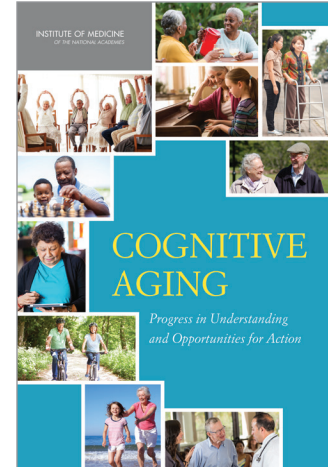


# Cognitive Aging

## Progress in Understanding and Opportunities for Action



For most Americans, staying “mentally sharp” as they age is a very high priority. Declines in memory and decision-making abilities may trigger fears of Alzheimer’s disease or other neurodegenerative diseases. However, cognitive aging is a natural process that can have both positive and negative effects on cognitive function in older adults—effects that vary widely among individuals. At this point in time, when the older population is rapidly growing in the United States and across the globe, it is important to examine what is known about cognitive aging and to identify and promote actions that individuals, organizations, communities, and society can take to help older adults maintain and improve their cognitive health.

With support from the McKnight Brain Research Foundation, the National Institute on Aging, the National Institute of Neurological Disorders and Stroke, AARP, the Retirement Research Foundation, and the Centers for Disease Control and Prevention, the Institute of Medicine (IOM) convened a committee to examine the public health dimensions of cognitive aging. In *Cognitive Aging: Progress in Understanding and Opportunities for Action*, the committee assesses the state of knowledge about cognitive aging, including definitions and terminology, epidemiology and surveillance, prevention and intervention, education of health professionals, and public awareness and education.

### What Is Cognitive Aging?

Like other organs, the human brain changes with age in both its physical structures and its ability to carry out various functions. The brain is responsible for cognition, a term that includes memory, decision making, processing speed, wisdom, and learning. As a person ages, these functions may change—a process called cognitive aging.

Cognitive aging is not a disease. Instead, it is a process that occurs in every individual, beginning at birth and continuing throughout the life span.

**It is important to identify and promote actions that individuals, organizations, communities, and society can take to help older adults maintain and improve their cognitive health.**

Cognitive changes are different for each person, and an individual's cognitive function may vary from one day to another. Wisdom and expertise can increase with age, while speed of processing, decision making, and some types of memory may decline. Cognitive aging may affect daily tasks such as paying bills, driving, following recipes, and adhering to medication schedules. It may challenge an older person's ability to live independently, pursue favorite activities, and maintain a sense of identity. But there are specific actions that individuals and their families can take to support their cognitive function. It is important to overcome stigma and misconceptions that may prevent older adults from seeking resources that can promote their cognitive health and overall quality of life.

## Steps for Individuals to Reduce Risks for Cognitive Decline

Despite wide variation in cognitive function among

individuals, the committee identifies three actions, supported by scientific evidence, that everyone can take to maintain their cognitive health and potentially reduce the effects of cognitive aging. Specifically, the committee recommends that individuals should

1. Be physically active.
2. Reduce and manage cardiovascular disease risk factors (including hypertension, diabetes, and smoking).
3. Regularly discuss and review health conditions and medications that might influence cognitive health with a health care professional.

The committee also identifies additional actions for which there is some scientific evidence to suggest positive effects on cognitive health:

- Be socially and intellectually engaged, and continually seek opportunities to learn.

## Characterizing Cognitive Aging

### Key Features

- 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 some 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 (such as Alzheimer's disease).

### Risk and Protective Factors

- Health and environmental factors over the life span influence cognitive aging.
- Modifiable and non-modifiable factors include genetics, culture, education, medical comorbidities, acute illness, physical activity, and other health behaviors.
- Cognitive aging can be influenced by development beginning in utero, infancy, and childhood.

### Assessment

- Cognitive aging is not easily defined by clear thresholds on cognitive tests since many factors—including culture, occupation, education, environmental context, and health variables (e.g., medications, delirium)—influence test performance and norms.
- For an individual, cognitive performance is best assessed at several points in time.

### Impact on Daily Life

- Day-to-day functions, such as driving, making financial and health care decisions, and understanding instructions given by health care professionals, may be affected.
- Experience, expertise, and environmental support aids (e.g., lists) can help compensate for declines in cognition.
- The challenges of cognitive aging may be more apparent in environments that require individuals to engage in highly technical and fast-paced or timed tasks, situations that involve new learning, or stressful situations (i.e., emotional, physical, or health-related), and less apparent in highly familiar situations.

**It is important to overcome stigma and misconceptions that may prevent older adults from seeking resources that can promote cognitive health and overall quality of life.**

- Get adequate sleep and receive treatment for sleep disorders as needed.
- Take steps to avoid the risks of cognitive changes due to delirium if hospitalized.

Finally, individuals and families should be aware of the potential for financial fraud and abuse, impaired driving skills, and poor consumer decision making, and they should make health, finance, and consumer decisions based on reliable evidence from trusted sources.

### **Steps for Health Care Providers to Address Cognitive Aging**

Individuals and families are turning to health care professionals in increasing numbers for information and advice about cognitive health. These professionals need to be fully informed and ready to respond to patient queries. However, although cognitive aging occurs in every individual (compared with about 11 to 14 percent of older Americans who experience Alzheimer's disease or other dementias), there is relatively little research or clinical guidance about risk and protective factors or interventions for non-disease age-related declines in cognition. As a result, many health care providers consider cognitive health counseling a challenge.

The committee recommends that health professional schools, professional societies, and public and private health care organizations develop and disseminate core competencies, curricula, and continuing education opportunities that focus on cognitive aging (as distinct from clinical syndromes and diseases). Furthermore, the committee stresses that cognitive health should be promoted during regular medical and wellness

visits for people of all ages. Specifically, health care professionals should use patient visits to

- identify risk factors for cognitive decline and recommend steps to minimize risk;
- review patient medications, especially those known to affect cognition;
- provide patients and families with information about cognitive aging and actions that may maintain cognitive health or prevent decline; and
- encourage patients and family members to discuss concerns about cognitive health.

### **Community Support, Policy Change, and Private-Sector Business Involvement to Address Cognitive Aging**

The effects of cognitive aging have widespread societal consequences and require action in many sectors. An array of public health and social services are available to assist older adults and their families, and communities across the country are working to improve quality of life for aging individuals, but many challenges remain. Opportunities for action include

- Collect and disseminate population-based data on cognitive aging.
- Develop an independent information gateway on cognitive aging as well as consumer-relevant criteria for evaluating cognition-related products.
- Involve the financial, transportation, and technology industries in developing and implementing products, services, and informational materials focused on (1) maintaining and assessing older adults' driving skills



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National Institute of Neurological Disorders and Stroke

AARP

Retirement Research Foundation


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and making family decisions about safe driving; (2) banking and financial decision vulnerabilities; and (3) technology opportunities to accommodate cognitive changes.

## Public Education and Engagement

Promoting cognitive health for older adults requires clear and effective communication with the public. Messages should be accurate, up-to-date, and consistent; resonate with diverse groups within the U.S. population; and encourage behaviors that promote cognitive health. Differentiating cognitive aging from Alzheimer's disease and dementia will be a major challenge for public information campaigns. Although Alzheimer's disease and other neurodegenerative diseases are an important area of focus, the committee calls for more attention to the needs of the vast majority of the aging population whose change in cognitive function is not related to disease.

## Conclusion

"Cognitive aging is not just an individual or a family or a health care system challenge," the committee writes, "it is an issue that affects the fabric of society and requires actions by many and varied stakeholders." *Cognitive Aging: Progress in Understanding and Opportunities for Action* offers clear steps that individuals, families, communities, health care providers and systems, financial organizations, community groups, public health agencies and others can take to promote cognitive health and help older adults live fuller and more independent lives. Ultimately, the report calls for a societal commitment to cognitive aging as a public health issue that requires prompt action across many sectors. 



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