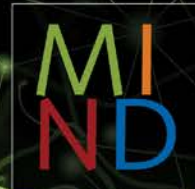


# The Partnership for a Healthy Mississippi Power Hour Presentation

May 24, 2022

Denise Lafferty, RN, BSN  
Chief Strategy and Operations Officer

Kevin Sullivan, PhD, MPH  
Assistant Professor of Medicine



# Power Hour Agenda

- Overview of Alzheimer's Disease and Related Dementias (ADRD)
- Recognizing the Signs and Symptoms of ADRD
- Introduction to The MIND Center at UMMC
- Risk Factors for ADRD
- MIND Center Research

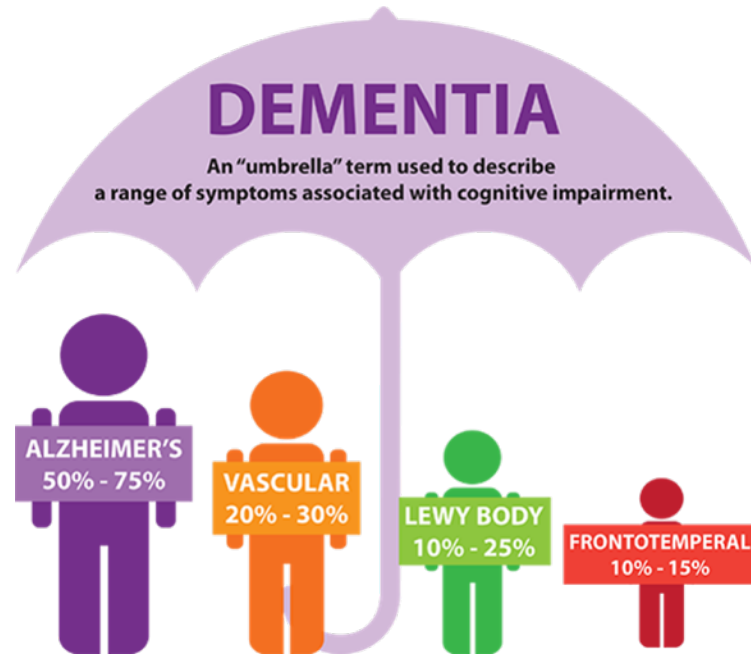


# What is dementia?

- A set of symptoms that are linked to disorders caused by abnormal brain changes that trigger a decline in thinking skills severe enough to impair daily life and independent function. Since dementia is progressive in nature, symptoms that develop will gradually become worse, causing brain cells to die.



# Difference between Alzheimer's and Dementia



# Normal Aging versus Memory Loss that is Concerning

## **NORMAL AGING**

- Occasional trouble recalling people or places
- Forgetting appointments or events occasionally
- Taking longer to process information
- Sometimes losing track of a conversation
- Occasionally forgetting where an item is

## **CONCERNING**

- Not remembering the names of close friends or relatives
- Frequently forgetting appointments or events
- Trouble verbalizing thoughts, frequent pauses in conversations or substituting common words
- Regularly repeating a statement or questions
- Consistently misplacing items



# Alzheimer's and Dementia Facts and Figures

- Worldwide, there are approximately 57 million people living with Alzheimer's or other forms of dementia.
- More than 6 million Americans and 57,000 Mississippians are living with Alzheimers.
- These numbers are projected to triple by the year 2050.
- Alzheimer's is the 6<sup>th</sup> leading cause of death in the US and in Mississippi; it kills more than breast cancer and prostate cancer combined.
- One in three seniors dies with Alzheimer's or another type of dementia.
- Alzheimer's is the only disease in the top 10 causes of death in the US that can't be prevented, slowed, or cured. Yet.





# The Memory Impairment and Neurodegenerative Dementia (MIND) Center

- Founded in 2010 by Dr. Tom Mosley, a nationally recognized expert in brain aging and dementia.
- The MIND Center is a national leader in Alzheimer's and dementia research and clinical care at the University of Mississippi Medical Center.



# The Gertrude C. Ford MIND Research Center at UMMC in Jackson, MS





# The MIND Center – Comprehensive Center with Three Mission Areas



Research



Health Care



Education



# Research Mission

- To understand the causes and develop new treatments for Alzheimer's disease and related dementias



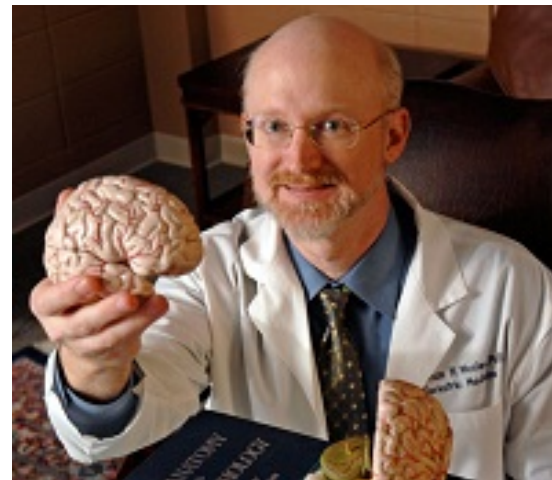


# MIND Center Research

## 4 MAIN AREAS OF RESEARCH

1. Risk Factors
2. Genetics
3. Imaging
4. Clinical Trials

The MIND Center currently has **21 active grants** from the National Institutes of Health **totaling > \$37 million** in federal funding and receives supplemental funding from the state as well as private donors and supporters.



**Dr. Thomas Mosley,  
Robbie and Dudley Hughes  
Distinguished MIND Center Chair,  
MIND Center Director**



# Health Care Mission

- To deliver state-of-the-art diagnosis and treatment for patients experiencing memory loss and cognitive impairment resulting from Alzheimer's disease and related dementias, with a focus on bringing compassionate and quality care to the underserved.



# The MIND Center Clinic

- Launched in October 2013
- 3 clinic locations in the Jackson area including the University Physicians Pavilion, UP Grants Ferry and UP Riverchase
- Offers diagnosis and treatment for memory loss and cognitive impairment
- Addresses medical, social and psychosocial needs and provides caregiver support
- Call **601-496-MIND Option 1** for an appointment or more information (no referral necessary)





# MIND Center Clinic Diagnosis

- Usually 1 - 2 MIND Center Clinic visits
- 60 – 90 minute evaluation
- Interview with patient and family member
- Thorough physical and neurological examination
- Cognitive testing and depression screening
- Lab studies
- Brain imaging (CT, MRI, or PET Scan)



**Dr. Kim Tarver**  
Director of MIND Center  
Clinical Services



# The MIND Center Clinic

- Experienced multi-disciplinary team (geriatricians, neurologist, consulting neuropsychologists and psychiatrists, nurse practitioner, social worker, RN care coordinators and patient schedulers)
- Patient and family visit with social worker or RN care coordinator for guidance and support
  - Community resources
  - Financial information
  - Dealing with behavioral problems
- Collaboration with primary care doctor
- Ongoing visits (every 3 – 6 months) to monitor disease and medications and support patient and family/caregiver
- Telehealth visits available via Epic Extended Care application



# TeleMIND Program

- Launched in 2014
- Partnership with UMMC's Center for Telehealth
- Brings specialized dementia care to patients in remote areas of Mississippi where the availability of geriatric specialists and neurologists may be limited
- Provides virtual medical care, including evaluation and treatment of memory loss and cognitive impairment, through innovative and secure, real-time, audiovisual technology



# Caregiver Support Services



- Individual counseling
- Group/family counseling
- Telephone consultations - 601-496-MIND (6463) Option 2
- Financial and insurance guidance
- Legal consultation
- Statewide network of 35 Caregiver Support Groups
- MIND Center Caregiver Support Group
  - **3<sup>rd</sup> Monday** of each month at 5:30 p.m. (Currently held virtually by Zoom)





# Art in Mind Program

- Partnership with the Mississippi Museum of Art
- Held monthly and free for participant with memory loss and their caregiver
- Opportunity to view art in the gallery and then create art in the studio
- Led by Susan Anand, Certified Art Therapist
- Contact Jennifer Knight at 601-496-MIND Option 2 or [mindclinic@umc.edu](mailto:mindclinic@umc.edu) to register





# Education and Outreach Mission

- To provide comprehensive training and development on Alzheimer's disease, brain wellness, and dementia prevention and care, to health care professionals and the broader community.





# MIND MATTERS

A FREE community education series focused on Alzheimer's disease and other dementias.

- Held bi-monthly at the UMMC Student Union Building (or virtually via Facebook Live during COVID-19)
- Previous topics:

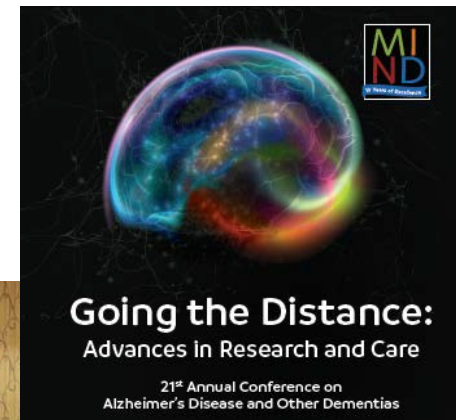
- Financial Readiness as You Age
- The Health Effects of Sleep Apnea
- Hearing Loss and Cognitive Decline
- Music and Memory
- How to Promote Brain Health
- Hospice and Palliative Care

- Advances in Alzheimer's and Dementia Research
- Legal Wellness Check-up
- Safety for Seniors
- Genetic Considerations of Alzheimer's
- Avoid Scams: Protect Yourself!



# Annual Conference on Alzheimer's Disease and Related Dementias

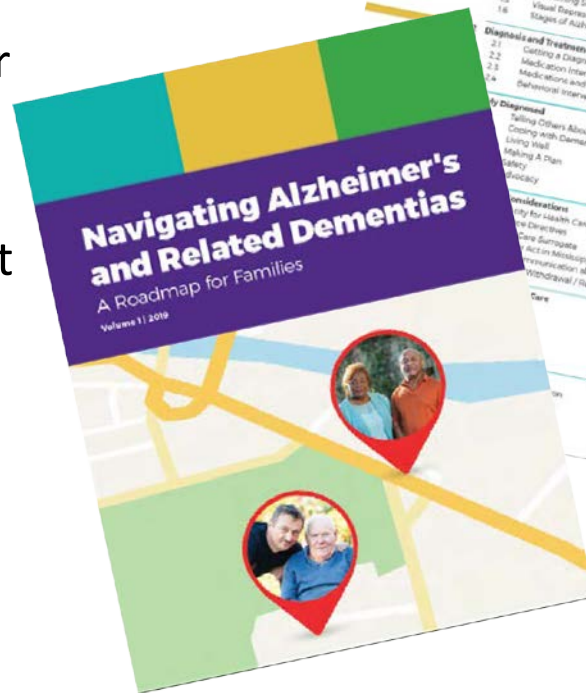
- The only statewide conference on Alzheimer's disease and other dementias
- The goal of this 2 ½ day conference is to inform, educate, and train individuals in Mississippi and surrounding states who are caring for persons with Alzheimer's and other types of dementia
- With the theme "Conquering Caregiver Challenges", the 22<sup>nd</sup> Annual Conference will be held October 26-28, 2022 at the Hilton Jackson Hotel and Conference Center





# Navigating Alzheimer's Resource Guide

- Written and published by The MIND Center in partnership with the Department of Mental Health and Alzheimer's Mississippi
- A 220-page consolidated reference to assist families as they traverse the Alzheimer's disease process
- Over 6,000 guides distributed to date
- Available online at [umc.edu/mindcenter](http://umc.edu/mindcenter) or contact [mindcenter@umc.edu](mailto:mindcenter@umc.edu) or 601-815-4237



# Caregiver University (CGU)



Caregiver  
UNIVERSITY

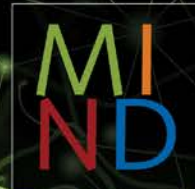
- Quarterly, multi-session training program for family caregivers (17 modules)
- Focused on improving care delivery and support for individuals and family caregivers living with Alzheimer's and dementia
- No charge to attend and classes taught by experts from The MIND Center and partner organizations
- Remaining 2022 Dates:  
Sept. 13-23, 2022 ♦ Nov. 8-18, 2022





# Research Update from The MIND Center

Kevin J Sullivan, PhD, MPH  
Assistant Professor of Medicine  
The MIND Center  
University of Mississippi Medical Center



# Outline

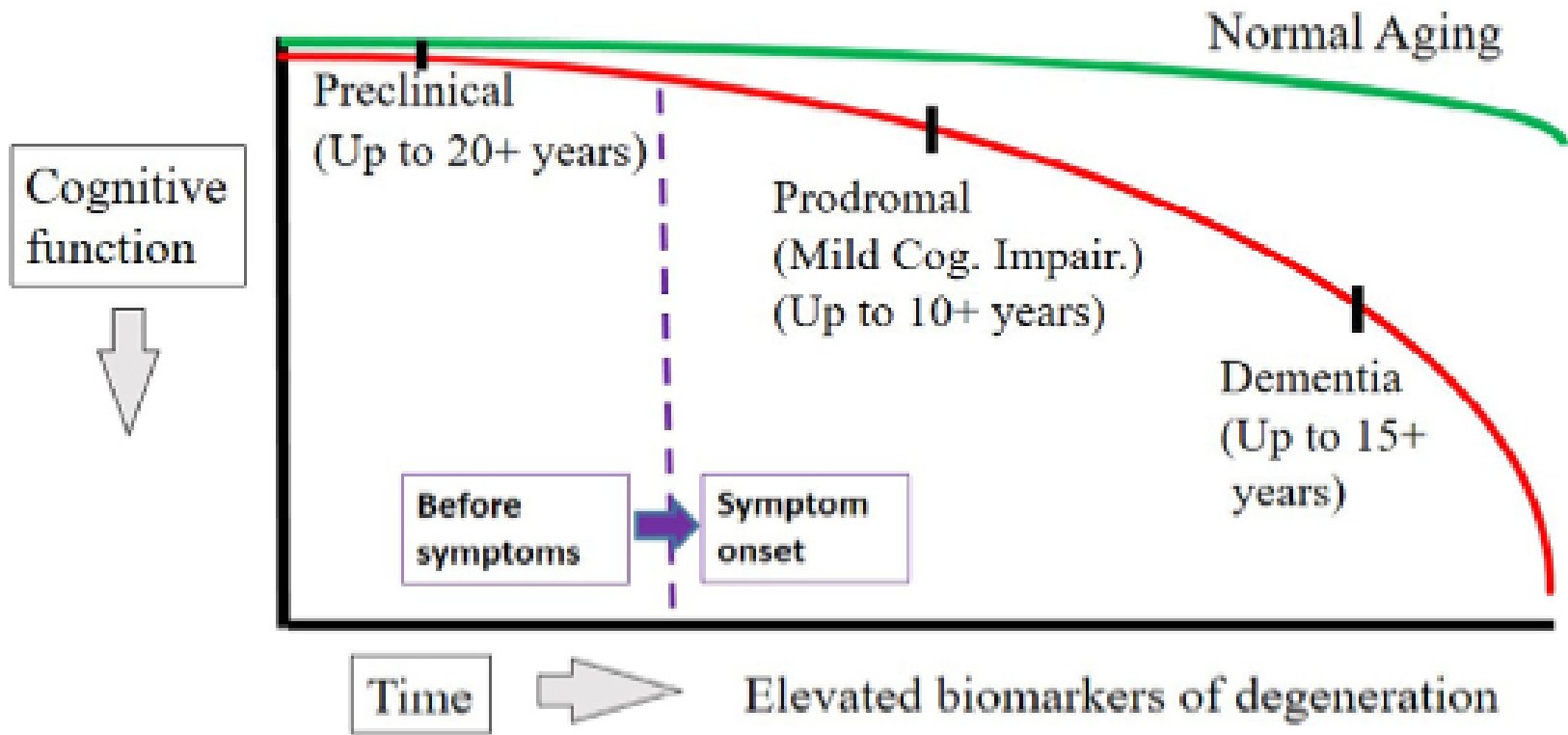
- Normal vs Abnormal Cognitive Aging
- Atherosclerosis Risk in Communities Study (ARIC)
  - Cardiovascular Risk Factors and Head Injury
- Blood Biomarkers for Alzheimer's Disease
- MIND Center – Mayo Clinic Study of Aging



# Normal vs Abnormal Cognitive Aging

- As we age there is some degree of declining cognitive and physical abilities that is completely normal and expected.
- However, if memory and thinking problems are severe enough to regularly impact daily independent functioning and causing stress to you or family members it may be time to talk to your doctor
  - This does not mean you have Alzheimer's disease!
  - Some forms of cognitive impairment are reversible, such as adverse side effects from a new medication.
- Alzheimer's disease is NOT an inevitable outcome of the normal aging process, it is a combination of various brain disease processes that result in a clinical syndrome of dementia.





**It is an important goal of aging and dementia research to identify individuals who are on the red trajectory as early as possible and study ways to slow or reverse that trajectory**



# Atherosclerosis Risk in Communities Study

- Recruited an initial cohort of ~16,000 participants (45-64 years old) from four US communities
  - Suburban Minneapolis, MN (University of Minnesota)
  - Forsyth County, NC (Wake Forest University)
  - Washington County, MD (Johns Hopkins University)
  - **Jackson, MS (University of Mississippi Medical Center)**
- Initial aim was to identify risk factors for atherosclerosis, heart disease, and stroke
- Evolved into one of the most comprehensive and long-term studies of brain aging with the expansion into the ARIC-NCS (Neurocognitive Study)

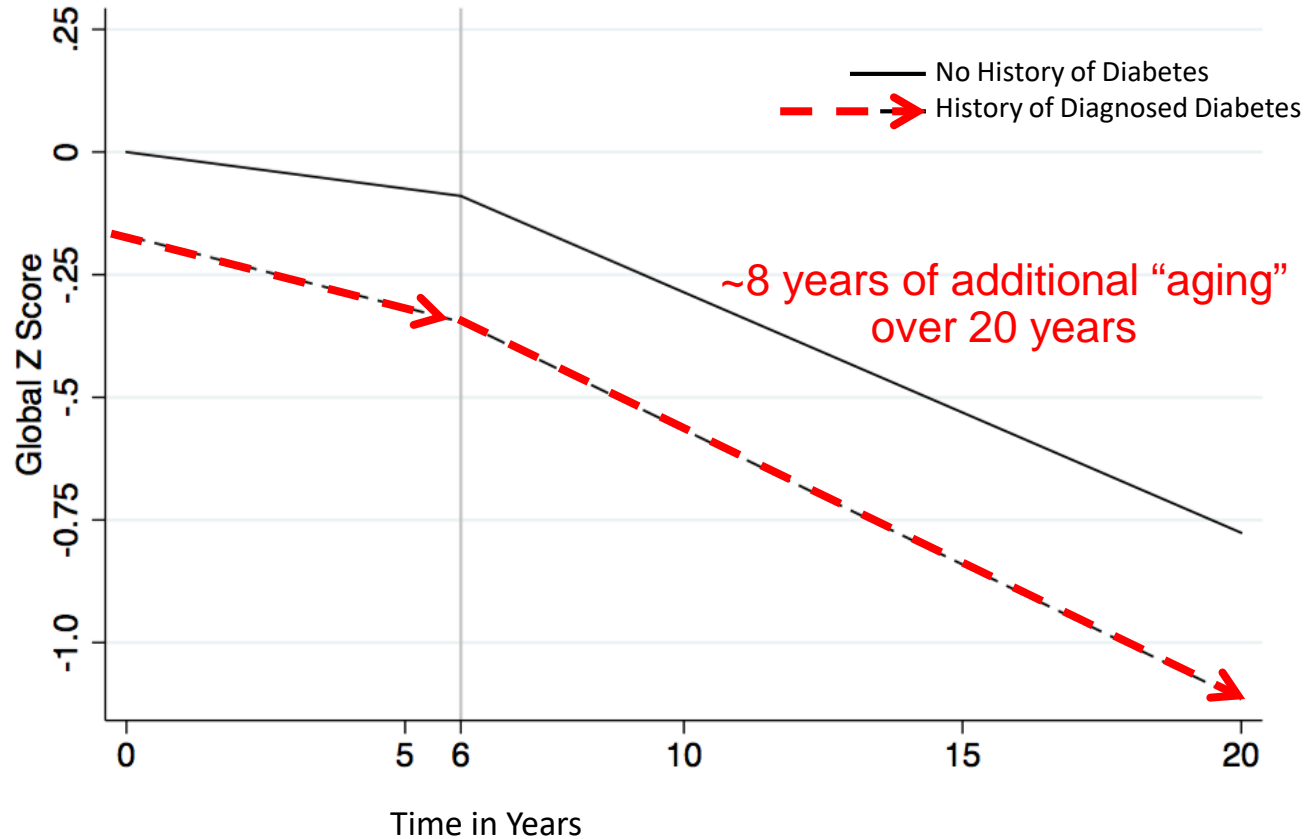


# Cardiovascular Risk Factors

- A primary finding of the ARIC study is that cardiovascular risk factors, even as early and perhaps especially during midlife, are associated with an increased lifetime risk of dementia
  - Hypertension
  - Diabetes
  - Obesity
  - Smoking
- Evidence is lacking that controlling these modifiable factors will outright delay or prevent dementia/cognitive decline but better cardiovascular health, regular physical activity, and healthy diet have numerous benefits that may include lower dementia risk.

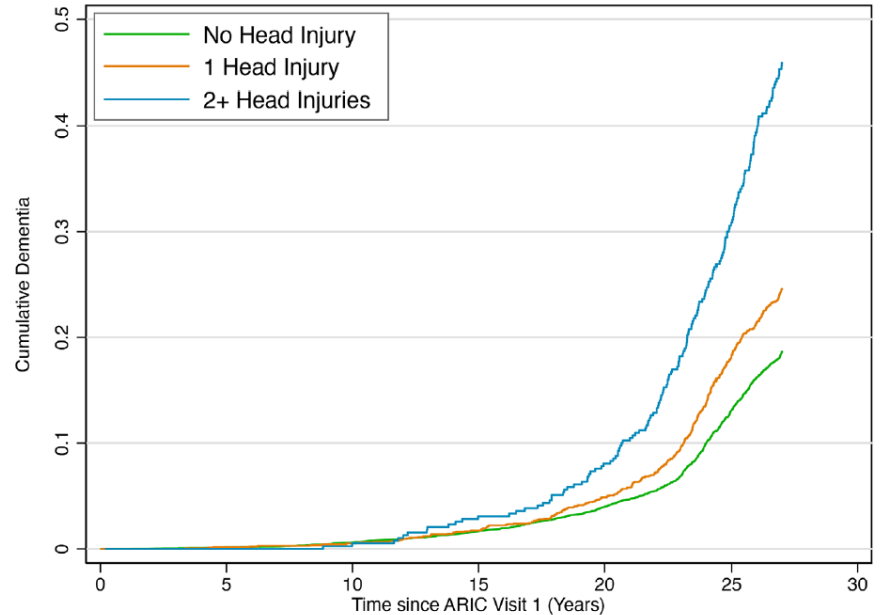


# Cognitive Decline and Diabetes in ARIC Participants



# Head Injury and Dementia

- Estimates from studies including ARIC that a **single TBI event increases lifetime risk of dementia anywhere from 20-40%** and may be associated with **increased deposition of brain amyloid**, a pathological hallmark of Alzheimer's disease.
  - Subsequent TBI events increase this risk and amyloid deposition even more
- Two most common causes of TBI are **falls and motor vehicle accidents**, events that disproportionately affect older adults





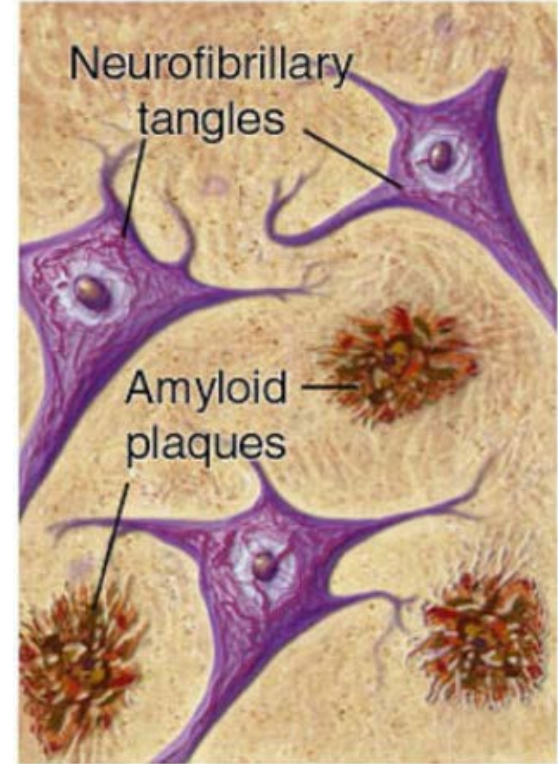
# Blood Biomarkers for Alzheimer's Disease

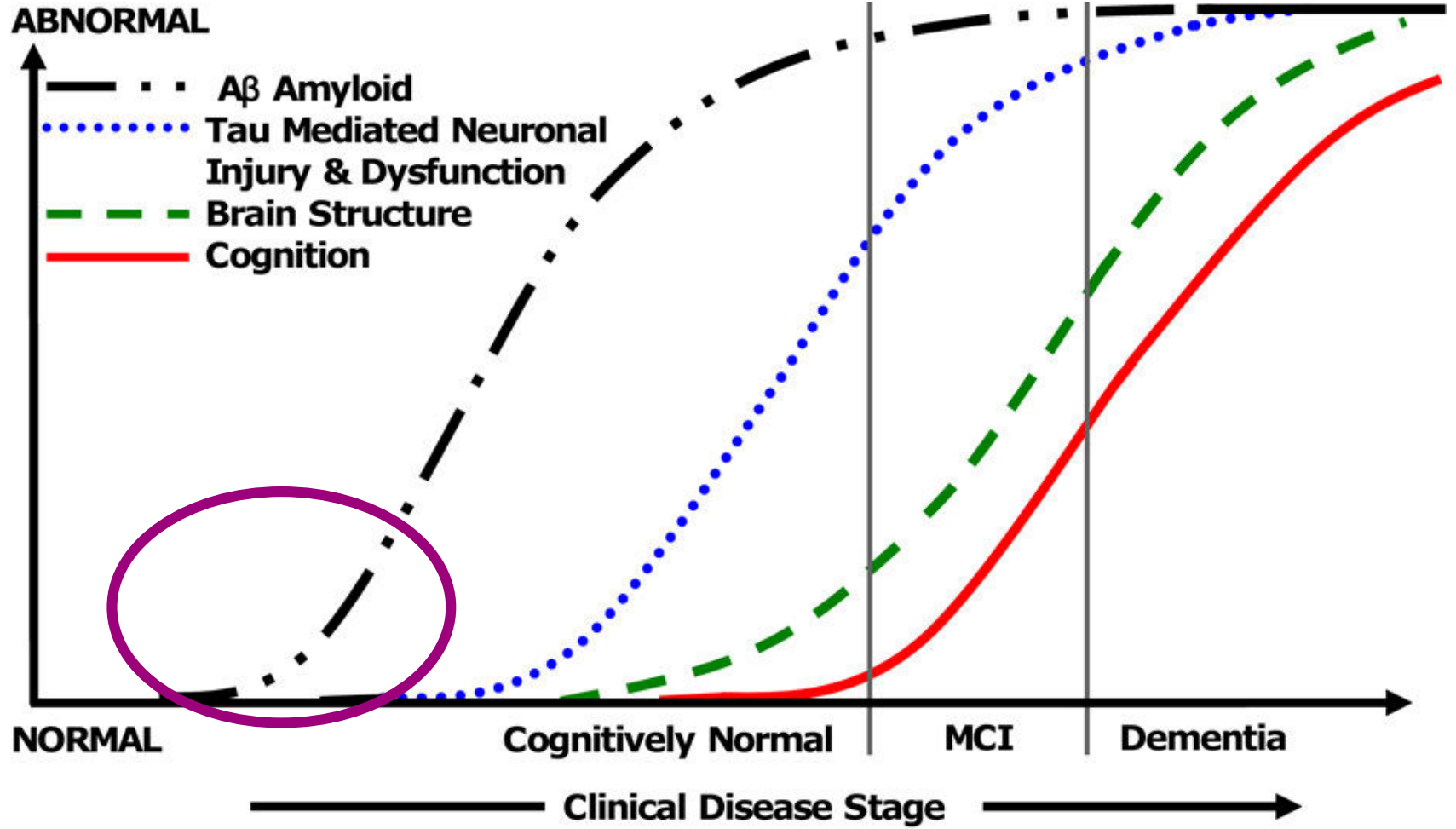
- Alzheimer's disease is defined by three brain pathologies: amyloid-beta (plaques), misfolded tau protein (tangles), and neurodegeneration (brain volume loss).
- We've previously tested for these processes by directly scanning the brain with an MRI or PET scan, or by sampling the cerebrospinal fluid, the protective fluid that surrounds the brain and contains waste products from the brain.
- Assessment methods have improved to the point that these very small fragments of amyloid, tau, and neurons are now detectable in blood, where they circulate at much lower concentrations than in CSF.
- These blood markers have shown strong correlations to the presence of Alzheimer's disease pathology in the brain, and in some cases are detectable even before the development of brain pathology



# Amyloid Plaques

- The buildup of amyloid-beta ( $A\beta$ ) plaques in the brain is the hallmark pathological basis of Alzheimer's Disease
  - $A\beta_{42}$  is a particularly 'sticky' variant that results in plaques
- How we measure  $A\beta$  has changed over time:
  - Autopsy
  - Cerebrospinal Fluid/PET Scans
  - Blood?
- $A\beta$  is routinely cleared from a healthy brain
  - Higher levels of  $A\beta_{42}$  in the blood or the CSF is **good**
- A focus on Alzheimer's Disease prevention involves detection of  $A\beta$  or factors that predict the later accumulation of brain as **early as possible**

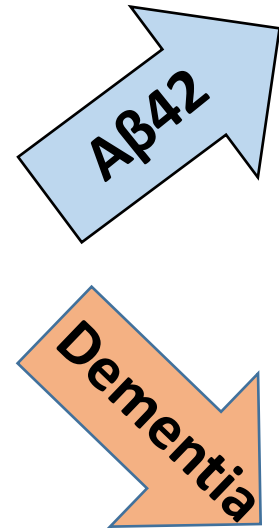
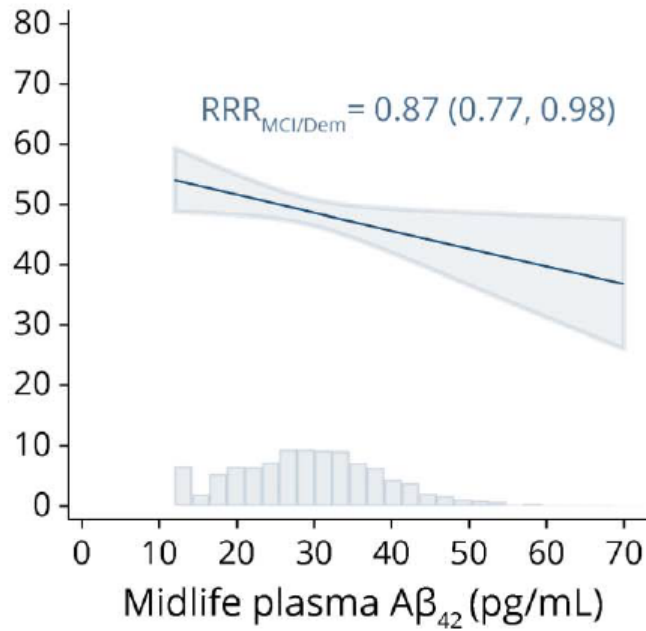
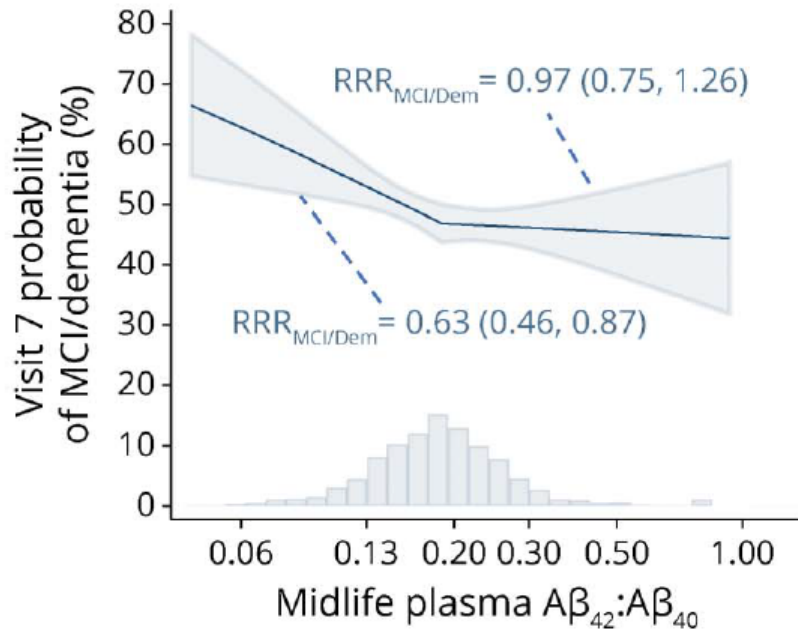




# Association of Midlife Plasma Amyloid- $\beta$ Levels With Cognitive Impairment in Late Life: The ARIC Neurocognitive Study

Kevin J. Sullivan, Chad Blackshear, Jeannette Simino, Adrienne Tin, Keenan A. Walker, A. Richey Sharrett, Steven Younkin, Rebecca F. Gottesman, Michelle M. Mielke, David Knopman, B. Gwen Windham, Michael E. Griswold, Thomas H Mosley

- Midlife Blood A $\beta$  predicts risk of dementia and MCI 20-25 years later in ARIC Study sample of over 2000 participants





# Other Blood Biomarkers

- Measuring amyloid in the blood is just one aspect of Alzheimer's disease.
- We can also now measure fragments of tau protein related to brain tangle accumulation, fragments of neuro-skeletal proteins that reflect dying neurons in the brain, and many other fluid markers that relate to other aspects of brain health.
- We have started the process to measure all of these using ARIC participant blood samples and these biomarkers will also be a component of our new Study of Aging.



# Steps to Clinical Implementation

- There remain challenges to the widespread implementation of Alzheimer's disease blood biomarkers in clinical practice
  - There is considerable influence of peripheral organ function, such as the kidneys and liver, that can interfere with a valid measurement of some of these markers
  - We don't yet understand how well these tests perform in diverse populations with respect to racial and ethnic background, as well as multiple comorbidities
- Blood biomarkers have immediate utility of better screening for inclusion in Alzheimer's Disease clinical trials and are already being used to identify higher risk participants for study inclusion
- Additional validation studies in diverse populations are needed, which we plan to be a part of at the MIND Center with both the **ARIC Study** and our new **Study of Aging**



# MIND Center-Mayo Clinic Study of Aging

- This is a new aging research study starting at the MIND Center at UMMC in collaboration with the Mayo Clinic in Rochester, Minnesota.
- The Mayo Clinic Study of Aging is a long-running cohort study of adults in the community researching risk factors and biomarkers related to cognitive impairment and dementia.
- We plan to take this well-established study protocol and invite **thousands of Mississippi residents** to participate in biannual study visits that will involve assessments of your **thinking and physical abilities, cardiovascular risk factors, blood tests for novel biomarkers, and brain scans.**
- The goal of the study is to help identify better ways to diagnose and prevent Alzheimer's disease while promoting healthier aging.



MAYO  
CLINIC



UMMC MIND CENTER - MAYO CLINIC

# STUDY<sub>OF</sub> AGING

Learn more or schedule your appointment:

601.984.6654

[StudyofAging@umc.edu](mailto:StudyofAging@umc.edu)

[www.umc.edu/StudyofAging](http://www.umc.edu/StudyofAging)

Principal Investigator:

Thomas H. Mosley, PhD

Co-Principal Investigators:

B. Gwen Windham, MD, MHS

Michael E. Griswold, PhD

**Gertrude C. Ford MIND Research Clinic, TR131 | University of Mississippi Medical Center  
2500 N. State Street | Jackson, MS 39216 | Phone: 601.984.6654**

*IRB Protocol: 2018 -0038*

# Acknowledgements

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**We thank all of the MIND Center and Study of Aging supporters and stakeholders**

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David Knopman, Mayo Clinic Rochester  
B Gwen Windham, University of Mississippi Medical Center  
Michael E Griswold, University of Mississippi Medical Center  
Thomas H Mosley, University of Mississippi Medical Center

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# Questions?



