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Enhancing Cognitive Aging: Clinical Highlights of a Report from the Institute of Medicine

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With the aging of our population, cognitive aging has emerged as a leading public health concern. In a 2014 AARP survey, 93% of respondents identified maintaining brain health as a top priority.¹ Yet, a substantial void exists in the fundamental understanding of the cognitive aging process, and its distinction from Alzheimer's disease and related dementias. Thus, the Institute of Medicine convened a 16-member expert panel, which was charged with making recommendations on the public health aspects of cognitive aging and defining actions required to better maintain the cognitive health of older adults. The committee was tasked with defining cognitive aging, reviewing its epidemiology, and making recommendations for prevention and intervention opportunities, education of healthcare professionals, and enhancing public awareness. This article highlights key aspects of the report and provides resources (Table) for healthcare professionals.²

What is cognitive aging?

Cognition refers to the multidimensional mental functions involved in attention, thinking, understanding, learning, remembering, problem-solving, and decision-making. Cognitive aging is defined as a process of gradual yet highly variable changes in cognitive functions that occur as people age. Cognitive aging is not a disease or a level of impairment; rather, it is a lifelong process that affects everyone. The process is highly dynamic, with differing levels of cognitive functioning apparent over time in a given individual (e.g., diurnal variations and changes with medications or acute illness) and between age-matched individuals. Some cognitive functions, such as memory and reaction time decrease, whereas others, such as wisdom and knowledge increase with age.³

Role of the healthcare professional

Healthcare professionals play a key and irreplaceable role in screening, identification, prevention and management of cognitive aging, as well as in education of patients and their families to maintain cognitive health. Primary care and Medicare Wellness visits represent important opportunities to screen for cognitive impairment, assess risk factors, and educate patients and families. A formal cognitive assessment is required to detect cognitive

impairment, since early deficits are easily missed. Since every measure has its strengths and limitations, the report did not recommend a specific tool (Table). The Alzheimer's Association⁴ rated the General Practitioner Assessment of Cognition (GPCOG), Memory Impairment Screen (MIS), or Mini-Cog, each of which takes <5 minutes, as most suitable for use in primary care. Based on the evidence, screening for risk factors, including vascular risk factors, alcohol, smoking, diet, exercise, depression, and chronic conditions should be considered.

Patient and family education

The report made several strong recommendations for interventions that were supported by adequate evidence. First and foremost, regular physical exercise is recommended to maintain cognitive health. Secondly, patients should work to reduce their cardiovascular risk factors, including hypertension, diabetes, and smoking. Minimizing psychoactive medications and avoiding delirium are other important steps (see below). Finally, maintaining social engagement and lifelong learning, as well as getting adequate sleep are recommended to optimize cognition.

Medication review and management

On average, individuals age 65 and older are prescribed 14 different drugs per year⁵; many of these may have adverse cognitive effects. Healthcare professionals play a critical role in minimizing potentially inappropriate medications for older people⁶. Anticholinergic medications, prescribed in 20–50% of older persons at any given time, are highly associated with both short-term and long-term adverse cognitive effects. Many over-the-counter antihistamines, such as diphenhydramine, are potent anticholinergic agents, and it is important to educate older patients about their potential risks.

Delirium prevention

Nearly one-third of the US older population is hospitalized each year related to acute illness or surgery.⁷ Delirium is the most common complication of hospitalization in older persons, occurring in up to 50% or an estimated 2.6 million individuals per year.⁸ Delirium has been identified as a leading contributor to both short-term and long-term cognitive decline following hospitalization, and at least 40% of cases are preventable through strategies including cognitive reorientation, sleep enhancement, early mobility, nutrition and fluid replenishment, correcting metabolic derangements, managing pain, minimizing psychoactive medications, providing adequate oxygenation, and addressing vision and hearing impairment. Healthcare professionals can play an important role in identifying individuals at high risk for delirium prior to or at hospital admission and instituting preventive strategies.

Driving safety

Problems with driving safety are often brought to the attention of the primary care physician. Driving is critically dependent on many aspects of cognition, such as processing speed, decision-making, executive function, multitasking skills, visuospatial abilities, and memory.

While older drivers bring decades of experience, declining cognitive function and increasing reaction time can limit safety. However, restricting driving can lead to loss of independence and depression. Studies have indicated that driver training courses can improve the safety of older drivers. A variety of resources (Table) are available to assist healthcare professionals with assessing and intervening to assure driver safety.

Financial decision-making

The management and planning of one's finances are complex activities that require high levels of cognitive functioning, and problems may signal early impairment requiring evaluation. In addition, age-related cognitive changes put older adults at risk for financial fraud or exploitation. In 2010, elder financial abuse resulted in direct and indirect losses of an estimated \$2.9 billion in the US.⁹ Credible consumer financial education programs are available (Table).

Nutraceuticals and brain games

A large number of products for "cognitive enhancement" are being advertised direct-to-consumer, ranging from a variety of nootropics and nutritional supplements to cognitive training tools ("brain games"). Typically, these products have not been carefully tested to evaluate either their benefits or adverse effects. For instance, brain games have become widely popular, while their evaluation has been quite limited. The evidence for the transfer of specific cognitive training skills to real-world tasks in well-controlled studies, as well as long-term retention of the skills, has not been demonstrated.¹⁰ Healthcare professionals are advised to caution their patients about the use of these products. In addition, these products may function to detract time and resources from other activities that have proven benefit, such as physical exercise and cardiovascular risk reduction.

Maintaining cognitive health is a major concern for our patients and their families. While much remains to be learned about the basic biological mechanisms as well as more effective interventions to enhance cognitive aging, the IOM report highlights that there is much that can and should be done now. Healthcare professionals will play an increasingly vital role in ensuring their patients' cognitive health.

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Table**Resources on Cognitive Aging for Health Care Professionals**

Source	Resource
Practice guidelines for health care professionals relevant to cognitive aging	
American Association of Colleges of Nursing	Older Adult Care Competencies
American College of Surgeons	Best Practices Statement for Prevention and Treatment of Postoperative Delirium
American Geriatrics Society	Clinical Practice Guideline for Postoperative Delirium in Older Adults
American Occupational Therapy Association	Cognition, Cognitive Rehabilitation, and Occupational Performance
American Psychological Association	Guidelines for the Evaluation of Dementia and Age-Related Cognitive Change
Royal Australian College of General Practitioners	Preventive Activities in Older Age
Cognitive assessment procedures and tools for use by health care providers	
Alzheimer's Association	Recommendations for Operationalizing the Detection of Cognitive Impairment During the Medicare Annual Wellness Visit in a Primary Care Setting Health Care Professionals' Cognitive Assessment Toolkit
American Occupational Therapy Association	Occupational Therapy's Role in Adult Cognitive Disorders
American Psychiatric Association	<i>Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition</i>
American Psychological Association	Guidelines for the Evaluation of Dementia and Age-Related Cognitive Change Part III. Procedural Guidelines: Conducting Evaluations of Dementia and Age-Related Cognitive Change
Hospital Elder Life Program	www.hospitalelderlifeprogram.org
National Institute on Aging	Assessing Cognitive Impairment in Older Adults: A Quick Guide for Primary Care Physicians
Patient counseling and education about cognitive aging and related concerns	
Alzheimer's Association	10 Early Signs and Symptoms of Alzheimer's Brain Health
American Psychological Association	Older Adults' Health and Age-Related Changes: Reality Versus Myth
National Institute on Aging	Talking With Your Older Patient: A Clinician's Handbook
Resources related to safe medication use in older adults	
American Geriatrics Society	Beers criteria* What to Do and What to Ask Your Healthcare Provider if a Medication You Take Is Listed in the Beers Criteria for Potentially Inappropriate Medications to Use in Older Adults
Centers for Disease Control and Prevention	Adults and Older Adult Adverse Drug Events
Health in Aging	Medications and Older Adults
Institute for Safe Medication Practices	www.ismp.org
Institute of Medicine	Preventing Medication Errors: Quality Chasm Series

Source	Resource
National Institute on Aging	Safe Use of Medicines
NIH Senior Health	Taking Medications Safely
U.S. Food and Drug Administration	Medicines and You: A Guide for Older Adults
Resources related to older adult driving	
American Automobile Association Foundation	How to Help an Older Driver
Maryland Motor Vehicle Administration	www.mva.maryland.gov/safety/older/older-driver-safety-safe-mobility.htm
Massachusetts Registry of Motor Vehicles	Mature Drivers
National Highway Traffic Safety Administration	Traffic Safety Plan for Older Drivers and How to Understand and Influence Older Drivers
National Institute on Aging	Older Drivers
NIH Senior Health	How Aging Affects Driving
New York State Office for the Aging	Understanding and Helping an Older Driver
Pennsylvania Department of Transportation	Talking With Older Drivers: A Guide for Family and Friends
Vermont Department of Motor Vehicles	Mature Drivers
Virginia Grand Driver	Driver Safety Tips
Washington Department of Licensing	Safe Driving for Seniors
Resources related to elder financial abuse	
AARP	Scam Jams Fraud Watch Network
Consumer Federation of America	Nation's Top Ten Consumer Complaints
Consumer Financial Protection Bureau	Office of Financial Protection for Older Americans
Federal Bureau of Investigation	Fraud Target: Senior Citizens
Federal Trade Commission	Pass It On financial fraud awareness campaign
Financial Fraud Enforcement Task Force	Protect Yourself: Elder Fraud and Financial Exploitation
National Council on Aging	Top 10 Scams Targeting Seniors
Wells Fargo Investment	Elder Client Initiatives

Presented in alphabetical order by source

NIH = National Institutes of Health.

* Including public education resources.