



The Mayo Clinic Study of Aging

MINDFUL MATTERS

Featuring Mayo Clinic Study of Aging
Updates and Healthy Aging Information



UPDATES ON MAYO CLINIC STUDY OF AGING

The Mayo Clinic Study of Aging Directors Update

By Ronald Petersen, MD., PhD Director, Mayo Clinic Study of Aging



This has been an exciting year for the Mayo Clinic Study of Aging (MCSA) and the Mayo Clinic Alzheimer's Disease Research Center (ADRC). Both of these large projects funded by the National Institute on Aging were up for their five-year renewal. Our team wrote

excellent applications for renewal, and I am pleased to inform you that both of the studies were reviewed favorably at the National Institutes of Health and will be re-funded for an additional five years.

The MCSA began in 2004 and will now be funded through 2024. The parent project for the MCSA, the Alzheimer's Disease Patient Registry, began in 1986, and consequently, the overall program will be approaching 40 years of continuous funding.

The ADRC began in 1990 and will be funded through 2024. The ADRC operates at both Mayo Clinic Rochester and Mayo Clinic Florida. These two programs constitute the backbone of the aging, cognition and Alzheimer's disease research at Mayo Clinic.

Our programs have focused on aging in the community as well as a variety of cognitive disorders including mild cognitive impairment, Alzheimer's disease, Lewy body disorders and frontotemporal degeneration. Our programs, to which you have contributed, have informed the field nationally and internationally on the evolution of these disorders with a focus on developing effective therapies.

We had a wonderful Study Appreciation Day on September 15, 2018, at the Mayo Civic Center. We held two events, one in the morning and one in the afternoon. There were

approximately 900 attendees. It was wonderful to see all of you and convey some of our excitement and results of the programs to you at that time.

On that note, I would like to thank you for your original willingness to participate in our research and your continued participation. The true value of a longitudinal study such as the MCSA resides in its continuous collection of data over many years. Some of you have been involved in the MCSA since its inception in 2004 and are undergoing your tenth or eleventh annual evaluation. All of this data is priceless, and we cannot thank you enough. I do need to emphasize, however, that it is vital for you to continue to participate. When individuals drop out of a longitudinal study, the data collection is interrupted, and we lose track of the eventual course of aging. Therefore, we will do all we can to help you participate in some fashion in the ongoing study.

The MCSA is quite unique among research studies on aging and cognition. A major factor in its prominence is your willingness to participate. In general, the residents of Olmsted County are particularly generous with their time and agree to participate not only in the baseline clinical study but also in some of the imaging-related projects such as magnetic resonance imaging (MRI) and positron emission tomography (PET) studies. The imaging studies generate the biomarkers that we are using to correlate with clinical aging and the development of cognitive impairment.

In the renewal of the MCSA, we emphasize three new goals. The first goal will be to evaluate the role of these biomarkers, imaging studies, cerebrospinal fluid from lumbar punctures and other biomarkers and correlate them with the clinical progression in aging. Again, because we randomly sample the residents of Olmsted County, this

makes the study particularly valuable. There are several other longitudinal studies on aging and cognition in the country, but we are the only one that is able to use the resources of the Rochester Epidemiology Project under the direction of Walter Rocca, M.D., to randomly sample residents of our community. In addition, since virtually all of you obtain your medical care either at Mayo Clinic or Olmsted Medical Center, we are able to combine the medical records, with your permission, and have a complete medical background on all of the participants.

A second goal of the renewal of the MCSA is to study the role of vascular disease in the brain. If that occurs with a larger blood vessel, a person may experience a stroke with related symptoms. However, since the frequency of vascular disease increases with age, and it contributes to cognitive impairment, we are in a unique position to study its evolution. Several of our younger investigators will be using MRI scans to evaluate the role of vascular disease and aging in the brain.

The third goal of the renewal will be to study blood tests for cognitive impairment. That is, we can visualize the proteins in the brain that are involved with Alzheimer's disease, but the imaging tests are expensive, and lumbar punctures are invasive. As such, we need a relatively simple and minimally invasive test to provide information on risk factors for developing cognitive impairment. There are several blood tests under development that will help us make these determinations in the future, and consequently, we obtain blood from the participants on each visit. We have stored over three-quarters of a million tubes of blood in the Mayo Clinic Biobank to help us address these issues. As you can see, I think we are on the brink of some very important and novel findings with regard to aging and cognition.

I would like to close with a new study that we published in 2018 on subjective cognitive decline. By that we mean your own impression on how your memory and thinking skills are progressing. Virtually all of us develop some degree of forgetfulness as we age, particularly for names of individuals. We learn from you that the frequency of forgetfulness can be as high as almost 80 percent in individuals 70 years and older. By combining this information with all of the medical record data and other information we have on you, we have been able to determine what additional information is gathered from the questionnaires about your memory function over time. Our research has demonstrated that, often, you are aware of a change in your memory that may be important with regard to the development of future cognitive impairment. Again, we are hoping that this early signal of subjective decline may enable us to develop therapies in instances in which cognitive impairment is developing. However, it is important to appreciate that forgetfulness is a part of aging and need not be a signal of incipient Alzheimer's disease.

In closing, I want to thank you for your dedication to our research on aging and cognitive function in Olmsted County. This is extremely important work for us and for the broader field, and it is only through your dedication to our work that we are able to continue this research.

SAVE THE DATE

2019 Mayo Clinic Study
of Aging Appreciation

Saturday, September 21, 2019

Mayo Civic Center

ANGELA LUNDE ON DEMENTIA PREVENTION

Reducing your risk for dementia - Lifestyle Matters

By Angela Lunde M.A. Outreach and Engagement, Mayo Clinic Study of Aging



The greatest known risk factors we know of for Alzheimer's disease, a type of dementia that accounts for up to 75% of dementia cases, are old age, a family history, and carrying a particular gene known as the APOE-e4 gene. These risk factors cannot be avoided. But

it's not all bad news. New reports with mounting evidence indicate that there are things we can do, that are within our control, to reduce our overall risk for Alzheimer's disease. Every day we engage in dozens of activities— we eat certain foods, are physically active, and learn new things. Some of us work, volunteer, take classes, socialize with family and friends, and generally end the day with some sort of sleep routine. More and more evidence suggests that over decades these daily habits and lifestyle choices impact the health of our brain and the likelihood of having dementia. In other words, our own behavior plays a role in protecting us from Alzheimer's disease. Overall, this news should give us hope—that while we can't control the genes we've inherited or forestall aging, we do have some control over our everyday lifestyle behaviors. Over the past couple of years, two major reports were released that shed some

light on which lifestyle choices are most associated with reducing one's risk for Alzheimer's disease.

These reports, one by the Lancet International Commission on Dementia Prevention and Care, and the other by the National Academies of Sciences, Engineering, and Medicine share similar findings.

The Lancet report which combines the work of 24 international experts identified nine modifiable risk factors linked to dementia. The report states that these factors, which are generally lifestyle related, may account for up to 35 percent of the overall risk for dementia and in many cases, can be modified or avoided through lifestyle behavior and preventive health care and services.

- Mid-life hearing loss that is uncorrected.
- Failing to complete secondary education
- Smoking
- Failing to seek early treatment for depression
- Physical inactivity
- Social isolation
- Untreated high blood pressure
- Obesity
- Type 2 diabetes



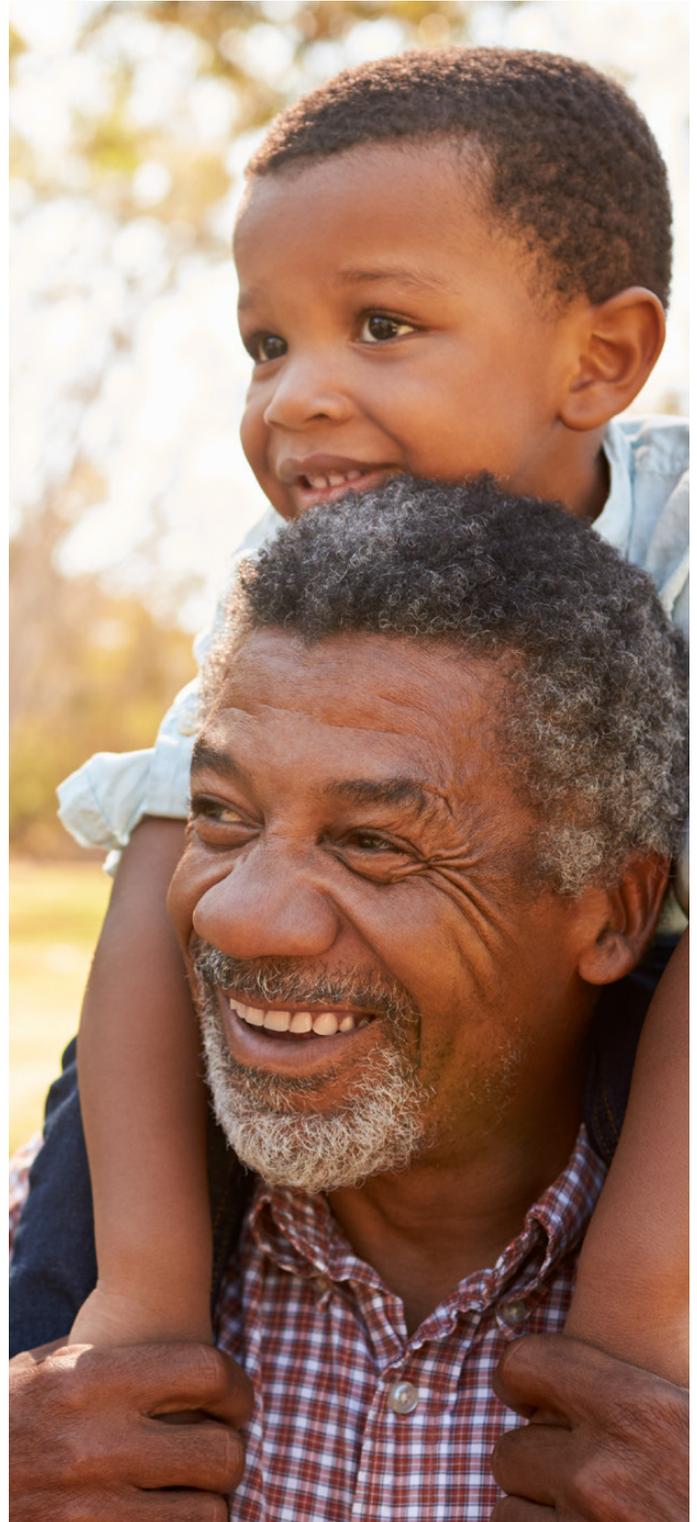
The National Academies of Sciences article, *Preventing Cognitive Decline and Dementia: A Way Forward*, concluded dementia risk lowering benefits from these three classes of interventions:

- Cognitive Training
- Blood Pressure Management
- Increased Physical Activity

The benefits from these interventions are supported by encouraging, although still inconclusive evidence. However, more evidence and understanding is emerging all the time. While managing blood pressure and increasing physical activity are pretty straight forward recommendations, cognitive training is a bit more elusive and contentious. Brain games, for example, can be engaging but the claims made by companies touting the benefits of these games are often exaggerated.

The Global Council on Brain Health recommends people incorporate cognitively stimulating activities into their lifestyles by engaging in formal or informal educational activities such as learning a new language, engaging in work or leisure activities and connecting socially with others. The key however to maintaining or improving brain health is that the activity must be novel, highly engaging and mentally challenging.

Most recently, the World Health Organization (WHO) released guidelines intended to advise health-care providers, patients and the general public on what they can do to help prevent cognitive decline and dementia. Overall, findings from the reports are good news. They offer concrete steps you can take that may reduce dementia risk. Unfortunately, there are no guarantees; we've all seen people who have been affected by Alzheimer's despite clean and healthy living. However, healthy behaviors may delay or slow down cognitive decline even if it evenly comes, and they will also protect against other serious conditions like diabetes, heart disease and cancer.



Trying Out MCSA Psychometry Testing

By Ryan Potaracke, Program Coordinator



I came to the department of Neurology in September of 2018. I had previously never heard of psychometric testing and was immediately intrigued to learn more. I first did my own research behind the meaning and need of psychometric testing.

I found the root meaning of psychometric comes from the Greek words for mental and measurement. I also found that not only is psychometric testing used for studies of brain function, but can also be used for prospective employees to see if they are a good fit for the company they are seeking to work for. The next step in my research was to try out the testing myself!

One of our psychometrist set up a test for me so that it would be exactly what our participants go through. I found myself nervous to go through the test. What if I didn't do well? What if I looked silly in front of my new coworkers for

not knowing the right answers? I was not allowed to ask questions on how I was doing or what the right answers were. I found myself struggling with a few of the tests, in particular the one where I had 1 minute to list off as many items as I could in a certain category. At first I was firing them off no problem, but after about 15 seconds I was a bit stuck and frustrated! One test I really enjoyed was the Digit Symbol test. I felt like a spy trying to crack a secret code! I also enjoyed the tests where I had to use the blocks and puzzle cubes. While I thought they would be easy, they were a challenge that I actually enjoyed!

Overall, I am very thankful I had the chance to go through what our participants do for us. I am so thankful for every one of our participants who endures these visits every year to help us gather so much pertinent data as Dr. Petersen discussed earlier in this newsletter. If you have any experiences you would like to share, I would love to hear from you!



FAQ's Answered by a Psychometrist

By Steven Smith, Senior Program Coordinator



Q: Why can't you tell me how I did on the test?

A: We cannot say how you performed because we use the same tests year after year.

The reason for this is so we can compare your performance from one year to the next. If we provide

the answers, the test results would no longer be valid. Our participants volunteer a great deal of time to the Mayo Clinic Study of Aging and we want to respect your time by accurately assessing your memory and not invalidating any of the tests!

Q: Why do the testers seem "emotionless" during the test?

A: We are not emotionless, I promise! However, during psychometric testing, we utilize standard procedures. This affects everything from how fast we speak to our vocal inflection. We go through rigorous training to ensure we do this correctly. If testers do not adhere to these standards, we may inadvertently cue participants to remember one thing over another. That would be unfair to our participants and we want to ensure we have accurately captured your abilities during these testing sessions.

Q: What is your favorite part of being a psychometrist?

A: Personally, I enjoy that it allows me an opportunity to work with our wonderful participants face-to-face. I am a supervisor at the Alzheimer's Disease Research Center so I often get busy with administrative work. I value my time with participants because it is a constant reminder of our overall mission and I enjoy seeing the devotion our participants have for the Mayo Clinic Study of Aging.

Q: What do you think is the hardest test?

A: I am probably biased because I administer these tests frequently, but I have always enjoyed the Block Test. I love puzzles, so even if I don't do well, I still enjoy the challenge!

Q: Are all tests the same for every participant?

A: The theme in psychometric testing is always standardization. All participants in the Mayo Clinic Study of Aging complete the same assessments. This allows us to look at data from one person to another and from age group to age group. Ultimately, this helps us better understand the process of normal and abnormal aging.

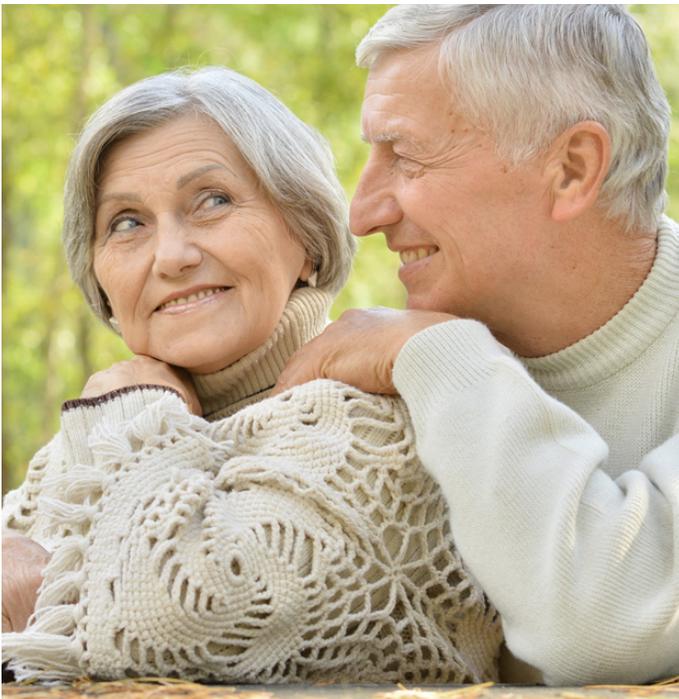
WHAT IS A PSYCHOMETRIST?

A Psychometrist is an individual who is highly trained in administering and scoring various tests for the assessment of neuropsychological functioning including cognition, attention and memory.

Psychometrics work under the supervision of a licensed Neuropsychologist. The minimum education level for a Psychometrist is a Bachelor's degree in Psychology or a related field from an accredited college or university.

THROUGH THE EYES OF A PATIENT

We sat down with Sister Lauren Weinandy to gain insight into her experience with the Mayo Clinic Study of Aging. She has been a participant in the Mayo Clinic Study of Aging for quite some time; 15 visits to be exact! She grew up in Brewster, MN. She moved to Rochester in 1954 and has lived here ever since. Sister Weinandt has held several positions during her 63 years of service at the Argent Society, including her current role in the archives department. She has recently been featured in Ken Burns' documentary, *The Sisters of St. Francis: A Tradition of Sacrifice.*"



Q: What have you enjoyed most about participating in the Mayo Clinic Study of Aging?

A: "I have really enjoyed attending the MCSA appreciation dinners, it is always interesting to see other participants and learning about aging and what is happening with the research. I enjoy sharing my experiences, with the study and with aging, with the other participants I know or have met over the years."

Q: What about the MCSA visits do you like/dislike most?

A: I enjoy most of the testing because it can be fun to see if I can remember. While the tests can be challenging, especially the puzzles and the recalling of stories and names, I really like the challenge.

Q: How do you deal with those tougher psychometry tests?

A: I try not to get frustrated and do the best that I can with those tougher puzzles. The tester is always so kind and never has made me feel uneasy when I don't think I did as well. I know the tests are an important part in making sure my memory is okay.

Q: What advice would you give to a participant who is new to the MCSA?

A: Keep coming back! I have had friends comment that they didn't think Mayo Clinic and the MCSA needed participants to keep coming back as much as I have, but I know that continuing to come for my visits is important to the study. I am going to keep participating no matter what others may say, and am happy to do it if it may help someone down the road.

Q: What can the Mayo Clinic/ADRC do to keep participants coming back?

A: Continue to provide a welcoming environment to participants here in the office and at the annual appreciation dinner. Letting participants know they are appreciated and also keeping them updated on the research involved will keep them coming back.

We want to thank each and every one of our participants who come in visit after visit. We know how time-consuming and sometimes frustrating the testing can be, but please know you are valued! You are helping us gather more data so we can keep advancing on the study of aging.

ARE YOU SUPPORTING SOMEONE AFFECTED BY DEMENTIA?

Mayo Clinic Dementia Education and Support Opportunities

Care Partners: Essentials for Wellbeing

A 5-hour educational workshop intended for families and family caregivers who are providing care and/or support to a person living with dementia. The experiential workshop will cover specific skills and a compassionate approach to caregiving, topics include:

- Dementia: The basics and beyond
- Shining a light on the experience of caregiving
- The art of being with the person who has dementia
- A new way of communicating
- Stress, coping, and resiliency
- Mindfulness as a form of self-care

This 5-hour course is repeated in July and October.

July 17, 24, and 31, 2019

3:00-5:00 pm (July 17 and 31 are from 3:00-4:30 pm)

Assisi Heights; Earth Room

1001 14th Street NW Rochester, MN

October 12, 2019

10 am - 3:00 pm Assisi Heights Earth Room

1001 14th Street NW Rochester, MN

Advanced registration is required by calling 507-284-1324

Mayo Clinic Caregiver Support Meetings

Caring Conversations are drop-in support groups intended for persons who provide support and care to a spouse, partner, or relative living with Alzheimer's disease, Lewy body dementia, Frontotemporal degeneration, mild cognitive impairment or a related disorder.

Led by Mayo Clinic facilitators, the purpose of these meetings is for individuals to feel heard, understood and supported. The group offers a place to share experiences and feelings confidentially with others who are on a similar path with opportunities for reflection, problem-solving, and information gathering.

Two meetings are offered each month, please note the different locations. All meetings are open to the public and no advanced registration is required.

2nd Wednesday of each month 1:30-2:45 p.m.

Assisi Heights Conference Center Water Room

1001 14th Street NW Rochester, MN

Enter through the North Door (back of building) labeled Assisi Conference and look for signs to Water Room.

Contact: 507-284-1324

4th Thursday of each month 10:00-11:15 a.m.

Charter House Northview Room

211 2nd St NW Rochester, MN

Free parking is available in the guest parking spaces in the lot to the east and north of Charter House. Once parked enter through the main door on the south side of the building. Contact: 507-292-1313 with any questions

Be Part of our Dementia-Friendly Community Movement

A dementia-friendly community is one where people affected by dementia or memory loss feel understood and respected, and have opportunities to participate and contribute in everyday community life. It is a place where every individual, business and organization receives information and education to increase awareness and understand what they can do to make a difference. A good place to start is by attending a Dementia Friends Information Session.

Dementia Friends Information Session

A one-hour informational session led by a Dementia Friends Champion is intended for all community members to better understand how they can help a neighbor, church member, customer, friend or relative living with memory loss or dementia. The session is informal and includes fun activities and interaction. Attendees learn what dementia is, what it's like to live with the disease and tips for communicating with people who have dementia. Everyone who attends is asked to consider a practical action that can help someone in their community.

Last Wednesday of each month (no session in December)

6:00-7:00 p.m. at the Charter House; First Floor, Room 164

211 2nd St NW Rochester, MN

Free parking is available in the guest parking spaces in the lot to the east and north of Charter House. Once parked enter through the main door on the south side of the building.

SELECTION OF PUBLISHED RESEARCH

Over the past 5 years, Mayo Clinic has published 237 research publications due to the participation of those enrolled in the Mayo Clinic Study of Aging.

Below is a sample of 25 of those publications

1. Longitudinal Association Between Brain Amyloid-Beta and Gait in the Mayo Clinic Study of Aging.
2. Association of Cerebrospinal Fluid Neurofilament Light Protein With Risk of Mild Cognitive Impairment Among Individuals Without Cognitive Impairment.
3. Association Between Functional Performance and Alzheimer's Disease Biomarkers in Individuals Without Dementia.
4. Comparison of PC and iPad administrations of the Cogstate Brief Battery in the Mayo Clinic Study of Aging: assessing cross-modality equivalence of computerized neuropsychological tests.
5. Development of a cerebrovascular magnetic resonance imaging biomarker for cognitive aging.
6. Statins and Brain Health: Alzheimer's Disease and Cerebrovascular Disease Biomarkers in Older Adults.
7. Functional Activity and Neuropsychiatric Symptoms in Normal Aging and Mild Cognitive Impairment: The Mayo Clinic Study of Aging.
8. Mediterranean Diet, Its Components, and Amyloid Imaging Biomarkers.
9. Subjective cognitive decline and risk of MCI: the Mayo Clinic Study of Aging.
10. Leisure-Time Physical Activity and the Risk of Incident Dementia: The Mayo Clinic Study of Aging.
11. Association of Excessive Daytime Sleepiness With Longitudinal β -Amyloid Accumulation in Elderly Persons Without Dementia.
12. Association of telomere length with general cognitive trajectories: a meta-analysis of four prospective cohort studies.)
13. Association of antidiabetic medication use, cognitive decline, and risk of cognitive impairment in older people with type 2 diabetes: results from the population-based Mayo Clinic Study of Aging.
14. Depressive and anxiety symptoms and cortical amyloid deposition among cognitively normal elderly persons: the Mayo Clinic Study of Aging.
15. Nursing Home Use Across The Spectrum of Cognitive Decline: Merging Mayo Clinic Study of Aging With CMS MDS Assessments.
16. Decreased Glutamate Levels in Patients with Amnesic Mild Cognitive Impairment
17. Neuroimaging biomarkers and impaired olfaction in cognitively normal individuals.
18. Mild Cognitive Impairment and Exposure to General Anesthesia for Surgeries and Procedures: A Population-Based Case-Control Study
19. Association Between Mentally Stimulating Activities in Late Life and the Outcome of Incident Mild Cognitive Impairment, With an Analysis of the APOE ϵ 4 Genotype
20. Excessive daytime sleepiness and fatigue may indicate accelerated brain aging in cognitively normal late middle-aged and older adults.
21. Comparison of Gait Parameters for Predicting Cognitive Decline: The Mayo Clinic Study of Aging.
22. Evaluation of Amyloid Protective Factors and Alzheimer Disease Neurodegeneration Protective Factors in Elderly Individuals.
23. Increased Brain Glucose Uptake Following 12 Weeks of Aerobic High-intensity Interval Training in Young and Older Adults.
24. Cortical thickness and depressive symptoms in cognitively normal individuals: The Mayo Clinic Study of Aging.
25. How Early Can We Diagnose Alzheimer's Disease (And Is It Sufficient)?

STUDY OF AGING TEAM

Investigators

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Eric Tangalos, M.D.
Joe Parisi, M.D.
Cliff Jack Jr., M.D.
Walter Rocca, M.D.
Mary Machulda, Ph.D., L.P.
Julie Fields, Ph.D., L.P.
Michelle Mielke, Ph.D.
Kejal Kantarci, M.D.
Prashanthi Vemuri, Ph.D.
Val Lowe, M.D.
Carole Nistler, M.D. - Olmsted Medical Center
Steve Younkin, M.D., Ph.D.
Neill Graff-Radford, M.D.
Dennis Dickson, M.D.
Nilufer Taner-Ertekin, M.D., Ph.D.
Len Petrucelli, Ph.D.
Rosa Rademakers, Ph.D.
John Lucas, Ph.D.
Tanis Ferman, Ph.D.
Otto Pedraza, Ph.D.
Floyd Willis, M.D.
Yonas Geda, M.D.
David Jones, M.D.
Jonathan Graff-Radford, M.D.
Rodolfo Savica, M.D., Ph.D.
Walter Kremers, Ph.D.

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Ryan Townley, M.D.
Mary Widmeyer, M.D.

Research Fellows

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Mo Elminawy, M.B., B.Ch
Chaitanya Undavalli, MBBS
Ammar Almorsy, MBBCN

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Jenny Hurt
Kris Johnson, R.N.
Karen Kuntz, R.N.
Sara Mason, R.N.
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Kenny Calvert
Tascha Helland
Jillian Kaniss
Tim Ledbetter
Jennifer Scuse
Connie Spitzer
Courtney Forseth

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Whitney Dahl
Kimberly Etbauer

Study Assistants

Patricia Sowls

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Joel Miller

Medical Secretary

Dorla Burton

MRI/PET Recruitment Coordinator

Paul Lewis

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Supervision and Research Coordination

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Sabrina Alberston
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