The “New Normal” or the New Abnormal: Making Sense of Cognitive Changes Over Time

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About us…

The Layton Aging & Alzheimer’s Disease Center at OHSU is one of 30 NIH Alzheimer’s Disease Centers in the United States and the only one of its kind in Oregon.

The Layton Center conducts studies of promising treatments, technologies for patient support, genetics, neuroimaging and pathology.

Along with research, we also provide evaluation and treatment for persons with dementia and their family members.
Outline

• Overview of normal aging
• Cognitive function
• Normal vs. Abnormal
• What to do next
Age-related Changes

- What is normal?
Working
Manipulates, stores, evaluates
(calculating a tip)

Semantic
Memory for knowledge
(name of the US States)

Episodic
Memory of life episodes, autobiographical
(breakfast, graduation)

Executive
Organizing, planning, filtering
(the supervisor)

Processing Speed
Attention

Cognitive Function
Review

• The brain shrinks over time.
• This can result in slower processing speed and challenges with attention.
• It is normal to forget new, basic information, such as the name of the person to whom you were just introduced.
• Our semantic and episodic memory tends to serve us well over time.
What is abnormal?
Personality Changes

Personality typically remains stable over time:

• Neuroticism, extroversion, openness, agreeableness, conscientiousness (NEO Personality Inventory).

• When personality does change, pay attention
  – Depression
  – Dementia
  – Delirium
Clues to impaired cognition

• Disoriented to time
• Inability to learn new information
• Repetitive conversation
• Difficulty finding the right words
• Impaired judgement
• Withdrawing from social events
Concerning Changes

Poor judgement

Inability to manage a budget

Losing track of the season

Difficulty having a conversation

Misplacing things and being unable to retrace your steps

Typical Changes

Making a bad decision once in a while

Missing a monthly payment

Forgetting what day it is, but remembering later

Sometimes forgetting what word to use
What does this mean? Should I worry?

• Alzheimer's Disease and Related Dementias affect 5.3 million Americans
• Most expensive disease in America
• Affects the whole family
• Diagnosis issues still a concern
• No cure, no treatment
• Prevention and delay of impairment
The Meaning of Cognitive Changes

1. Psychological disorder
2. Mild cognitive impairment
3. Dementia
4. Worried Well
5. Other
Mild Cognitive Impairment (MCI)

• Concern for change in cognition compared with previous abilities
• Multiple causes: psychological, physical, trauma
• Objective impairment in one or more areas
  – Memory
  – Executive function
  – Attention
  – Language
  – Visual spatial skills

• *Preserved independence in functional abilities*

What's the difference between ALZHEIMER'S and DEMENTIA?

ALZHEIMER'S
the most common form

DEMENTIA

Vascular Dementia
Mixed Dementia
Frontotemporal Dementia
Normal pressure hydrocephalus
Huntington's Disease
Creutzfeldt-Jakob disease
Wernicke-Korsakoff Syndrome

Dementia is an umbrella term that describes a wide range of symptoms including memory loss and mental decline. Alzheimer's is the most common form of dementia, but there are many others. Learn more at alz.org/relateddementias
Dementia

• Alzheimer’s Disease and Related Dementias affect 5.3 million Americans
• Most expensive disease in America
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Most Common Forms of Dementia

Figure 1-2  Causes of dementia by percentage of patients.
Criteria for Dementia

Cognitive impairment which:
1. Interferes with the ability to function at work or at usual activities
2. Represent a decline from previous levels of functioning
3. Not explained by delirium or major psychiatric disorder

Impairment in a minimum of two of the following domains:
1. Ability to acquire and remember new information (working memory)
2. Reasoning and handling of complex tasks, poor judgment (executive)
3. Visuospatial abilities
4. Impaired language
5. Personality, behavior, or comportment

Recommendations from the National Institute on Aging-Alzheimer’s Association workgroups on diagnostic guidelines for Alzheimer’s disease. Alzheimer’s and Dementia, May 2011
What do I do now?
Next Steps

- Schedule appointment with PCP, be specific:
  “I need to talk with my doctor about my memory. Could you schedule a little extra time for us?”
- Memory test (MoCA, SLUMs, MMSE), history
- Explore the Alzheimer’s Association’s website for tips on how to talk with your PCP (www.alz.org)
Don’t go alone…

- Now is the time to engage your kids, spouse or friends
- Don’t assume the kids are “too busy.”
- Don’t assume your dad doesn’t need you
- Those who are close to you need to know what is going on and the plans for the future
Potential Advice

• Get a hearing test
• Get a vision test
• Start exercising
• Manage chronic conditions well (high blood pressure, high cholesterol, diabetes, congestive heart failure…)
• Review your medications with your pharmacist—are any “anticholinergics”? If so, can you stop them?
• Enjoy time with your family
Cognition and Hearing

- Greater hearing loss associated with lower cognitive scores
- Reduction in cognitive performance associated with a 25dB loss was equivalent to the reduction associated with an age difference of 7 years.
- Hearing aid use was positively associated with cognitive functioning

Pocket Talker
RTC: Exercise and hippocampal volume

120 older adults randomized to:
1. Aerobic exercise group: moderate intensity 3 days/week (walking x 40 minutes)
2. Stretching control group

Exercise: Tai Chi

Meta-analysis: 28 studies, 2553 participants
Tai Chi improves cognitive function in persons with and without cognitive impairment
1. Moderate aerobic activity
2. Agility and mobility
3. Learning and memorization
4. Sustained attention
5. Mediation and relaxation
6. Social activity
Leisure Activity

• 124 participants over 5 years
• “Among leisure activities, reading, playing board games, playing musical instruments, and dancing were associated with a reduced risk of dementia…”

Verghese 2013
Alcohol intake and dementia

Cognition and Sleep

• Risk of mild cognitive impairment
  – Less than 6.5 hours of sleep/night
  – Excessive daytime sleepiness

• Limited risk
  – Insomnia

• Protective
  – Daytime naps
Cognition and Sleep

Sleep Disordered Breathing

• Recurrent arousals from sleep due to airway blockage
• Hypoxic events
• Affects up to 60% of older adults
• Yaffe, et al., 2011: Associated with increased risk of MCI: (OR=1.80, 95% CI 1.10 – 2.93)
Breathing Disorders and Cognitive Impairment

Treatment with CPAP can improve cognition
“Safer” Sleep Medications?

“The use of medications with anticholinergic activity increases the cumulative risk of cognitive impairment and mortality.”

(Fox, 2011, Journal of the American Geriatrics Society)
Sleep Medicines and Dementia

Persons using these medications had a 2-fold increased risk of developing dementia

Risk increased
• Current use
• Higher doses
• Longer duration of effect

Risk decreased with discontinuation of the medicine.

Brain Games

“What do you get when you combine a common and frightening health condition (dementia), the theory of neuroplasticity and the Internet? The answer is the creation of a rapidly growing, already $2 billion per year industry.”

(Ratner and Atkinson, 2015)
Review

- Some memory changes are normal with aging
- Some are not
- If you are concerned, make an appointment for an evaluation
- If you are not concerned, listen to your friends and family
- Take action to preserve your memory and your health
• Exercise! 40 minutes, 3-4 times/week
• Tai Chi, ballet, juggling
• Eat fruits and vegetables
• Avoid smoking
• Glass of wine (up to 1/night) is ok
• Treat hearing loss (even minor)
• Assess and treat sleep concerns
• Spend enjoyable time with family and friends
Medications?

• 5 drugs on market
• Many in clinical trials:
  – Phase 1: Healthy volunteers, safety and dose
  – Phase 2: Efficacy and side effects
  – Phase 3: Efficacy and adverse reactions
  – Phase 4: Efficacy and safety
NIH Research Funding, 2013
In Millions of Dollars

- Cancer: $5,649
- HIV/AIDS: $3,095
- Cardiovascular: $2,051
- Diabetes: $1,066
- Alzheimer's: $524

2016: 950 million
The Future

• More work is needed!
• Important increases in governmental funding for research
• The Layton Center sponsors AD researchers early in their career, with hopes of inspiring new modalities of prevention and treatment.
• If you want to support or be involved in research, let us know!
Thank You
One in nine adults age 65 and older, have Alzheimer’s.

New treatments can only come about by increasing and accelerating research.

Without new treatments by 2050, the number of people age 65 and older with AD may nearly triple from 5.1 million to a 13.8 million.

There is no cure for Alzheimer’s disease and only a few drugs that alleviate it’s symptoms.

Become part of a local network of citizens to accelerate innovation in Alzheimer’s care and treatment through research.

Join ACTNOW! today.

With ACTNOW! the Layton Aging and Alzheimer’s Disease Center at OHSU is gathering a Northwest community of patients, researchers, care-givers and anyone with an interest in Alzheimer’s research. ACTNOW! members are kept up-to-date on current Alzheimer’s research, advocacy for research and participation in local studies.

Visit the ACTNOW! website to join.

www.alzactnow.org

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