Editorials

Preventing Dementia: Is There Hope for Progress?

CARLA M. PERISSINOTTO, MD, MHS, and VICTOR VALCOUR, MD, *University of California, San Francisco, California*

Undoubtedly, there is an increasing need to clarify the modifiable risk factors for cognitive impairment. By 2050, the global population older than 65 years will double.[1] Because the prevalence of dementia doubles every five years,[2-4] the global burden of dementia will increase significantly—an impact that warrants a more anticipatory approach to identifying modifiable risk factors and their consequences, as with any chronic disease.

Recent attention has been placed on screening for dementia, leading many physicians and patients to inquire about prevention strategies. Patients may tell us that they are completing sudoku and crossword puzzles daily, but is this really helping? Can we confidently counsel our patients and their families on primary, secondary, or tertiary prevention strategies? Unfortunately, the answers to what really works in primary and secondary prevention are not that simple. The current recommendation from the U.S. Preventive Services Task Force on screening for dementia is inconclusive because of the lack of concrete data.[5] However, the recommendation acknowledges the potential clinical benefits to early recognition of dementia, such as anticipating functional decline, and thereby helping to prepare patients, caregivers, and health care systems.

Global public health campaigns have excelled in identifying and educating the public about the effects of blood pressure, exercise, and diet on cardiovascular risk. Campaigns to promote "brain health" could similarly inform the public about potential benefits that extend beyond that of the heart. The main challenge in dementia prevention lies in identifying the connection between risk factors and cognitive function. An additional challenge relates to the status of research in dementia prevention. Hindered by the long latency period between intervention and disease, dementia research often relies on intermediate markers of neuropsychological testing performance in a manner that may not accurately inform onset of functional changes and dementia.

Much of the interventional research has been inconclusive, contradictory, and mainly from observational studies, with few randomized controlled trials aimed at the role of antioxidants, cognitive activity, and other vascular risk factors (e.g., hypertension, statin therapy, exercise).[6-13] Vascular risk factors appear to increase the risk of developing dementia, but data to support the modification of these risk factors as a prevention strategy are not firmly established.[14] Some of the most promising data relate to physical activity.[15-17] Given the broad health benefits of physical activity and few to no identified risks, this may be the most important recommendation for physicians to focus on with patients. Similarly, early data suggest a benefit from social engagement, and early recognition and treatment of depression.[16,18] These two strategies have low risk and high benefit because they are likely to positively impact quality of life, despite whether they directly impact dementia pathology. Targeting vascular risk factors seems physiologically plausible and may also have broad benefits beyond the brain.

It is reasonable to look to prior public health campaigns as models for our educational and prevention efforts for dementia. Educational efforts should first focus on ensuring that the public understands that a diagnosis of dementia represents a spectrum of cognitive impairment, and that Alzheimer disease is only one of several subtypes. Until strategies targeting primary and secondary prevention emerge, our greatest impact may be in tertiary prevention—in the prevention of dementia morbidity. Such work may require early recognition, in which strategies targeting home and financial safety have a clear impact on those at highest risk.

Despite attempts at clarifying prevention strategies, are we back to the drawing board, returning to the geriatricians' mantra of keeping things simple, avoiding polypharmacy, and ensuring our patients are physically and mentally active? Although disease-specific prevention strategies may remain elusive, extending functional life expectancy is achievable, and is this not the core goal for dementia prevention after all?

Address correspondence to Carla M. Perissinotto, MD, MHS, at carla.perissinotto@ucsf.edu. Reprints are not available from the authors.

Author disclosure: Nothing to disclose.

REFERENCES

1. U.S. Census Bureau. Population profile of the United States. http://www.census.gov/population/www/pop-profile/natproj.html. Accessed March 5, 2011.
2. Bachman DL, Wolf PA, Linn RT, et al. Incidence of dementia and probable Alzheimer's disease in a general population: the Framingham Study. *Neurology.* 1993;43(3 pt 1):515-519.

3. Ferri CP, Prince M, Brayne C, et al.; Alzheimer's Disease International. Global prevalence of dementia: a Delphi consensus study. *Lancet*. 2005;366(9503):2112-2117.
4. Graves AB, Larson EB, Edland SD, et al. Prevalence of dementia and its subtypes in the Japanese American population of King County, Washington state. The Kame Project. *Am J Epidemiol*. 1996;144(8):760-771.
5. U.S. Preventive Services Task Force. Screening for dementia: recommendations and rationale. June 2003. http://www.uspreventiveservicestaskforce.org/3rduspstf/dementia/dementrr.htm. Accessed March 10, 2011.
6. Daviglus ML, Bell CC, Berrettini W, et al. National Institutes of Health state-of-the-science conference statement: preventing Alzheimer's disease and cognitive decline. *NIH Consens State Sci Statements*. 2010;27(4):1-30. http://consensus.nih.gov/2010/alzstatement.htm. Accessed March 25, 2011.
7. Haan MN, Wallace R. Can dementia be prevented? Brain aging in a population-based context. *Annu Rev Public Health*. 2004;25:1-24.
8. Lim WS, Gammack JK, Van Niekerk J, Dangour AD. Omega 3 fatty acid for the prevention of dementia. *Cochrane Database Syst Rev*. 2006;(1):CD005379.
9. Malouf R, Grimley Evans J. Folic acid with or without vitamin B12 for the prevention and treatment of healthy elderly and demented people. *Cochrane Database Syst Rev*. 2008;(4):CD004514.
10. Mangialasche F, Solomon A, Winblad B, Mecocci P, Kivipelto M. Alzheimer's disease: clinical trials and drug development. *Lancet Neurol*. 2010;9(7):702-716.
11. McGuinness B, Craig D, Bullock R, Passmore P. Statins for the prevention of dementia. *Cochrane Database Syst Rev*. 2009;(2):CD003160.
12. McGuinness B, Todd S, Passmore P, Bullock R. Blood pressure lowering in patients without prior cerebrovascular disease for prevention of cognitive impairment and dementia. *Cochrane Database Syst Rev*. 2009;(4):CD004034.
13. Middleton LE, Yaffe K. Targets for the prevention of dementia. *J Alzheimers Dis*. 2010;20(3):915-924.
14. Richard E, Ligthart SA, Moll van Charante EP, van Gool WA. Vascular risk factors and dementia—towards prevention strategies. *Neth J Med*. 2010;68(10):284-290.
15. Jedrziewski MK, Ewbank DC, Wang H, Trojanowski JQ. Exercise and cognition: results from the National Long Term Care Survey. *Alzheimers Dement*. 2010;6(6):448-455.
16. Middleton LE, Yaffe K. Promising strategies for the prevention of dementia. *Arch Neurol*. 2009;66(10):1210-1215.
17. Rockwood K, Middleton L. Physical activity and the maintenance of cognitive function. *Alzheimers Dement*. 2007;3(2 suppl 1):S38-S44.
18. Wilson RS, Mendes De Leon CF, Barnes LL, et al. Participation in cognitively stimulating activities and risk of incident Alzheimer disease. *JAMA*. 2002;287(6):742-748. ■