Cognitive Aging:
Progress in Understanding and Opportunities for Action

IOM Committee on the Public Health Dimensions of Cognitive Aging
IOM Committee

DAN G. BLAZER (Chair), Duke University Medical Center
KRISTINE YAFFE (Vice-Chair), University of California, San Francisco
MARILYN ALBERT, John Hopkins University
SARA J. CZAJA, University of Miami
DONNA FICK, Pennsylvania State University
LISA P. GWYTHER, Duke University
FELICIA HILL-BRIGGS, Johns Hopkins University
SHARON K. INOUYE, Harvard Medical School
JASON KARLAWISH, University of Pennsylvania
ARTHUR F. KRAMER, University of Illinois at Urbana-Champaign
ANDREA Z. LACROIX, University of California, San Diego
JOHN MORRISON, Icahn School of Medicine at Mount Sinai
TIA POWELL, Albert Einstein College of Medicine
DAVID REUBEN, University of California, Los Angeles
LESLIE SNYDER, University of Connecticut
ROBERT B. WALLACE, The University of Iowa College of Public Health
Sponsors

- McKnight Brain Research Foundation
- National Institute on Aging
- National Institute of Neurological Disorders and Stroke
- Centers for Disease Control and Prevention
- Retirement Research Foundation
- AARP
Statement of Task Highlights

The IOM committee was convened to examine cognitive health and aging, as distinct from Alzheimer's disease. The committee was asked to make recommendations focused on the public health aspects of cognitive aging with an emphasis on:

- Definitions and terminology,
- Epidemiology and surveillance,
- Prevention and intervention opportunities,
- Education of health professionals,
- Public awareness and education.
Study Timeline

2014

February – First committee meeting
April – Second committee meeting and workshop
June – Third committee meeting and workshop
September – Fourth committee meeting
November – Fifth committee meeting

2015

January to March – Report review, release to sponsors
April – Public release
What is Cognitive Aging?

• **Cognition** refers to the mental functions involved in attention, thinking, understanding, learning, remembering, solving problems, and making decisions.

• **Cognitive aging** is a process of gradual, ongoing, yet highly variable changes in cognitive functions that occur as people get older.

• Cognitive aging is a lifelong process. It is not a disease or a quantifiable level of function.

• In the context of aging, **cognitive health** is exemplified by an individual who maintains his or her optimal cognitive function with age.
Demographics

Key Features of Cognitive Aging

- Inherent in humans and animals as they age
- Occurs across the spectrum of individuals as they age regardless of initial cognitive function
- Highly dynamic process with variability within and between individuals
- Includes cognitive domains that may not change, may decline, or may actually improve with aging, and there is the potential for older adults to strengthen some cognitive abilities
- Only now beginning to be understood biologically yet clearly involves structural and functional brain changes
- Not a clinically-defined neurological or psychiatric disease such as Alzheimer’s disease and does not inevitably lead to neuronal death and neurodegenerative dementia.
Proportions of people ages 65 and older with moderate or severe memory impairment versus no or mild memory impairment

Intra-individual changes in cognition scores over time
(random sample of ~500 adults, ages 60 and older)

Key Messages

• Cognitive aging is more than decline in memory or speed of processing; can have positive effects on cognition.

• Scientific understanding of the non-disease changes in cognition with age is rapidly advancing; much remains to be learned.

• Wide variability in the impact of cognitive aging among individuals and throughout the life span.

• Age affects all organs, including the brain.

• Cognitive changes can affect daily activities.

• Actions can be taken by individuals to help maintain cognitive health.

• Opportunities for action at many levels.
Recommendation 1
Increase Research and Tools for Assessing Cognitive Aging and Cognitive Trajectories

NIH, CDC, research foundations, academic research institutions, and private-sector companies should expand research on the trajectories of cognitive aging and improve the tools used to assess cognitive changes and its effects on daily function. Specific needs include:

- Studies using a range of assessments to explore the physiological and structural basis of cognitive aging;
- Nonhuman animal studies that examine the mechanisms and clinical correlates of cognitive aging;
- Studies to examine the mechanisms underlying interventions that affect cognitive trajectories;
- Studies to identify and validate novel tools and measures of function;
- An update of the norms for cognitive function in older adults.
Recommendation 2
Collect and Disseminate Population-Based Data

CDC, state health agencies, and other relevant government agencies, nonprofit organizations, research foundations, and academic research institutions should strengthen efforts to collect and disseminate population-based data on cognitive aging. These efforts should identify the nature and extent of cognitive aging throughout the population including high risk and underserved populations with the goal of informing the general public and improving relevant policies, programs, and services.

Data collection and dissemination efforts should:
- Focus on cognitive health as separate from dementia and other diseases
- Develop operational definitions of cognitive aging
- Involve representative surveys involving diverse and high-risk populations
- Emphasize longitudinal assessments
- Include cognition questions in the core BRFSS

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES
Advising the nation • Improving health
Recommendation 3

Take Actions to Reduce Risks of Cognitive Decline with Aging

Individuals of all ages and their families should take actions to maintain and sustain their cognitive health, realizing that there is wide variability in cognitive health among individuals. Specifically, individuals should:

• Be physically active.

• Reduce and manage cardiovascular disease risk factors (including hypertension, diabetes, smoking).

• Regularly discuss and review health conditions and medications that might influence cognitive health with a health care professional.

• Take additional actions that may promote cognitive health.
Recommendation 4

Increase Research on Risk and Protective Factors and Interventions

NIH, CDC, other relevant government agencies, nonprofit organizations, and research foundations should expand research on risk and protective factors for cognitive aging and on interventions aimed at preventing or reducing cognitive decline and maintaining cognitive health.

Research opportunities include:

- Collaborative approaches between ongoing longitudinal studies
- Risk factors and interventions in under-studied and vulnerable populations
- Clinical trials of interventions
- Approaches to sustaining behavior changes that promote cognitive health
Recommendation 5

Ensure Appropriate Review, Policies, and Guidelines for Products that Affect Cognitive Function or Assert Claims Regarding Cognitive Health

The Food and Drug Administration and the Federal Trade Commission, in conjunction with other relevant federal agencies and consumer organizations, should determine the appropriate regulatory review, policies, and guidelines for

- Over-the-counter medications that may affect cognitive function
- Interventions that do not target a disease but may assert claims about cognitive enhancement or maintaining cognitive abilities such as memory or attention
Recommendation 6

Develop and Implement Core Competencies and Curricula in Cognitive Aging for Health Professionals

The Department of Health and Human Services, the Department of Veterans Affairs, and educational, professional, and interdisciplinary associations and organizations involved in the health care of older adults should develop and disseminate core competencies, curricula, and continuing education opportunities, including for primary care providers, that focus on cognitive aging as distinct from clinical cognitive syndromes and diseases, such as dementia.
Recommendation 7

Promote Cognitive Health in Wellness and Medical Visits

Public health agencies, health care systems, CMS, health insurance companies, health care professional schools and organizations, health care professionals, and individuals and their families should promote cognitive health in regular medical and wellness visits among people of all ages. Attention should also be given to cognitive outcomes during hospital stays and post-surgery.

Specific responsibilities for:

• Health care professionals – during patient visits
• CMS – demonstration projects
• Health care systems and insurers – programs and materials
• Providers, patients, and families – potential changes after hospital stays and post-surgery
Recommendation 8

Develop Consumer Product Evaluation Criteria and an Independent Information Gateway

CDC, NIH, and the Administration for Community Living (ACL), in conjunction with other health and consumer protection agencies, nonprofit organizations, and professional associations, should develop, test, and implement cognitive aging information resources and tools needed by individuals and families to improve informed decision making regarding cognitive health. Specifically:

- A central, user-friendly website to provide independent, evidence-based information and links relevant to cognitive aging;

- Consumer-relevant criteria should be developed and disseminated to provide guidance on evaluating cognition-related products (e.g., cognitive training product, nutriceuticals, and medications).
Recommendation 9

Expand Services Relevant to Cognitive Health

Relevant federal and state agencies, nonprofit organizations, professional associations, and relevant private sector companies and consumer organizations should develop, expand, implement, and evaluate programs and services used by older adults relevant to cognitive aging with the goal of avoiding exploitation, optimizing independence, improving function in daily life, and supporting sound decision making.

Specific actions relevant to:

- **Financial decision making** – banking and financial services industries
- **Driving and transportation** – NHTSA, state DMVs, organizations, industry
- **Technology** – technology industries, education programs
- **Health information** – websites, packaging, consumer health information
Recommendation 10
Expand Public Communications Efforts and Promote Key Messages and Actions

CDC, ACL, NIH, and other relevant federal agencies, state and local government agencies, relevant nonprofit and advocacy organizations and foundations, professional societies, and private sector companies should

• develop, evaluate, and communicate key evidenced-based messages about cognitive aging through social marketing and media campaigns;

• work to ensure accurate news and storylines about cognitive aging through media relations; and

• promote effective services related to cognitive health in order to increase public understanding about cognitive aging and support actions that people can do to maintain their cognitive health.
Opportunities for Action at Multiple Levels

- **Individuals and families**
- **Communities** – including community organizations, senior centers, residential facilities, housing and transportation planners, local governments
- **Health care** – health care professionals and professional associations, and health care system
- **Public health** – public health agencies (federal, state, and local agencies), aging organizations, media, professional associations, and consumer groups
- **Research funders and researchers**
- **Policy and regulations** – policy makers, regulators, and consumer advocacy and support organizations
- **Private sector businesses** – financial, transportation, and technology industries
Thank You!

Free PDF of the report:
www.iom.edu/cognitiveaging

Additional materials:
4-page report brief
Action guides
Quiz

www.iom.edu/cognitiveaging
Additional slides

Differences in Cognitive Function by Age Based on Different Cognitive Tests, MIDUS II, N=4,268


Cognitive Trajectories for Global Cognition in Older Adults, Mayo Clinic Study of Aging, N=1,390