DUKE DEMENTIA FAMILY SUPPORT PROGRAM

Caregiver Connections An Educational Webinar Series With The Experts

The presentation will begin shortly. Thank you for your patience!

dukefamilysupport.org 919-660-7510

Dementia 101

Daniel Parker, MD Assistant Professor – Division of Geriatrics Duke School of Medicine January 26, 2022

Background

- I'm a geriatrician, memory disorders specialist, and researcher.
- I see patients at the Duke Memory Disorders clinic.
- My research centers on understanding how diet and exercise promote brain health.



Outline

- 1. What changes in memory and thinking are part of "normal" aging and what changes are concerning?
- 2. How do we define mild cognitive impairment (MCI) and dementia?
- 3. What causes mild cognitive impairment (MCI) and dementia?
- 4. Are mild cognitive impairment (MCI) and dementia preventable?
- 5. What happens at a Memory Clinic evaluation? How do we make a diagnosis?
- 6. How do we treat mild cognitive impairment (MCI) and dementia?

Memory and thinking change with age....

"Normal" Aging

- Making a bad decision once in a while.
- Missing a monthly payment.
- Forgetting which day it is and remembering later.
- Sometimes forgetting which word to use.
- Losing things from time to time.

Concerning Changes

- Making poor judgements and decisions a lot of the time.
- Problems taking care of monthly bills.
- Losing track of the time, date, or time of year.
- Trouble having a conversation.
- Misplacing things often and being unable to find them

What do we mean by SCI, MCI, and dementia?

Cognitively-Unimpaired

Subjective Cognitive Impairment (SCI)

- I notice subtle changes in my memory and thinking
- Cognitive assessment is normal.
- These changes <u>do not</u> interfere with my day to day activities.

Mild Cognitive Impairment (MCI)

- There are changes in my memory and thinking that I and others notice.
- These changes are picked up on cognitive assessments.
- These changes <u>do not</u> interfere with my day to day activities.
- These changes aren't caused by another medical or psychiatric problem.



- There are changes in my memory and thinking that I and others notice.
- These changes are picked up on cognitive assessments.
- I <u>need extra help</u> with day to day activities.
- These changes aren't caused by another medical or psychiatric problem.

MCI and dementia are "umbrella" terms

- MCI and dementia are syndromes or "umbrella" terms which describe a group of symptoms that occur together.
- They don't tell us what's going on in the brain that is causing the symptoms.
- There are different diseases that can cause MCI and dementia.



What diseases cause MCI & dementia?



*These changes are just one piece of a complex puzzle that scientists are studying to understand the underlying causes of these forms of dementia and others.

Alzheimer's Disease is the most common cause of MCI and dementia.



for the development of Alzheimer's Disease



Projected Number of People Aged 65 or Older With Alzheimer's Disease, by Age Group, United States, 2010-2050



Source: Created from data in Hebert LE, Weuve J, Scherr PA, Evans DA. Alzheimer disease in the United States (2010-2050) estimated using the 2010 Census. *Neurology* 2013;80(19):1778-83.

Total expenditures on dementia is ~\$200 billion

2/3 of Americans with AD are women

Dementia Risk for African-Americans is 2X higher than whites

Some good news?

- As our population ages, more people are living with MCI and dementia.
- However, the number of people diagnosed with dementia in a given year may be decreasing.
- Up to 40% of dementia may be preventable.



Can we prevent dementia?

Early Life

- Educational attainment

<u>Midlife (45-65)</u>

- Hearing/Vision Loss
- Traumatic Brain Injury
- High Blood Pressure
- Excess Alcohol Use
- Obesity

Early diagnosis and intervention are key!!!

Later Life (>65)

- Smoking
- Depression
- Social Isolation
- Physical Inactivity
- Air Pollution
- Diabetes

Livingston G, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. The Lancet.



What happens at a Memory Clinic evaluation?

- Obtain a history of cognitive symptoms.
- Perform a cognitive assessment and neurological examination.
- Look for other factors that may contribute to cognitive symptoms.
- Obtain brain imaging.
- Consider additional testing to identify the cause of the cognitive changes.
- Develop a treatment plan.



What other factors can contribute to cognitive symptoms?

Mood Disorders

1. Depression & Anxiety

<u>Sleep</u>

- 1. Sleep apnea
- 2. Insomnia

Medications

- Anticholinergic medications (Benadryl, amitriptyline, tolterodine, paroxetine)
- 2. Sedatives (muscle relaxants, benzos)
- 3. Hypnotics (ambien)

Medical Problems

 Heart failure, liver disease, kidney disease, thyroid problems

Vitamin Deficiencies

1. Vitamin B12

Sensory Impairment

- 1. Hearing impairment
- 2. Visual Impairment

Infectious Diseases

1. HIV, Syphilis, Hepatitis C

Lifestyle Factors

- 1. Substance use
- 2. Lack of exercise

How do make a clinical diagnosis?

	Patient & Caregiver- Reported Symptoms	Cognitive Assessment	Functional Assessment
Normal Cognition	Normal	Normal	Normal
Subjective Cognitive Impairment (SCI)	Abnormal	Normal	Normal
Mild Cognitive Impairment (MCI)	Abnormal	Abnormal	Normal
Dementia	Abnormal	Abnormal	Abnormal

How do we use brain imaging in our evaluation?

- We obtain an MRI of the brain in most patients.
- Brain imaging is <u>often normal</u> in patients with MCI and dementia.
- We mainly use brain imaging to <u>rule out other problems</u> in the brain that can lead to changes in memory and thinking.
- Other types of brain imaging can help identify the cause of MCI or dementia.

MRI

 Sometimes we can see changes in brain regions that are consistent with a specific disease, like shrinkage of the hippocampus in Alzheimer's.



FDG-PET

 Evaluates how much energy different regions of the brain are using. Decreased energy use in certain regions is seen in Alzheimer's.



Amyloid PET

 Special chemicals bind to amyloid plaques and light up. Amyloid plaques are part of Alzheimer's disease.



How do we determine which disease is causing MCI/dementia?

At the Duke Memory Disorders Clinic, we offer advanced diagnostic testing to identify the disease causing the MCI or dementia. This is mostly for information and does not usually affect our management.

Alzheimer's Disease

- We can perform a lumbar puncture to obtain a small amount of spinal fluid to check for Alzheimer's disease proteins.
- We also offer a blood test (Precivity AD) to check for Alzheimer's disease proteins, although this is not yet covered by insurance.
- We can perform genetic testing for familial Alzheimer's disease.
- We can perform APOE genotyping.

Lewy Body Disease

 We can perform a skin biopsy to check for the protein that builds up in Lewy Body Disease (αsynuclein)

Frontotemporal Dementia

• We can perform genetic testing to identify variants that cause frontotemporal dementia.

Mild Cognitive Impairment

Duration: 7 years

Disease begins in Medial Temporal Lobe



Symptom: Short-term memory loss

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Severe Alzheimer's

Duration: 3 years

Disease spreads to Occipital Lobe



Symptoms include: Visual problems

How do we manage MCI and dementia?

- Address modifiable risk factors (especially for MCI).
- Increase cognitive resilience.
- Promote overall health and wellbeing.
- Consider medications that help with memory and thinking symptoms.
- In the future, we may use antiamyloid therapies to slow down progression of Alzheimer's disease.









Address Modifiable Risk Factors

Mood Disorders

Treat anxiety/depression

Discontinue or reduce the dose of Medications medications that can worsen memory and thinking

High Blood
PressureTarget BP of <130/80</th>

Other MedicalTreat high cholesterolRisk FactorsTreat diabetes

Hearing/Vision Hearing aids Impairment Cataract surgery Sleep Treat sleep apnea Treat insomnia

Diet Mediterranean, DASH, or MIND diet

Physical
 Activity
 Activity
 Activity
 Activity
 Decrease sedentary time.

Cognitive Stimulation Encourage cognitively-stimulating activities Encourage social engagement

Medications that can treat dementia symptoms

- We have two types of medications that can help with memory and thinking symptoms in dementia.
 - Medications that increase the concentrations of acetylcholine in the brain (donepezil and rivastigmine). Can cause GI upset and slow down the heart rate, leading to falls.
 - Memantine, which decreases overstimulation of the NMDA receptor in the brain. Generally has few side effects.
- These medications <u>do not slow down or reverse the disease process</u> in the brain and the benefits are generally modest.
- These medications <u>have not been shown to help in MCI</u>, so we typically reserve them for patients with dementia.

Anti-Amyloid Therapy

- Aducanumab is an FDA-approved drug that can decrease the build up of amyloid in the brain.
- No convincing evidence (yet) that this slows down changes in memory and thinking due to Alzheimer's disease.
- Aducanumab can cause brain swelling and brain bleeding.
- Most private insurers are not paying for aducanumab. Medicare will probably only pay for it for participants in a clinical trial.





What about....

Bredsen Protocol	 Popularized by a book called, The End of Alzheimers. Based on a "study" of 10 patients Involved diet modification, time-restricted feeding, vitamins, exercise, hormones, supplements, etc. 	
Prevagen	 Jelly fish protein Huge marketing campaign No evidence of benefit 	
Young Plasma	 Based on experiments in mice FDA shut down "young blood" clinics in February 2019 Potential risks include transmission of disease, immune reactions 	
Stem Cell Therapy	 No evidence of benefit and potentially harmful Very expensive 	
Hyperbaric Oxygen	 Some small studies have shown beneficial effects Requires frequent treatments and how long the beneficial effects last is unclear 	

Summary

- MCI and dementia are syndromes or "umbrella" terms that describe changes in memory and thinking.
- MCI and dementia are caused by different diseases in the brain, the most common of which is Alzheimer's disease.
- Some portion of MCI and dementia cases may be preventable.
- Healthy lifestyle changes may slow down progression of MCI to dementia by increasing cognitive resilience.
- Most people living with dementia do not end up in nursing homes.
- Over the past decade, we have made great strides in understanding the biology of dementia.

Take Home Message

- If you or someone you know is concerned about changes in memory and thinking, schedule an appointment with a memory specialist.
 Early intervention is key!!
- Even if you have already been diagnosed with MCI or dementia, adopting healthy lifestyle habits and addressing modifiable risk factors can keep your brain working at it's best.
- Consider participating in research to help us identify effective preventions and treatments for dementia.



Daniel.Parker@Duke.edu

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Thank you for joining us today!

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