brain, memory, or thinking . . . but are not supported by testing
- Beware of advertisements that seem to promise the world . . . with an out of this world price tag.





Summary Points

- No such thing as “Dementia Prevention” but we can take actions to lower risk
- Promotion of Healthy Brain Aging is our top goal
- Top modifiable risk factors include diabetes, vascular disease, excessive alcohol use, smoking

Dementia Prevention = Healthy (Brain) Aging

Thank you!

