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PERSPECTIVE

Primary prevention recommendations to reduce the risk of cognitive decline

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Abstract

Introduction: Few resources address steps clinicians can take to help patients reduce their risk of dementia, despite growing recognition that brain health can be optimized and that risk reduction for cognitive decline can be accomplished by lifestyle modifications.

Methods: To address this gap, UsAgainstAlzheimer's convened a risk reduction workgroup (RRWG) to review existing evidence and develop recommendations for primary care clinicians discussing cognitive decline and risk reduction with their patients.

Results: The RRWG produced 11 consensus-based recommendations and implementation strategies across six topics: neurovascular risk management, physical activity, sleep, nutrition, social isolation, and cognitive stimulation.

Discussion: These recommendations are a first step for clinicians to address brain health with patients and potentially help them prevent cognitive decline. To ensure there is routine care for brain health, proper incentives and policies must be instituted and more education for consumers should be provided.

KEYWORDS
Alzheimer's disease, cognitive decline, dementia prevention, primary care, risk reduction

1 | INTRODUCTION

As many as 40% of dementia cases can be attributed to modifiable risk factors.[1] Much of that risk reduction can be accomplished by changing behavior in midlife. Considering the emerging evidence that dementia may be preventable, UsAgainstAlzheimer's convened a workgroup of national experts to develop new recommendations that primary care clinicians and general neurologists can use to initiate

primary prevention conversations with their patients about cognitive decline.

This resulting consensus statement is based on expert opinion that builds upon the available evidence for dementia risk reduction. It is another step in a process to deliver actionable solutions for clinicians and is consistent with other efforts to introduce these and related issues into primary care settings.[2]

2 | METHODS

The UsAgainstAlzheimer's risk reduction workgroup (RRWG) comprised eight clinicians with collective expertise and experience developing and evaluating evidence, developing and implementing risk-reduction strategies, improving brain health for people at increased risk of cognitive decline, and promoting health equity in clinical practice. UsAgainstAlzheimer's and Avalere Health provided facilitation and consensus-building support. During portions of the workshops, domain experts with specific expertise in physical activity, nutrition, diabetes management, cognitive intervention, social isolation and loneliness, and hypertension management presented relevant research related to effective implementation of specific evidence-based recommendations. Although the domain experts were not directly involved in developing or drafting the RRWG's final output, they led presentations on their areas of expertise during certain workshop sessions to inform RRWG deliberations for the guidance presented in this document.

Given the nature of the recommendations they set out to develop and the state of the evidence, the RRWG used expert consensus to guide the selection and prioritization of key topics as well as the subsequent recommendations for the implementation of interventions. The RRWG committed to key guiding principles for the development of the recommendations so that they would be solution-oriented, actionable, and equitable.

As a first step, the RRWG reviewed a targeted body of recent literature (most published within the past 5 years) to assess the current evidence on the risk reduction of cognitive decline, which included large systematic reviews, meta-analyses, and seminal studies (see Appendix A).

The RRWG chose to focus their attention on six topics for which they determined that evidence was strongest (informed by strength of evidence assessments among the sources reviewed) and for which they could provide actionable guidance for clinical practice: neurovascular risk management, physical activity, sleep, nutrition, social activity, and cognitive stimulation. The RRWG chose not to focus on hyperlipidemia, depression, head injury, hearing loss, education level, smoking, alcohol consumption, or air pollution at this time.

The RRWG participated in four virtual workshops between October 26 and December 18, 2020, to discuss strategies for the primary prevention of Alzheimer's disease (AD) and related dementias (ADRD) in light of the evidence reviewed and to reach consensus for actionable guidance. The recommendations and implementation considerations were also reviewed in January 2021 by an external panel of experts who did not take a position on the recommendations but provided valuable feedback.

RESEARCH IN CONTEXT

1. **Systematic Review**: The UsAgainstAlzheimer's risk reduction workgroup (RRWG) first reviewed a targeted body of recent literature to determine current evidence on the risk reduction of cognitive decline. The RRWG was then informed by domain experts, who presented their relevant findings regarding effectively instituting evidence-based recommendations.
2. **Interpretation**: The RRWG selected six topics that had the strongest evidence and were suitable to provide actionable guidance for clinical practice: neurovascular risk management, physical activity, sleep, nutrition, social isolation, and cognitive stimulation. The RRWG then created 11 consensus-based recommendations and implementation strategies for the six topics.
3. **Future Directions**: The RRWG's recommendations are only the first step, as more steps should be taken, such as the implementation of certain policies, to ensure clinicians properly address the topics of brain health and cognitive decline prevention with their patients. Further efforts to ensure patients are educated about reducing their risk of dementia are also necessary.

HIGHLIGHTS

- The UsAgainstAlzheimer's risk reduction workgroup aligned on 11 recommendations for clinicians and general neurologists.
- Guidance should apply to individuals aged 45 years and older.
- The medical community must convert recommendations into actionable strategies.
- Appropriate incentives for clinicians are needed to encourage wider adoption.
- Policy changes and relevant quality measures could further support adoption.

3 | RECOMMENDATIONS

The RRWG aligned on 11 recommendations for primary care clinicians and general neurologists. In addition to the recommendations and their supporting rationale, the RRWG felt it was important to include considerations for implementing the recommendations in clinical practice. In its work, the RRWG attempted to be mindful of social determinants of health, account for cultural differences, and design for general accessibility.

The group achieved consensus that all guidance should apply to individuals aged 45 years and older since some mid-life risk factors (e.g., hypertension) are strongly associated with dementia and because AD pathophysiology begins decades before symptoms develop.[3]

Refer to Table 1 for a summary of recommendations to promote the risk reduction of ADRD and considerations for their implementation.

Most of the recommendations—including those for neurovascular risk management, physical activity, nutrition, and sleep—are consistent with standard care, especially for patients with existing cardiovascular conditions (e.g., type 2 diabetes or hypertension).[4–6] In those cases, the intention of the recommendation is to raise awareness of the impact these factors can have on cognitive health and to provide another reason clinicians can use for encouraging adherence.

Some recommendations—including those for social activity or cognitive stimulation—may not be part of standard practice for most clinicians, but the RRWG believes emerging evidence shows that the benefit of addressing these topics outweighs the cost. Assessment of social activity and cognitive stimulation could be quickly added to other lifestyle questions currently posed to patients, and clinicians could address them only as needed. These two recommendations have not yet received widespread testing or validation for routine use in primary-care settings.

For some individuals, lifestyle changes will need to be supplemented with other treatments. While evidence shows that multidomain approaches have the greatest impact on reducing the risk of ADRD,[7–8] RRWG members encourage clinicians to address all components for which they can make the time.

4 | RATIONALE FOR RECOMMENDATIONS

4.1 | Neurovascular risk management

The association between cardiovascular risk factors and cognitive function has been well documented.[12–16] 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] Similarly, for those with type 2 diabetes, evidence suggests that targeting HbA1c levels <7% is associated with lower risk of dementia.[18] RRWG members discussed whether treatment of existing cardiovascular conditions should be a focus of their recommendations. It was through these discussions that they reached consensus on narrowing the scope of their recommendations to focus on the primary prevention of ADRD, noting that clinicians should rely on existing practice guidelines for the secondary prevention through medication management or other interventions.

Importantly, 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] the RRWG agreed that 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. They encourage clinicians to discuss optimal brain health in conjunction with heart health, as the two go hand in hand.

4.2 | Physical activity

Despite ample evidence demonstrating that greater amounts of physical activity are associated with a reduced risk of cognitive decline and ADRD,[12,14,21] physical activity is rarely discussed by health-care professionals for the prevention or treatment of medical conditions affecting the brain. Physical activity decreases with age, especially among women, persons with lower income, and persons from certain race and ethnicity groups.[22] These same populations are disproportionately affected by ADRD, making it imperative that clinicians initiate conversations about brain health with them and how physical activity can help maintain and protect brain health.

The RRWG suggests placing greater focus on helping individuals reduce sedentary lifestyles through a gradual approach.[10] Helpful strategies are included in the implementation considerations for these recommendations (Table 1). There is evidence to support the promotion of physical activity using a multilevel approach,[23] including using the support of individuals, family members, caregivers, and neighbors; and clinicians should use a combination of approaches to help their patients increase their physical activity.[10] But assessing a patient's level and ability to do physical activity is the first step in that process, which is why the RRWG recommends beginning there.

4.3 | Sleep

Although the initially reviewed sources of evidence did not address sleep as frequently as the other topics addressed by the RRWG, the moderate level of evidence identified in those sources related to sleep disturbance provided a starting point for their conversations.[14] Several RRWG members are experts on the topic of sleep related to dementia and believe strongly in addressing sleep quality to reduce the risk of dementia. They noted that recent prospective epidemiologic studies have shown an increased risk of cognitive impairment associated with sleep disturbances (e.g., poor sleep quality, sleep apnea, altered circadian rhythms, excessive daytime napping).[24] Evidence also suggests a bidirectional relationship between sleep disturbances and AD, which could lead to AD pathology in older adults.[25] Older women with sleep apnea, in particular, were almost twice as likely to develop cognitive impairment 5 years later, and hypoxia is a likely mechanism.[26]

RRWG members further highlighted that sleep quality is often overlooked by clinicians when considering interventions for dementia prevention, but that investigational studies show promising results regarding sleep therapy and its impact of cognitive decline.[27] Sleep is being investigated as a potential method for prevention of a variety of neurodegenerative diseases, including ADRD, based on clearance of pathological proteins through the glymphatic system of the brain during sleep.[27] RRWG members noted that future research is needed to

TABLE 1 Summary of recommendations

Topic	Recommendation	Considerations for implementation
Neurovascular risk management	1. 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.	• 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 Simple 7" 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/my-life-check–lifes-simple-7 • 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]
Physical activity	2. Clinicians should conduct a physical activity assessment, at least annually, using a practical and validated tool(s) to identify adults (aged 45+) who are sedentary or not meeting recommended levels of physical activity (150 minutes [2½ hours] per week of moderate intensity),[h,i] and who can decrease their risk of cognitive decline or worsening health. 3. For individuals not meeting recommended levels of physical activity, develop a plan using a safe, gradual approach that that starts with *moderate-intensity physical activity*[i] that fits within a person's lifestyle (e.g., walking, gardening, dancing, calisthenics) and is culturally acceptable.	• Examples of validated physical assessment tools to evaluate an individual's level of physical activity:[g] ◦ Rapid Assessment of Physical Activity ◦ Physical Activity Vital Sign (PAVS) ◦ Exercise Vital Sign (EVS) ◦ Speedy Nutrition and Physical Activity Assessment (SNAP) ◦ General Practice Physical Activity Questionnaire (GPPAQ) ◦ Stanford Brief Activity Survey (SBAS) ◦ Additional tools can be found at: https://www.ahajournals.org/DOI/epub/10.1161/CIR.0000000000000559) • If a completed assessment identifies someone who is not meeting recommended levels of physical activity, help individuals choose smaller goals to start. ◦ The ultimate goal should be to reach 150 minutes of aerobic, moderate-intensity physical activity per week (or 30 minutes on most days of the week).[i] ◦ When patients cannot do the recommended amounts of physical activity due to disability or chronic health conditions, they should be as physically active as their abilities and conditions allow. • Goals should be updated or revised based on an individual's progress (or lack of progress). • The benefits of physical activity communicated to patients should include its effects on memory/brain health. • Suggesting physical activities that can be done with family, friends, or peers is often more successful. • Refer to any local/community resources that offer free, low-cost physical activity programs when possible. • When available, connect individuals with a resource to be a support in between or during visits. • Resources to share with older adults: https://health.gov/our-work/physical-activity/move-your-way-campaign/campaign-materials/materials-older-adults • If an individual is comfortable using digital devices, consider recommending a digital device (e.g., Apple watch, Fitbit) or free app to motivate or help them monitor their activity. • For individuals meeting physical activity recommendations, continued encouragement and recognition or praise should be given for maintenance.

(Continues)

TABLE 1 (Continued)

Topic	Recommendation	Considerations for implementation
Sleep	4. Clinicians should routinely (if possible, at each visit) assess sleep quantity and quality in patients aged 45+ using a validated tool and ascertaining whether they take any medications to sleep. 5. For individuals getting insufficient or poor-quality sleep, clinicians should encourage getting 7 to 8 hours of sleep in a 24-hour period, including naps. Those with severe sleep complaints which may indicate sleep apnea (e.g., snoring with stops of breathing or excessive daytime sleepiness), should be referred to a sleep clinic for diagnosis and treatment.	• Example of a validated tool to assess sleep quality: ◦ Pittsburgh Sleep Questionnaire • An individual may have a sleep disorder if they experience one or more of the following:[k] ◦ Trouble falling or staying asleep three times a week for at least 3 months ◦ Frequent snoring ◦ Persistent daytime sleepiness ◦ Leg discomfort before sleep ◦ Acting out dreams during sleep ◦ Grinding teeth or waking with a headache or aching jaws • Share tips and information on napping for those who need additional sleep: https://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/napping/art-20048319. • Ask patients about their medications and whether they may be affecting nighttime sleep or contributing to daytime sleepiness. ◦ Consider changing the timing of when medications are taken to minimize their impact on sleep quality • Share tips for optimal sleep environments, such as: ◦ Make the room as dark and quiet as possible ◦ Keep the room on the cooler side ◦ Avoid using the bed for work ◦ Do not text in bed. Keep electronic media out of the bedroom ◦ Stop watching TV at least an hour before bedtime ◦ Buy a comfortable mattress with sufficient back support—the firmer the better for most people ◦ Use a hypoallergenic pillow and wash bedclothes frequently enough to eliminate dust
Nutrition	6. Clinicians should assess dietary eating patterns and habits, at least annually, with patients aged 45+. 7. For individuals who indicate a less than optimal diet, clinicians should counsel patients about the value of a healthy diet,[f] and should broach the topic of culturally acceptable dietary interventions that directly and indirectly impact brain health at each annual encounter to suggest beneficial nutritional modifications.	• Helpful question to assess the quality of one's diet include: ◦ Are you concerned about your diet? ◦ Do you think you get enough fruits and vegetables in your diet? How many servings do have per day? ◦ How many times per week do you eat butter, cheese, red meat, or fried foods? In what quantities? ◦ How many meals per day (or per week) are processed food? • Modifications through shared decision-making and collaborative healthcare should focus on decreasing the intake of high-fat dairy products (e.g., butter, cheese), red meat, fried foods, and processed foods or sweets. • Equally great effort should be made to motivate patients to increase relative intake of leafy green and cruciferous vegetables, berries, beans, high-fiber nuts and whole grains, and non-red meats like fish or chicken. • Note for patients that diet changes may be accompanied by temporary abdominal discomfort that could occur for up to a month due to "your body changing to process the new foods"; this can be minimized by introducing incremental changes to the diet. • The following resources for brain-healthy diets can be shared with patients to help them introduce diet modifications: ◦ MIND diet handout: https://khn.org/wp-content/uploads/sites/2/2017/04/mind_ph_module-1_mind-diet_v2.pdf ◦ DASH diet information: https://www.nhlbi.nih.gov/health-topics/dash-eating-plan ◦ Mediterranean diet information: https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics/mediterranean-diet • Determining underlying motivations as well as potential barriers to diet.

(Continues)

TABLE 1 (Continued)

Topic	Recommendation	Considerations for implementation
		• Change is important and should be addressed to prevent "relapse." • Access to healthy foods should be discussed with patients. • Objective measures (including vitals like heart rate and blood pressure), physical measures (like waist circumference and BMI), and lab values (specifically, lipid panel and hemoglobin A1C) should be tracked from recorded patient data to help ensure individuals maintain healthy weight. ◦ Additional trending for comprehensive metabolic panels and complete blood count ions, minerals, and hyperglycemic hyperosmolar can also be considered • If you have prescribed supplements to your patients, they should continue taking them. But you should relay to your patients that foods provide a much more diverse nutrient and bioactive profile than supplements and should be prioritized. • Correct nutrient or ion abnormalities as needed. • Monitor for unplanned or unexpected weight loss, which often precedes dementia. • Patients might benefit from referral to a dietician, particularly if patient nutritional needs are complicated.
Social activity	8. Clinicians should annually, or after major life events (e.g., death of loved one, changed living arrangements), perform an assessment using one or more validated tool(s) (e.g., the UCLA Loneliness Scale for assessing loneliness, or the Berkman-Syme Social Network Index for assessing social isolation) to identify adults aged 45+ experiencing loneliness[l] or social isolation.[m] 9. For those identified with elevated risk of social isolation or loneliness, clinicians should suggest strategies for enhancing their social connection[n] and activity and check in with them via phone or virtual meeting every few months to offer guidance or additional resources, as needed, to help prevent further declines in social activity.	• Examples of validated tools to assess social activity: ◦ UCLA Loneliness Scale for assessing loneliness ◦ Berkman-Syme Social Network Index for assessing social isolation • Don't assume you know who is or is not lonely; think about how and why someone may be lonely or isolated and focus your advice on the mechanism. • Ask the patient what he or she thinks would be a solution to their loneliness or social isolation and familiarize yourself with some of the community programs and resources in your area. For older adults, the Area Agencies on Aging and the AARP Connect 2 Affect are good places to start. • Examples to suggest may include: ◦ Meeting new people by joining clubs or organizations, such as a book club, a local sports team, a civic organization, or a political or religious group ◦ Volunteering, for instance, at a pet shelter, the library, hospital, school, or senior center ◦ Staying connected to family and friends (even during times of social distancing) by phone and video conferencing should be encouraged, recognizing that limited mobile/internet access may impact some individual's ability to maintain virtual social connections • Explain to patients that all forms of relationships and support can be meaningful in building a sense of connection and serve as a protective factor to brain health. The more supported and connected a person feels, the better they can handle stress and build stress resilience. • Try to document results of loneliness and social isolation screenings in your electronic health records.

(Continues)

TABLE 1 (Continued)

Topic	Recommendation	Considerations for implementation
Cognitive stimulation	10. During each scheduled visit, but at least annually, clinicians should ask patients (aged 45+) about their level of cognitive stimulation or activity,[o] which may include learning new skills or other stimulating activities they practice 11. For individuals who indicate low levels of cognitive stimulation or activity, suggestions for cognitive stimulation should be made	• When assessing for levels of cognitive activity or stimulation, clinicians could inquire about: ◦ New skills being learned (e.g., cooking, dancing, language, crafting) ◦ What or how frequently they read (non-fiction vs. fiction) ◦ Whether they watch documentaries or news ◦ Making music or art ◦ Playing strategy games (e.g., chess or dominoes) ◦ Practicing mindfulness or being exposed to nature

Abbreviations: A1c, glycated hemoglobin; ACC, American College of Cardiology; AHA, American Heart Association; BMI, body mass index; DASH, Dietary Approaches to Stop Hypertension; HHS, Health & Human Services; MIND, Mediterranean-DASH Intervention for Neurodegenerative Delay; UCLA, University of California Los Angeles; USPSTF, United States Preventive Services Task Force.

[a]Gorelick PB*, Furie KL, Iadecola C, et al. Defining optimal brain health in adults: A presidential advisory from the American Heart Association/American Stroke Association. Stroke 2017;48:e284–e303.

[b]United States Preventive Services Task Force (USPSTF). Hypertension in adults: Screening. USPTF. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/hypertension-in-adults-screening. Published 2021. Accessed July 7, 2021.

[c]United States Preventive Services Taskforce (USPTF). Statin use for the primary prevention of cardiovascular disease in adults: Preventive medication. USPTF. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/statin-use-in-adults-preventive-medication. Published 2016. Accessed July 7, 2021.

[d]United States Preventive Services Taskforce (USPTF). Abnormal blood glucose and type 2 diabetes mellitus: Screening. USPTF. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/screening-for-abnormal-blood-glucose-and-type-2-diabetes. Published 2015. Accessed July 7, 2021.

[e]Flack JM*, Adekola B. Blood pressure and the new ACC/AHA hypertension guidelines. Trends Cardiovasc Med. 2020;30(3):160-64.

[f]Whelton PK*, Carey RM, Aranow, WS, et al. ACC/AHA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circ 2018; 138: e426–e483.

[g]American Heart Association. Routine assessment and promotion of physical activity in healthcare settings: A scientific statement from the American Heart Association. Circ. 2018;137:e495-522.

[h]Arnett DK*, Blumenthal RS, Albert MA, et al. 2019 ACC/AHA Guideline on the primary prevention of cardiovascular disease: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines [published correction appears in Circulation. 2019 Sep 10;140(11):e649-e650] [published correction appears in Circulation. 2020 Jan 28;141(4):e60] [published correction appears in Circulation. 2020 Apr 21;141(16):e774]. Circulation. 2019;140(11):e596-e646. https://doi.org/10.1161/CIR.0000000000000678.

[i]US Department of Health and Human Services. Physical activity guidelines for Americans, 2d ed. Washington, DC: US Department of Health and Human Services, 2018.

[j]*Moderate*-intensity *physical activity* is defined as activity that requires 3.0 to < 6.0 metabolic equivalents (METs); such as walking briskly or with purpose (3 to 4 mph), mopping, vacuuming, or raking a yard. Levels of "moderate" or "vigorous" activity are different for every individual depending on their fitness level, which is why elevated heart rate is a good indicator of optimal activity.

[k]Sagon C. You need 7 to 8 hours of sleep for better brain health. AARP. https://www.aarp.org/health/healthy-living/info-2017/sleep-needed-for-better-brain-health-cs.html. Published 2017. Accessed July 7, 2021.

[l]*Loneliness*: the perception of social isolation or the subjective feeling of being lonely.

National Academies of Science. Social isolation and loneliness in older adults: opportunities for the health care system. Washington, DC: The National Academies Press, 2020.

[m]*Social isolation*: the objective lack of (or limited) social contact with others.

National Academies of Science. Social isolation and loneliness in older adults: opportunities for the health care system. Washington, DC: The National Academies Press, 2020.

[n]*Social connection* is related to *social support*, which is having people who can provide help and assistance in times of need. There are many types of social connection, ranging from intimate relationships (in which a person can share deep concerns and aspirations) with a romantic partner, close family member, or best friend, to casual encounters with grocery store clerks or online friends—and all forms serve as a protective factor to brain health. There are also different types of social support (National Academies of Sciences, 2020):

- *Emotional support*, in which people offer a shoulder to cry on.
- *Instrumental support*, in which people offer concrete help such as babysitting one's children or cooking a meal for a sick person, and.
- *Informational support*, in which people offer useful information, such as legal help or therapy.

National Academies of Science. Social isolation and loneliness in older adults: opportunities for the health care system. Washington, DC: The National Academies Press, 2020.

[o]*Cognitive stimulation therapy* refers to "participation in a range of activities aimed at improving cognitive and social functioning," while *cognitive training* refers to "guided practice of specific standardized tasks designed to enhance particular cognitive functions," primarily as an intervention to prevent or delay cognitive decline or dementia. *Cognitive activity* is described as "mentally stimulating activities … such as reading, playing chess, etc."

World Health Organization. Risk reduction of cognitive decline and dementia: WHO guidelines, 2019. Geneva, Switzerland: Department of Mental Health and Substance Abuse, World Health Organization.

Agency for Healthcare Research and Quality (AHRQ). Interventions to prevent age-related cognitive decline, mild cognitive impairment, and clinical Alzheimer's-type dementia. Comparative Effectiveness Reviews. 2017;188.

Yu JT*, Xu W, Tan CC, et al. Evidence-based prevention of Alzheimer's disease: systematic review and meta-analysis of 243 observational prospective studies and 153 randomized controlled trials. J Neurol Neurosurg Psychiatry 2020;91:1201-09.

explore the use of sleep disturbances in helping with the early detection of AD and as a new intervention target for dementia prevention.[28]

4.4 | Nutrition

A healthy diet like the Mediterranean, DASH (dietary approaches to stop hypertension), and especially the MIND (Mediterranean and DASH Intervention for Neurodegenerative Delay) diet has been associated with multiple benefits: improved cognition and decreased risk of dementia in an older population; healthier cardiovascular functioning including blood glucose, blood pressure control, and decreased stroke and heart attack risk; and a decrease in depression.[9] The foods promoted by those diets contain a majority of the vitamins, minerals, fiber, and bioactives that are beneficial for brain health.[29,30] Further, there is a direct association between a "Western diet" and cognitive decline and depression.[31] Some evidence shows that excessive dietary intake of unhealthy high-fat, processed, or low nutritional value foods may be detrimental to brain, cardiovascular, and mental health. Adhering to healthy diet patterns, specifically the MIND diet, is equivalent to being 7.5 years younger in brain age.[32] For these reasons, the RRWG agreed that recommending clinicians assess the quality of their patients' diet and promote healthy dietary modifications is an optimal way to build cognitive resilience and prevent ADRD while improving modifiable risk factors to enhance brain health.

4.5 | Social activity

Poor social connection and isolation have been shown to have deleterious effects on several aspects of mental and physical health.[11] Whereas social isolation is associated with impaired cognitive performance and cognitive decline, and a more rapid progression of AD,[33] positive social connections or support have been shown to buffer against the physical and psychological effects of stress and reduce the risk of dementia.[34] Loneliness is another risk factor for one's general health, including brain health, and is equivalent to smoking 15 cigarettes a day.[35] The RRWG agreed that quality social connections act as a protective factor for stress and aid in the recovery process when challenges in life occur and contribute to optimal brain health. They quickly reached consensus that assessing and addressing an individual's risk of isolation or loneliness is a first step to help them reduce or prevent related cognitive decline.

4.6 | Cognitive stimulation

The RRWG reviewed the evidence base for cognitive interventions. Overall, there is limited evidence linking cognitive interventions to long-term cognitive benefits.[11–14] Nevertheless, the World Health Organization (WHO) conditionally recommends that cognitive training may be offered to older adults with normal cognition and with mild cognitive impairment to reduce the risk of cognitive decline and/or dementia.[12] Cognitive reserve has been proposed as a protective factor that may reduce the risk of clinical onset of dementia and cognitive decline, and there is modest evidence that increased cognitive activity may stimulate (or increase) cognitive reserve and have a buffering effect against rapid cognitive decline.[36] The RRWG agreed that the benefits of promoting cognitive stimulation outweigh potential undesirable effects.

To encourage conversations about brain health, physicians should ask patients about brain stimulation as regularly as physical activity, nutrition, or other lifestyle activities that may impact overall health.

RRWG members suggest the following activities to assess and encourage among patients:

Nonfiction reading	Meaning and purpose in life
Media (documentaries, news, podcasts, etc.)	Prayer
Crafts/skills (cooking, hobbies, gardening, etc.)	Social engagement (frequency, in-person or virtual)
Arts (visual/music/dance)	Relationships (romantic, pets, etc.)
Assessment of rumination	Strategy games
Mindfulness/meditation	
Exposure to nature	

5 | OTHER IMPORTANT RISK FACTORS

The RRWG acknowledges that there are many other important modifiable risk factors related to ADRD prevention or risk reduction beyond the six topics featured in their proposed set of recommendations, such as hyperlipidemia, depression, head injury, hearing loss, less education, smoking, excessive alcohol consumption, and air pollution. The RRWG focused on an initial set of topics for which they could provide the most actionable guidance for clinical practice. Although the evidence base regarding implementation strategies for these other topics is still emerging, clinicians should nonetheless strive to address them. The workgroup is optimistic that ongoing research will further demonstrate the relationship of these factors to dementia and further encourage their continued research.

One topic, however, that received substantial consideration was depression. The RRWG discussed how depression symptoms can often mimic signs of cognitive decline (e.g., fatigue, poor concentration) and noted the close association between depression and dementia.[1,12] But regarding management recommendations to reduce the risk of dementia, the workgroup concluded that the evidence between treating depression and reducing the risk of cognitive decline is yet inconclusive.[12–20] The RRWG encourages clinicians to continue to screen for and treat depression according to latest standards, and to monitor individuals with related conditions closely for signs of cognitive decline.[14]

6 | CONCLUSION

These recommendations are a first step toward filling a gap in available guidance for clinicians seeking to address brain health or prevent cognitive decline among their patients. Further steps are needed toward effective implementation by clinicians, toward educating consumers, and toward ensuring appropriate incentives and policies are in place.

The RRWG urges the medical community to commit to translating these recommendations into actionable strategies and tools that clinicians and their care teams can use at the point of care to encourage their adoption and to help patients adhere to the recommended lifestyle changes. These must be strategies that do not interrupt their workflow, such as translation of the recommended assessment tools into their electronic medical records (EMRs). A study at the McCance Center is already testing the implementation of a brief multidomain questionnaire embedded in their EMRs, called the Ideal Brain Care Score, administered by clinicians in primary care settings.[37] Other studies have explored the potential of EMRs to track aspects of brain health or related interventions to help prevent cognitive decline.[38–39] Initiatives such as these can be built upon to identify broad-reaching interventions for the prevention of ADRD that minimize disruptions to clinician workflow and impact patient outcomes.

In addition to educating and training clinicians in approaches for optimizing brain health, there should be equal efforts to educate patients and raise awareness about reducing risk of dementia. Much can be learned from the effective implementation of nonpharmacological interventions for conditions like cardiovascular disease and diabetes. Similar efforts are now needed in the realm of dementia care.

Furthermore, appropriate incentives for clinicians may be needed to encourage wider adoption of these practices. Policy changes to ensure that appropriate screenings are conducted at opportune times and development of relevant quality measures could further support adoption. Additionally, the RRWG recognizes that research is needed to confirm and validate their consensus recommendations for use in primary care. These approaches, coupled with continued research to generate evidence on the clinical and economic impact of engaging individuals early in their cognitive health, will help make routine care for brain health a reality.

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CONFLICTS OF INTEREST

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APPENDIX A: INITIAL EVIDENCE REVIEW BY RRWG

The risk reduction workgroup (RRWG)'s deliberations were initially grounded in the evidence from the following sources:

- Lancet Commission, 2020. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30367-6/fulltext
- Yu et al., 2020. Evidence-based prevention of Alzheimer's disease https://jnnp.bmj.com/content/91/11/1201?rss=1
- Dhana et al., 2020. Healthy lifestyle and the risk of Alzheimer dementia https://n.neurology.org/content/95/4/e374
- American Diabetes Association, 2020. Older adults: Standards of medical care in diabetes https://care.diabetesjournals.org/content/43/Supplement_1/S152

- US Preventive Services Task Force, 2020. Cognitive impairment in older adults: Screening https://www.uspreventiveservicestaskforce.org/uspstf/document/RecommendationStatementFinal/cognitive-impairment-inolder-adults-screening
- WHO Guidelines, 2019. Risk reduction of cognitive decline and dementia https://www.who.int/publications/i/item/risk-reduction-of-cognitive-decline-and-dementia
- Researchers Against Alzheimer's, 2019. Non-pharmacological therapies in Alzheimer's disease: A systematic review https://www.usagainstalzheimers.org/sites/default/files/2019-09/non_pharm_report.pdf
- American Academy of Neurology, 2018. Practice guideline update summary: Mild cognitive impairment https://www.aan.com/Guidelines/home/GuidelineDetail/881
- American Heart Association/American Stroke Association, 2017. Defining optimal brain health in adults https://www.ahajournals.org/doi/full/10.1161/STR.0000000000000148
- National Academies of Sciences, Engineering, and Medicine, 2017. Preventing cognitive decline and dementia: A way forward https://www.ncbi.nlm.nih.gov/books/NBK436397/
- Ngandu et al., 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) https://www.sciencedirect.com/science/article/abs/pii/S0140673615604615?via%3Dihub