

Research Meeting: The Healthy Brain and our Aging Population: Translating Science to Public Health Practice

*May 1-2, 2006
Omni Hotel
Atlanta, Georgia*

Sponsors:

Centers for Disease Control and Prevention (CDC) and Alzheimer's Association

In May 2006, the Centers for Disease Control and Prevention (CDC) in partnership with the Alzheimer's Association conducted a 2-day meeting on the subject of major risk and protective factors related to maintaining cognitive function and reducing risk for cognitive decline. This meeting was part of a larger Healthy Brain Initiative between the CDC and the Alzheimer's Association. This partnership was established by the U.S. Congress in 2005. A cornerstone of the collaboration, which involves other key federal, national, state, and local partners, is developing a national roadmap of recommended public health strategies to address the critical issue of cognitive health for all Americans. The research meeting brought together national experts to review and discuss the current scientific knowledge representing a key first step in developing this important roadmap. This meeting was conducted in close collaboration with the National Institute of Aging at the National Institutes of Health.

Based upon the conclusions in the National Institutes of Health's Cognitive and Emotional Health Project, and the input from the Meeting Planning Workgroup, cardiovascular risk factors and physical activity were chosen as the meeting focus because their association with cognitive outcomes was deemed stronger than scientific evidence for other risk or protective factors.^{1,2} The research meeting examined the current state of science concerning the major risk factors, vascular factors and physical inactivity, and current research translation models for moving science into public health practice (Appendix A). The Meeting Planning Workgroup, composed of an invited group of experts (Appendix B), designed the meeting with oversight from the Steering Committee for the "Healthy Brain Initiative: A National Public Health Roadmap to Maintaining Cognitive Health" (Appendix C).

At the conclusion of the meeting, there was strong support overall for the Healthy Brain Initiative and moving forward in developing recommendations to promote and protect brain health. Based on the scientific discussions, it was concluded that the following factors are related to maintaining cognitive health: the control of high blood pressure, cholesterol, diabetes,

overweight and obesity; smoking prevention or cessation; and being physically active. Moreover, the incremental benefit of addressing additional risk factors was noted (e.g., addressing two factors is more likely to be beneficial than addressing only one).

Several specific observations were noted regarding the associations between vascular risk factors and physical activity and cognition.

- Substantial evidence exists to support the association between cardiovascular health and cognitive health.
- Substantial evidence exists to indicate that cumulative risks for vascular disease increase the risk for stroke and cognitive decline.
- It is important to emphasize that controlling vascular risk factors reduces the risk of experiencing cognitive decline, but current science does not support the relationship between controlling vascular risk factors and improved cognitive health.
- Growing evidence exists that physical activity may maintain or improve some aspects of cognitive health in the short term, but further research is needed both to determine long-term outcomes, and the nature of recommendations (i.e., the dose-response or amount of physical activity) needed to promote cognitive health.
- Evidence exists to support the relationship between physical activity and constructs related to emotional well-being, although causal mechanisms for the associations are unknown.

In addition to these important scientific observations, the participants made a number of key suggestions important to developing recommendations relevant to prevention research, surveillance, communication, and policy.

- Recognize the importance of emotional well-being as a part of cognitive health.
- Assess the general public's perspectives on lifestyle behaviors, choices, and attitudes concerning cognitive health and the burden of cognitive decline through qualitative studies.
- Determine the role of public health surveillance and the appropriate surveillance systems to assess cognitive maintenance, decline, or improvement.
- Determine the effects of modifying multiple risk factors on improvements in cognition.
- Determine target audience's perceptions of the benefits and barriers of making lifestyle modifications to reduce the risks associated with cognitive decline.
- Determine how to link scientifically valid messages about cognitive decline risk to current public health messages for primary prevention efforts.

- Promote the importance of cognitive health to key constituencies.
- Conduct clinical trials and other research to determine what are the outcomes of specific physical activity regimens on cognitive functions or processing, and how these are mediated.

The findings from the research meeting provided a foundation and common frame of reference for next steps in developing recommendations. Addressing the potential to promote and protect cognitive health requires new collaborations and investments to move the science forward for the benefit of the public. The work on cognitive decline may hold possibilities for preventing Alzheimer's disease and dementia. It is clear that major societal benefits from basic and clinical research will not be realized unless the findings can be translated into real-world practice to improve the health of all Americans. The Healthy Brain Initiative of the CDC and the Alzheimer's Association is working to make this translation a reality.

Proceedings from the meeting are being published in an April 2007 special issue of *Alzheimer's & Dementia*.

References

¹Wagster MV, Cuthbert BN, Edwards E. *National Institutes of Health's Cognitive and Emotional Health Project 2006*. Available at <http://trans.nih.gov/cehp/HBPemot.htm> (accessed November 2006).

²Hendrie HC, Albert MS, Butters MA, Gao S, Knopman DS, Launer LJ, Yaffe K, Cuthbert BN, Edwards E, Wagster MV. The NIH Cognitive and Emotional Health Project: Report of the Critical Evaluation Study Committee *Alzheimer's and Dementia*. 2006; 2(1): 12-32.

Appendix A

**Research Meeting: The Healthy Brain and our Aging Population:
Translating Science to Public Health Practice
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Agenda for the Research Meeting

Cardiovascular Risk Factors and Maintenance of Cognition.

Moderator: William Thies, Ph.D., Senior Vice President for Medical and Scientific Affairs
Alzheimer's Association

Animal models of cardiovascular risk factors and maintenance of cognition

Speaker: Mark Moss, Ph.D., Professor & Chair
Department of Anatomy & Neurobiology
Boston University School of Medicine

Epidemiological findings concerning influence of cardiovascular risk factors on cognition

Speaker: Francine Grodstein, Sc.D., Associate Professor
Harvard Medical School Associate Epidemiologist, Department of Medicine
Brigham and Women's Hospital
Johns Hopkins University

Physical Activity and Maintenance of Cognition

Moderator: James Laditka, D.A., Ph.D., M.P.A., Research Assistant Professor
Arnold School of Public Health
University of South Carolina

Animal models of physical activity and maintenance of cognition

Speaker: Carl Cotman, Ph.D., Professor,
Departments of Neurology and Psychobiology
Director, Institute for Brain Aging and Dementia,
University of California, Irvine

Epidemiological findings concerning influence of physical activity on maintenance of cognition

Speaker: Ken Rockwood, M.D., FRCP, Professor
Geriatric Medicine & Neurology,
Kathryn Allen Weldon Professor of Alzheimer Research, Dalhousie University

Clinical studies concerning influence of physical activity on maintenance of cognition

Speaker: Arthur Kramer, Ph.D., Professor
Beckman Institute and Department of Psychology,
University of Illinois at Urbana-Champaign

Translating Science into Public Health Practice

Moderator: David Buchner, Ph.D., Chief, Physical Activity and Health Branch
Division of Nutrition and Physical Activity
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention

Translating Science into Public Health Practice: Implications for Protecting Brain Health

Speaker: Marcia G. Ory, Ph.D., M.P.H., Professor

Department of Social and Behavioral Health,

School of Rural Public Health, The Texas A&M University System Health Science Center

Translating Science to Public Health Practice

Speaker: Tom Prohaska, Ph.D., Professor,

Department of Community Health Sciences

Co-Director, The Center for Research on Health and Aging Health Research and Policy Centers, School of Public Health, University of Illinois at Chicago

Can We Save the Brain? A Question for Public Health

Speaker: Darwin Labarthe, M.D., Director,

Division for Heart Disease and Stroke Prevention

National Center for Chronic Disease Prevention and Health Promotion

Centers for Disease Prevention and Control

Appendix B

Research Meeting Planning Workgroup

Marilyn Albert, Ph.D. (Co-Chair)

Division of Cognitive Neuroscience, Johns Hopkins Medical Center

David Brown, Ph.D.

Division of Nutrition and Physical Activity, CDC

David Buchner, MD, MPH

Division of Nutrition and Physical Activity, CDC

James Laditka, D.A., Ph.D., M.P.A., (Co-Chair)

Arnold School of Public Health University of South Carolina

Lenore Launer, Ph.D

Neuroepidemiology Section, National Institute on Aging

Sheree Marshall Williams, Ph.D, MSc

Division for Heart Disease and Stroke Prevention, CDC

Paul Scherr, Ph.D., DSc

Emerging Investigations and Analytical Methods Branch, Division of Adult and Community Health, CDC

William Thies, PhD

Medical and Scientific Affairs, Alzheimer's Association

David Thurman, MD

Division of Adult and Community Health, CDC

Molly Wagster, Ph.D.

Neuropsychology of Aging Program, National Institute on Aging

Appendix C

Steering Committee

Lynda Anderson, PhD (Co-Chair)

Healthy Aging Program, Division of Adult and Community Health, CDC

Bill Benson

Health Benefits ABC's

Debra Cherry, PhD

Alzheimer's Association

Mary Guthrie

Administration on Aging

Hugh Hendrie, MB, ChB, DSc.

Regenstrief Institute, Indiana University School of Medicine

James Laditka, DA, PhD, MPA

Arnold School of Public Health, University of South Carolina

Debra Lappin, JD

B&D Consulting

Stephen McConnell (Co-Chair)

Public Policy and Advocacy, Alzheimer's Association

Marcelle Morrison Bogorad, PhD

Neuroscience & Neuropsychology of Aging Program, National Institute on Aging

Michael Patterson

AARP Member Strategy Development - NRTA

Peter Rabins, MD, MPH

John Hopkins University School of Medicine

Ramona Rusinak, RN, PhD

Arizona Department of Health Services