

Promoting Healthy Aging: Public Health as a Leader for Reducing Dementia Risk

Eva M. J. Jackson, MPH,^{1,*} Kelly O'Brien,² Lisa C. McGuire, PhD,³ Matthew Baumgart,¹ Janelle Gore, MPH,^{3,4} Katie Brandt, MM,⁵ Allan I. Levey, MD, PhD,⁶ Helen Lamont, PhD⁷

¹Alzheimer's Association, Chicago, Illinois, USA.

²UsAgainstAlzheimer's, Washington, District of Columbia, USA.

³Division of Population Health, Centers for Disease Control and Prevention, Atlanta, Georgia, USA.

⁴Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee, USA.

⁵Massachusetts General Hospital, Harvard University, Boston, Massachusetts, USA.

⁶Goizueta Alzheimer's Disease Research Center, Emory University, Atlanta, Georgia, USA.

⁷Division of Disability and Aging Policy, Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, Washington, District of Columbia, USA.

*Address correspondence to: Eva Jackson, MPH. E-mail: evjackson@alz.org

Decision Editor: Brian Kaskie, PhD, FGSA

Keywords: Alzheimer's disease, Dementia, Healthy aging, Policy, Risk reduction

Alzheimer's disease and related dementias (ADRD) remain a public health priority, with prevalence of Alzheimer's disease—the most common cause of dementia—among people aged 65 years and older living in the United States expected to grow to nearly 13.8 million people by 2060 (Alzheimer's Association, 2023). ADRD are not normal aging; they impair memory and cognitive functioning, disrupting daily life. Over time, people with ADRD need increased assistance with basic activities of daily living and must rely on others for support, affecting family, friends, professional caregiving infrastructures, health and long-term care systems, and financial institutions designed to pay for care. In 2023, the formal cost of caring for people with ADRD to the health and long-term care systems in the United States is projected to total \$345 billion (Alzheimer's Association, 2023). Additionally, unpaid caregiving by family and friends was valued at nearly \$339.5 billion in 2022 (Alzheimer's Association, 2023).

The lifetime cost of care for a person with Alzheimer's disease was more than double the cost of care for a person without Alzheimer's disease (Alzheimer's Association, 2023). The total formal cost of ADRD care is projected to reach around \$1 trillion in 2050 (Alzheimer's Association, 2023; Zissimopoulos et al., 2014). These estimates do not consider the loss of quality of life for people with ADRD and their caregivers. It is imperative for the health of our systems and our population that public health address modifiable risk factors of ADRD.

Disproportionately Affected Populations

Not all populations are affected similarly by ADRD. It is estimated that for people aged 65 years and older, the risk of developing Alzheimer's disease was nearly double for women compared with men (Weinstein et al., 2012). Nearly

two-thirds of people living with Alzheimer's disease in the United States are women (Rajan et al., 2021). Additionally, certain racial and ethnic populations are disproportionately affected, thus experiencing a higher prevalence of Alzheimer's disease (Matthews et al., 2019). From 2014 to 2050, the overall U.S. population aged ≥ 65 years is expected to nearly double from 46 million to 88 million (Colby & Ortman, 2015), but some populations will see larger increases than others. From 2012 to 2050, the population growth of older adults is expected to vary widely by race and ethnicity: Native Hawaiian and other Pacific Islander persons (424% increase), Hispanic persons (390%), persons of two or more races (358%), American Indian and Alaska Native persons (274%), Asian American persons (266%), African American persons (172%), and White persons (75%; Ortman et al., 2014). ADRD has shared and unique impacts for different groups and is affected by intersectionality for people within and across groups. Although cognitive decline affects people in all groups, people may experience ADRD differently in terms of access to care and caregiving expectations.

Social Determinants of Health and ADRD

Healthy People 2030 defines social determinants of health (SDOH) as the conditions in places where people are born, live, learn, work, play, worship, and age (Office of Disease Prevention and Health Promotion, 2023). SDOH account for half of health outcome variation at the county level and continue to drive health disparities, which may affect risk for ADRD (CDC, 2020). Healthy People 2030 note that SDOH include safe housing, neighborhoods, and transportation; racism, discrimination, and violence within the home or community; education, job opportunities, and income; access to

Received: April 28 2023; Editorial Decision Date: May 14 2023.

© The Author(s) 2023. Published by Oxford University Press on behalf of The Gerontological Society of America.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs licence (<https://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial reproduction and distribution of the work, in any medium, provided the original work is not altered or transformed in any way, and that the work is properly cited. For commercial re-use, please contact journals.permissions@oup.com

nutritious foods and physical activity opportunities; access to health care; polluted air and water; and language and literacy skills (Office of Disease Prevention and Health Promotion, 2023). Other structural and social determinants of health that have been linked to ADRD include classism, sexism, and homophobia (Adkins-Jackson et al., 2023). Many of these SDOH may be related to cognitive health and risk factors that affect cognitive health, particularly through the impact of macrosystems’ structural power that drive SDOH and health disparities (Adkins-Jackson et al., 2023; CDC, 2020).

Differences in SDOH contribute to chronic disease disparities in the United States among racial, ethnic, and historically underserved and underrepresented populations by systematically limiting access to health care and other opportunities. The life course impact of SDOH disproportionately increase ADRD risk factors for groups that have been historically marginalized. Therefore, addressing SDOH, payment sources, historical inequities, and cultural differences are key approaches to addressing systemic and structural disparities and variations in ADRD risk factors. Using this structural lens towards improving health equity to prevent and address certain chronic conditions and their associated risk factors may enable public health to reduce the current and future impact of ADRD on millions of people.

Rise of Public Health as a Leader in ADRD Policy

Alzheimer’s disease emerged as a public health issue at the beginning of the 21st century, with growing scientific literature supporting relationships between ADRD and risks such as vascular disease, environmental factors, and lifestyle choices. In 2001, the National Institutes of Health (NIH) Cognitive and Emotional Health Project identified lifestyle and health behaviors that alter the risk for maintaining cognitive health in older adults (Hendrie et al., 2006). Soon after, the Centers for Disease Control and Prevention (CDC) cochaired a steering committee of national experts to guide the development of a new Healthy Brain Initiative, which then formed a framework to guide a coordinated public health response to address cognitive health—*The Healthy Brain Initiative: A National Public Health Road Map to Maintaining Cognitive Health* (CDC & Alzheimer’s Association, 2007).

National Alzheimer’s Project Act

On January 4, 2011, the National Alzheimer’s Project Act (NAPA) was signed into law (National Alzheimer’s Project Act, 2011). The Act charges the Secretary of the U.S. Department of Health and Human Services with creating and advancing a national plan to address ADRD. The national plan established five original ambitious goals (U.S. Department of Health and Human Services, 2012):

1. Prevent and effectively treat Alzheimer’s disease by 2025.
2. Enhance care quality and efficiency.
3. Expand supports for people with Alzheimer’s disease and their families.
4. Enhance public awareness and engagement.
5. Improve data to track progress.

The national plan provides a framework for coordination and integration of ADRD across the federal government. The original national plan was released on May 15, 2012, and has

been updated annually (Office of the Assistant Secretary for Planning and Evaluation, n.d.). Each summer, the Advisory Council on Alzheimer’s Research, Care, and Services makes recommendations informing the annual update to the national plan. These recommendations offer detailed steps that the federal government, Congress, and, in some cases, states and communities can take to advance the goals of the national plan.

Building Our Largest Dementia Infrastructure for Alzheimer’s Act

The third iteration of the Healthy Brain Initiative Road Map published in 2018 identified gaps in public health infrastructure impeding the implementation of core strategies (Alzheimer’s Association and CDC, 2018). To address these needs, the Building Our Largest Dementia (BOLD) Infrastructure for Alzheimer’s Act was passed by Congress and signed into law on December 31, 2018 (Building Our Largest Dementia Infrastructure for Alzheimer’s Act, 2018). The law authorized CDC funding to support state and local health departments with evidence-based information and strategies to increase early detection and diagnosis, reduce risks and avoidable hospitalizations, and improve support for dementia caregiving. These advances demonstrated the value of public health within ADRD policy.

NAPA Subcommittee Charge

In July 2020, recognizing the increased strength of scientific evidence regarding risk factors for ADRD, the NAPA Advisory Council established an ad hoc Risk Reduction subcommittee tasked with recommending an additional goal for potential inclusion in the national plan. The Advisory Council intended that the new goal focus on strategies to reduce risk factors for ADRD. This Risk Reduction subcommittee, guided by a steering committee of three national subject matter experts (see Supplementary Material), considered numerous potential risk and protective factors.

The subcommittee and its workgroups reviewed research, evidence, and strategies to address risk factors. The four expert workgroups, each chaired by two subcommittee members, identified public health, clinical, and policy steps that could address the risk factors. This process identified 10 risk factors (Table 1) meeting the criteria for action due to their strength of scientific evidence, ripeness for public health action, and potential for high impact.

Developing a Draft Goal and Recognizing Strategies

The subcommittee developed a draft goal, reduce the burden of risk factors for Alzheimer’s disease and related dementias, and strategies to meet that goal. The strategies included approaches by public health, clinical care, and research to address ADRD risk factors. The draft goal also included a suggested process

Table 1. Identified Dementia Risk Factors for NAPA Goal 6

| | |
|--------------------------|---|
| 1. Depression | 6. Poor diet quality and obesity |
| 2. Diabetes | 7. Poor sleep quality and sleep disorders |
| 3. Hearing loss | 8. Tobacco use |
| 4. Mid-life hypertension | 9. Traumatic brain injury |
| 5. Physical inactivity | 10. Unhealthy alcohol use |

to track progress, ensure continued public-private input, host a biannual summit to review progress and identify gaps and emerging opportunities, and advance specific milestones.

The draft goal strategies called on the Administration for Community Living and the aging services network, the CDC, the Centers for Medicare & Medicaid Services, the Health Resources and Services Administration, the Indian Health Service, the NIH, the Veterans Administration, state Medicaid programs, and other public and private payers to identify a comprehensive set of actions to assess and reduce dementia risk and improve early intervention. The actions must use an equity and inclusion framework to address biases in eligibility criteria, proportional representation, oversampling, data stratification, systemic racism, historical context, and structural factors disproportionately affecting the health of populations who are historically underserved and underrepresented. When public health and other health leaders assume an equity emphasis for risk reduction and invest in health promotion, there are significant downstream social and economic cost savings and improvements.

Methods for Modeling Estimated Impact of Goal 6

The subcommittee determined the potential impact of increased effort by the public health community to address the Alzheimer's disease risk factors identified by the workgroups. The subcommittee modeled the population attributable risk (PAR)—the portion of persons living with Alzheimer's disease that could be attributed to a risk factor for Alzheimer's disease—for eight of the 10 risk factors, based on a previously published methodology (Livingston et al., 2020; Norton et al., 2014) and using prevalence data from the Behavioral Risk Factor Surveillance System. The estimate was only for Alzheimer's disease and did not include other related dementias; to determine effect of a reduction on disease, prevalence estimates and projections are needed, and there are no such estimates except for Alzheimer's disease. Traumatic brain injury and sleep were not included in the analysis due to a lack of data and scientific clarity on causal pathways. After determining the communality of the risk factors (to avoid double-counting individuals with more than one risk factor), a combined PAR was calculated. Then, assuming a 15% per decade reduction in the prevalence of each of the eight risk factors, the model continuously recalculated the PAR and Alzheimer's disease prevalence as risk factor prevalence hypothetically declined. This resulted in an unpublished prevalence analysis from the subcommittee showing that, assuming causal relationships between the risk factors and Alzheimer's disease, as many as 1.2 million fewer people than currently projected by Rajan et al. (2021) would be living with Alzheimer's disease in 2050.

Assuming causal relationships between the risk factors and Alzheimer's disease, as many as 1.2 million fewer people than currently projected by Rajan et al. (2021) would be living with Alzheimer's disease in 2050.

External Experts Review the Draft Goal 6 Recommendation

More than 130 experts and organizations were invited to review the subcommittee's draft recommendation, and 50

multidisciplinary experts (see [Supplementary Material](#)) provided comments on the recommended goal and strategies. Input from reviews were incorporated into the final recommendation, ensuring alignment with current science and public health priorities. In July 2021, the subcommittee recommended that the Advisory Council add the drafted sixth goal to the national plan to address risk and protective factors associated with ADRD ([Risk Reduction Subcommittee 2021 Proposed Recommendations, 2021](#)).

2021 Update to the National Plan to Address Alzheimer's Disease

On December 26, 2021, Secretary Xavier Becerra announced that the 2021 Update to the National Plan to Address Alzheimer's Disease included a new sixth goal: accelerate action to promote healthy aging and reduce risk factors for Alzheimer's disease and related dementias ([U.S. Department of Health and Human Services, 2021](#)). Goal 6 included six strategies with action steps ([Table 2](#)). This was the first time a new goal was added to the national blueprint to address ADRD. Goal 6 commits federal agencies to a comprehensive approach to reducing risk factors for ADRD by supporting healthy aging throughout the life course.

Some of Goal 6 actions expand capacity in state, tribal, and territorial public health departments to address SDOH that contribute to disparities in healthy aging and brain health. This work builds on the BOLD Act and the National Healthy Brain Initiative. CDC's Healthy Brain Initiative Road Map Series ([Alzheimer's Association and CDC, 2018](#)) continues to be an important blueprint for public health action to address ADRD.

Conclusion

The development of Goal 6 for NAPA's National Plan, through partnerships with numerous private-public entities, highlights successes that can be achieved when diverse organizations

Table 2. Strategies to Promote Healthy Aging and Risk Reduction of ADRD

| Strategy | Description |
|--------------|--|
| Strategy 6.A | Identify research priorities and expand research on risk factors for Alzheimer's disease and related dementias |
| Strategy 6.B | Facilitate translation of risk reduction research findings into clinical practice |
| Strategy 6.C | Accelerate public health action to address the risk factors for Alzheimer's disease and related dementias |
| Strategy 6.D | Expand interventions to reduce risk factors, manage chronic conditions, and improve well-being through the aging network |
| Strategy 6.E | Address inequities in risk factors for Alzheimer's disease and related dementias among marginalized populations |
| Strategy 6.F | Engage the public about ways to reduce risks for Alzheimer's disease and related dementias |

Source/Notes: U.S. Department of Health and Human Services. (2021). *National plan to address Alzheimer's disease: 2021 update*. <https://aspe.hhs.gov/sites/default/files/documents/66904c18bb1f0843c3c113d7099e98c1/napa-national-plan-2021-update.pdf>.

work together to improve the public's health. With a clear and unifying purpose—promote healthy aging and risk reduction of ADRD—experts from multidisciplinary fields developed and presented a recommendation to the Advisory Council within a year that became a new goal. Goal 6 elevated existing initiatives around reducing risk for ADRD and spurred action across federal and private sectors. Although recognition of risk factors for ADRD in national policy and the inclusion of Goal 6 are important steps, improvements in addressing healthy aging and addressing risk factors for ADRD are needed. Public health has an important role—both in implementing evidence-based strategies to reduce risk and improve the health and well-being of persons living with Alzheimer's disease, and in coordinating multisectoral partnerships that may influence policy, systems, and environmental changes. Public health is an important leader in healthy aging and ADRD, and this effort demonstrates the necessity of its continued national leadership.

Public health is an important leader in healthy aging and ADRD, and this effort demonstrates the necessity of its continued national leadership.

Supplementary Material

Supplementary data are available at *Public Policy & Aging Report* online.

Funding

None.

Conflict of Interest

None.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

References

- Adkins-Jackson, P. B., George, K. M., Besser, L. M., Hyun, J., Lamar, M., Hill-Jarrett, T. G., Bubu, O. M., Flatt, J. D., Heyn, P. C., Cicero, E. C., Zarina Kraal, A., Pushpalata Zanwar, P., Peterson, R., Kim, B., Turner, R. W. 2nd, Viswanathan J., Kulick, E. R., Zuelsdorff, M., Stites, S. D., Arce Rentería, M., & Babulal, G. (2023). The structural and social determinants of Alzheimer's disease related dementias. *Alzheimer's & Dementia*, 1–15. Advance online publication. <https://doi.org/10.1002/alz.13027>
- Alzheimer's Association & Centers for Disease Control and Prevention (CDC). (2018). *Healthy Brain Initiative, state and local public health partnerships to address dementia: The 2018–2023 road map*. <https://www.cdc.gov/aging/pdf/2018-2023-Road-Map-508.pdf>
- Alzheimer's Association. (2023). 2023 Alzheimer's disease facts and figures. *Alzheimer's & Dementia*, 19(4), 1598–1695. doi:10.1002/alz.13016
- Building Our Largest Dementia Infrastructure for Alzheimer's Act. (2018). *Pub. L. No. 115–406*. <https://uscode.house.gov/statutes/pl/115/406.pdf>
- Centers for Disease Control and Prevention (CDC) & Alzheimer's Association. (2007). *The Healthy Brain Initiative: A national public health road map to maintaining cognitive health*. <https://www.cdc.gov/aging/pdf/thehealthybraininitiative.pdf>
- Centers for Disease Control and Prevention (CDC). (2020). *Social determinants of health and Alzheimer's disease and related dementias*. <https://www.cdc.gov/aging/disparities/social-determinants-alzheimers.html>
- Colby, S. L., & Ortman, J. M. (2015). Projections of the size and composition of the U.S. population: 2014 to 2060 (P25-1143). *Current Population Reports*, U.S. Census Bureau. <https://www.census.gov/library/publications/2015/demo/p25-1143.html>
- Hendrie, H. C., Albert, M. S., Butters, M. A., Gao, S., Knopman, D. S., Launer, L. J., Yaffee, K., Cuthbert, B. N., Edwards, E., & Wagster, M. V. (2006). The NIH Cognitive and Emotional Health Project: Report of the Critical Evaluation Study Committee. *Alzheimer's & Dementia*, 2(1), 12–32. doi:10.1016/j.jalz.2005.11.004
- Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S. G., Dias, A., Fox, N., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Ogunniyi, A.,...Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of The Lancet Commission. *Lancet*, 396(10248), 413–446. doi:10.1016/s0140-6736(20)30367-6
- Matthews, K. A., Xu, W., Gaglioti, A. H., Holt, J. B., Croft, J. B., Mack, D., & McGuire, L. C. (2019). Racial and ethnic estimates of Alzheimer's disease and related dementias in the United States (2015–2060) in adults aged ≥65 years. *Alzheimer's & Dementia*, 15(1), 17–24. doi:10.1016/j.jalz.2018.06.3063
- National Alzheimer's Project Act. (2011). *Pub. L. No. 111–375*. <https://www.congress.gov/111/plaws/publ375/PLAW-111publ375.pdf>
- Norton, S., Matthews, F. E., Barnes, D. E., Yaffe, K., & Brayne, C. (2014). Potential for primary prevention of Alzheimer's disease: An analysis of population-based data. *Lancet Neurology*, 13(8), 788–794. doi:10.1016/s1474-4422(14)70136-x
- Office of Disease Prevention and Health Promotion. (2023). *Social determinants of health*. U.S. Department of Health and Human Services. <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>
- Office of the Assistant Secretary for Planning and Evaluation. (n.d.). *National plan to address Alzheimer's disease*. U.S. Department of Health and Human Services. <https://aspe.hhs.gov/collaborations-committees-advisory-groups/napa/napa-documents/napa-national-plans>
- Ortman, J. M., Velkoff, V. A., Hogan, H. (2014) An aging nation: The older population in the United States (P25-1143). *Current Population Reports*. U.S. Census Bureau. <https://www.census.gov/content/dam/Census/library/publications/2014/demo/p25-1140.pdf>
- Rajan, K. B., Weuve, J., Barnes, L. L., McAninch, E. A., Wilson, R. S., & Evans, D. A. (2021). Population estimate of people with clinical Alzheimer's disease and mild cognitive impairment in the United States (2020–2060). *Alzheimer's & Dementia*, 17(12), 1966–1975. doi:10.1002/alz.12362
- Risk Reduction Subcommittee 2021 proposed recommendations. (2021). <https://aspe.hhs.gov/sites/default/files/2021-09/NA-PA-2021-Risk-Reduction-Recommendations.pdf>
- US Department of Health and Human Services. (2012). *National plan to address Alzheimer's disease*. <https://aspe.hhs.gov/national-plan-address-alzheimers-disease>
- US Department of Health and Human Services. (2021). National plan to address Alzheimer's disease: 2021 update. <https://aspe.hhs.gov/reports/national-plan-2021-update>
- Weinstein, G., Wolf, P. A., Beiser, A. S., Au, R., & Seshadri, S. (2012). Risk estimations, risk factors, and genetic variants associated with Alzheimer's disease in selected publications from the Framingham Heart Study. *Journal of Alzheimer's Disease*, 33((s1)), S439–S445. doi:10.3233/jad-2012-129040
- Zissimopoulos, J., Crimmins, E., & St Clair, P. (2014). The value of delaying Alzheimer's disease onset. *Forum for Health Economics & Policy*, 18(1), 25–39. doi:10.1515/fhep-2014-0013.