



Exam 7 Central Virtual Training

January 19, 2022

*Timothy Hughes, Kathleen Hayden, and
Jose Luchsinger MPIs of MESA-MIND*



MESA MIND Training Sessions

TODAY – Introductory session (for all Field Center Staff)

Part 1 – *Why?*

Part 2 – *How?* – Overview of all components and Training plans

Thursday 1/20 – Cognitive testing training

(Dr. Sachs and all cog testers)

Friday 1/28 – VaSera arterial stiffness training

(Chris Broadbridge and all Field Center Staff)

Housekeeping items for today's presentation

Let's hear from you

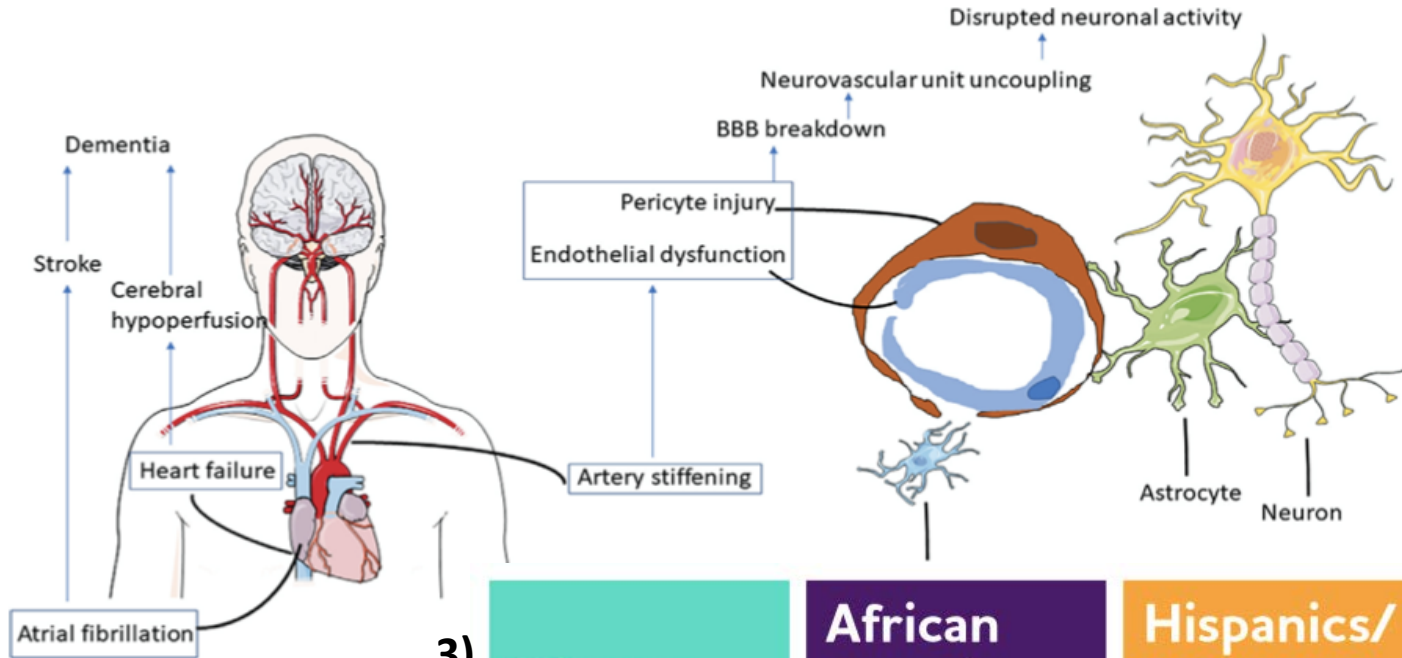
- Use the chat to tell us about yourself
 - First and last name, site, cog testing y/n, languages, and email
- Ask questions as they arise in the chat, raise hand, or speak up

MESA is ideally positioned to study the Vascular Contributions to Dementia (VCID)



1) Zlokovic et al. Alzheimer's & Dementia. 2020

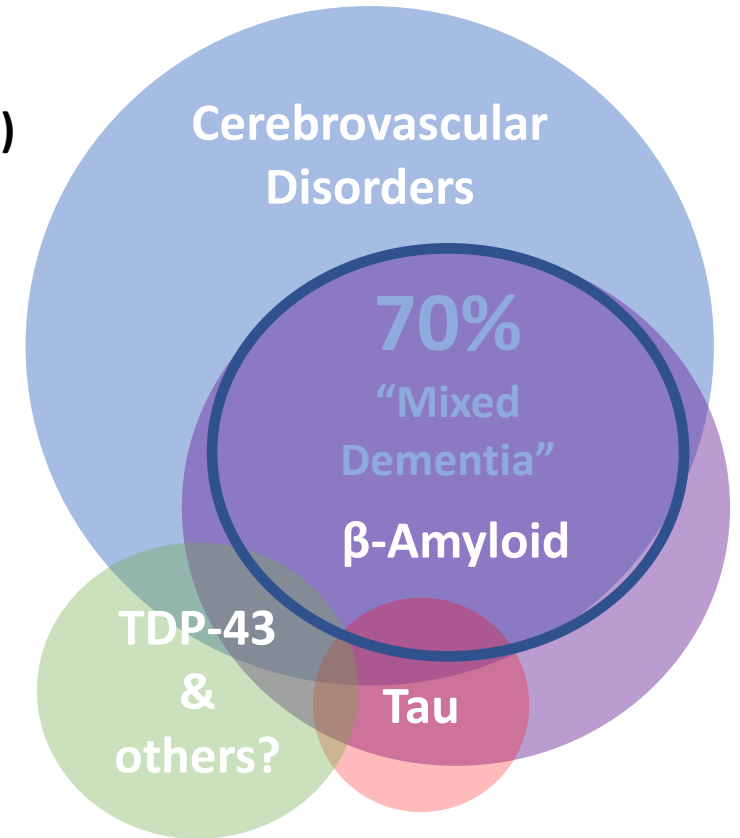
Alzheimer's & Dementia[®] | 5
THE JOURNAL OF THE ALZHEIMER'S ASSOCIATION



3)



2)



Kapasi et al. Acta Neuropathol. 2017

Multi-Ethnic Study of Atherosclerosis (MESA) MIND

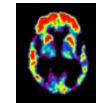


Sites: Columbia, Minnesota, Northwestern, UCLA, Johns Hopkins and WFU

38% White
28% AA
22% Hispanic
12% Chinese



2,500 adults (64-100+ years)



Amyloid-PET (3 sites, n=1000)



Cognitive testing (UDSv3)

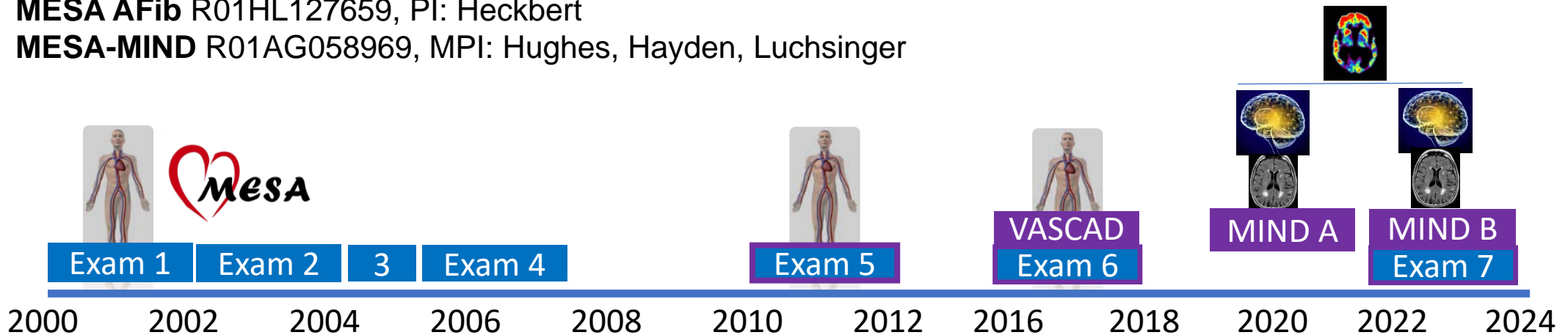


Brain MRI

MESA VASCAD R01AG054069, PI: Hughes

MESA AFib R01HL127659, PI: Heckbert

MESA-MIND R01AG058969, MPI: Hughes, Hayden, Luchsinger



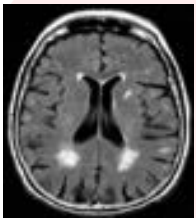
MESA-MIND Goals & Objectives

Goal - To understand how subclinical vascular disorders relate to changes in brain structure and cognition in diverse group of older adults at various degrees of risk.



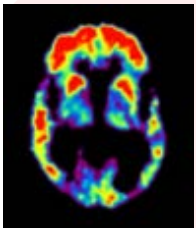
Objective 1 - Conduct comprehensive and repeated physical and cognitive examinations along with informant interviews

Result: track of cognitive impairment and decline over time



Objective 2 - Conduct repeated brain MRI

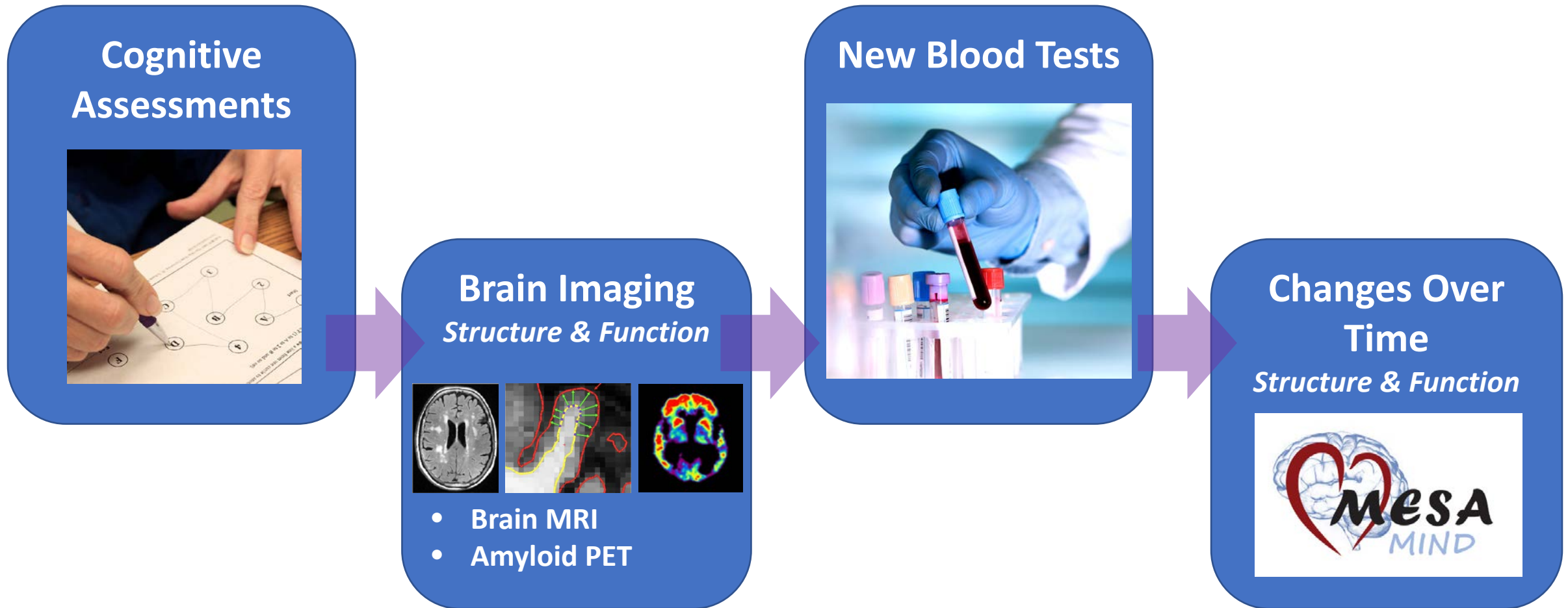
Result: quantify structural changes in the brain consistent with brain atrophy and cerebral small vessel disease



Objective 3 – Conduct brain amyloid PET imaging (3 sites) to visualize evidence of Alzheimer’s disease pathology in the brain.

Result: quantify levels of Alzheimer’s disease pathology in the brain

How Does MESA-MIND Study Brain Health?





How Does MESA-MIND Do This?

<u>Modules</u>	<u>Visit Performed</u>
Module A – Clinical Exam	A & B
Consent, update study informant information	
Physical Evaluation	
Height	
Weight	
Blood pressure	
Waist circumference	
Arterial stiffness	
Blood draw	
Medical history (including family history of dementia)	
Medications	
Clinician’s Physical Examination	
Short Physical Performance Battery	
Module B – Study Informant Provided Information	A & B
Study informant Interview	
Module C – Cognitive Testing Components	A & B
CASI, Digit Symbol Coding, UDS v3 cognitive battery, WRAT-5, AVLT, QDRS	
Module D – Brain MRI	A & B
Brain MRI	
Module E – Amyloid PET (3 out of 6 sites)	A or B
[11C] Pittsburgh Compound B PET	

How Does MESA-MIND Do This?

- **Blood draw** (Vermont Lab)
- **Arterial stiffness** (Chris Broadbridge 1/28 and UPenn)
- **Short Physical Performance Battery** (Michelle Gordon video)
- **Cognitive testing** (Dr. Bonnie Sachs)
- **Informant call** (Dr. Bonnie Sachs)
- **Physical neurologic exam** (Dr. Ben Williams)
- **Brain MRI** (UPenn)
- **Amyloid PET** (UMich)

1) Developing Blood Tests for Alzheimer's Disease



Fig. 1: Relationship between plasma biomarkers and change in PACC.

Blood Draws



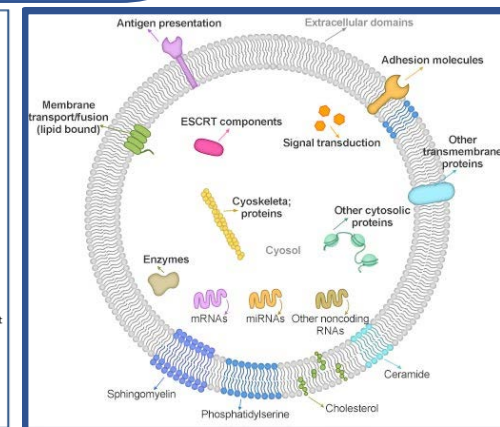
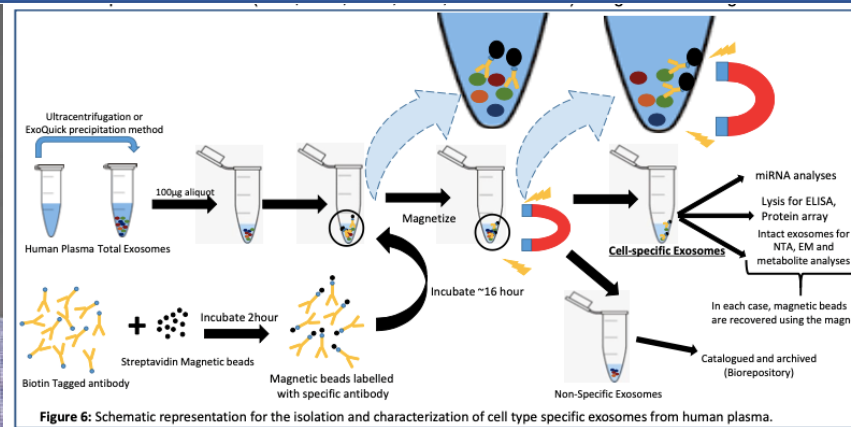
Training & Certification

- Standard plasma processing EDTA
- CBAL training and certification



A 24 hr ACT
Gabriel, Diez

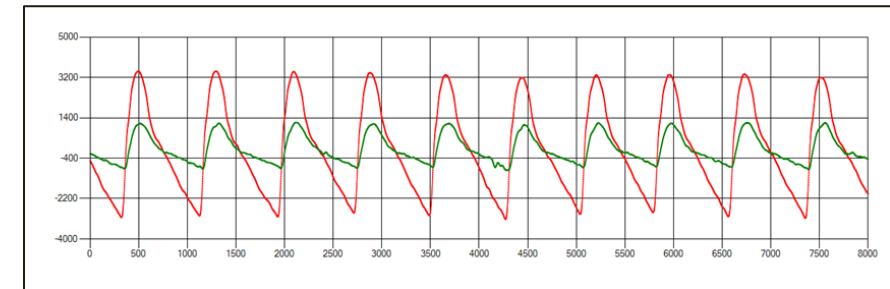
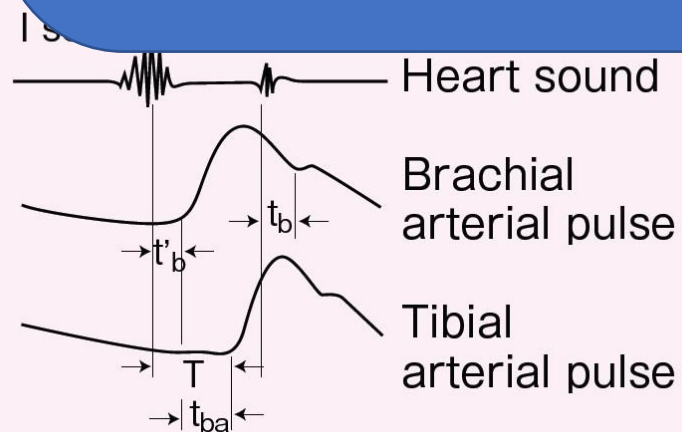
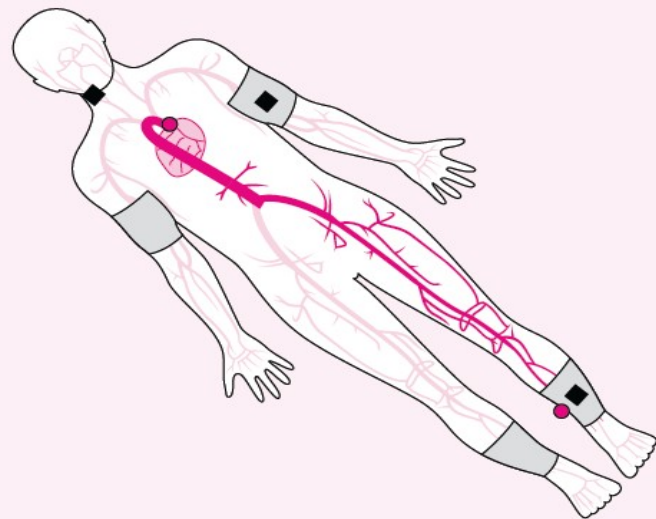
2)



Arterial Stiffness

Training & Certification

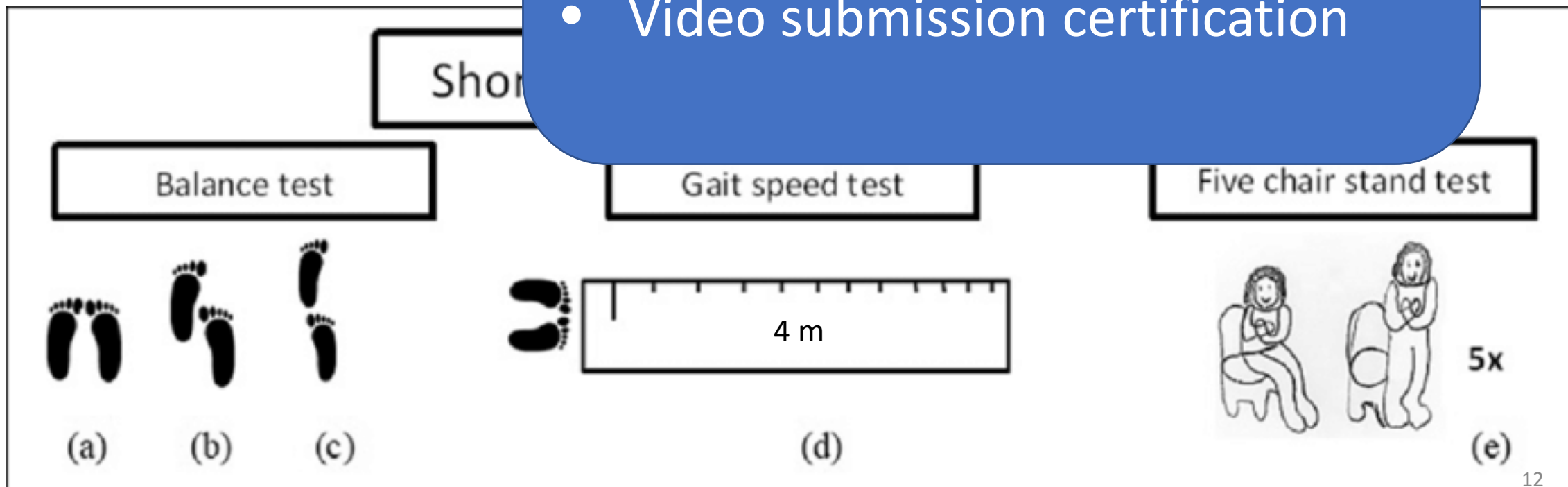
- MOP Section 7.8
- Training videos, <https://www.mesa-nhlbi.org/MesaInternal/MESAExam7Materials.aspx>
- Video submission certification
- Virtual training 1/28 (Chris Broadbridge)



Short Physical Performance Battery

Training & Certification

- MOP Section 7.6
- Training videos
- Video submission certification



Short Physical Performance Battery

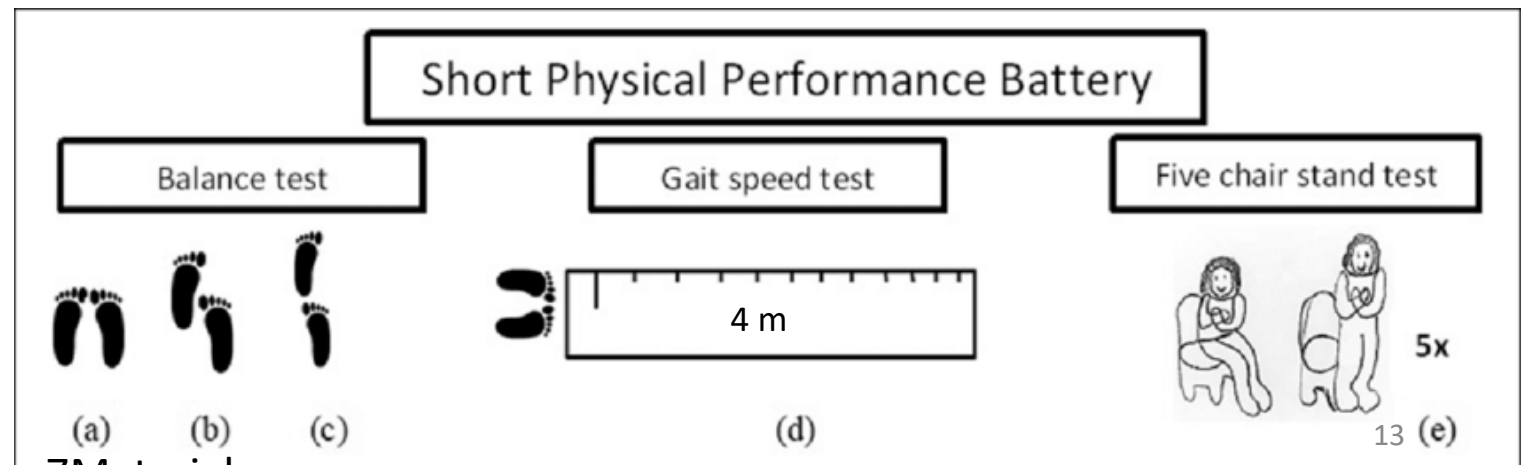


Exam 7 Materials

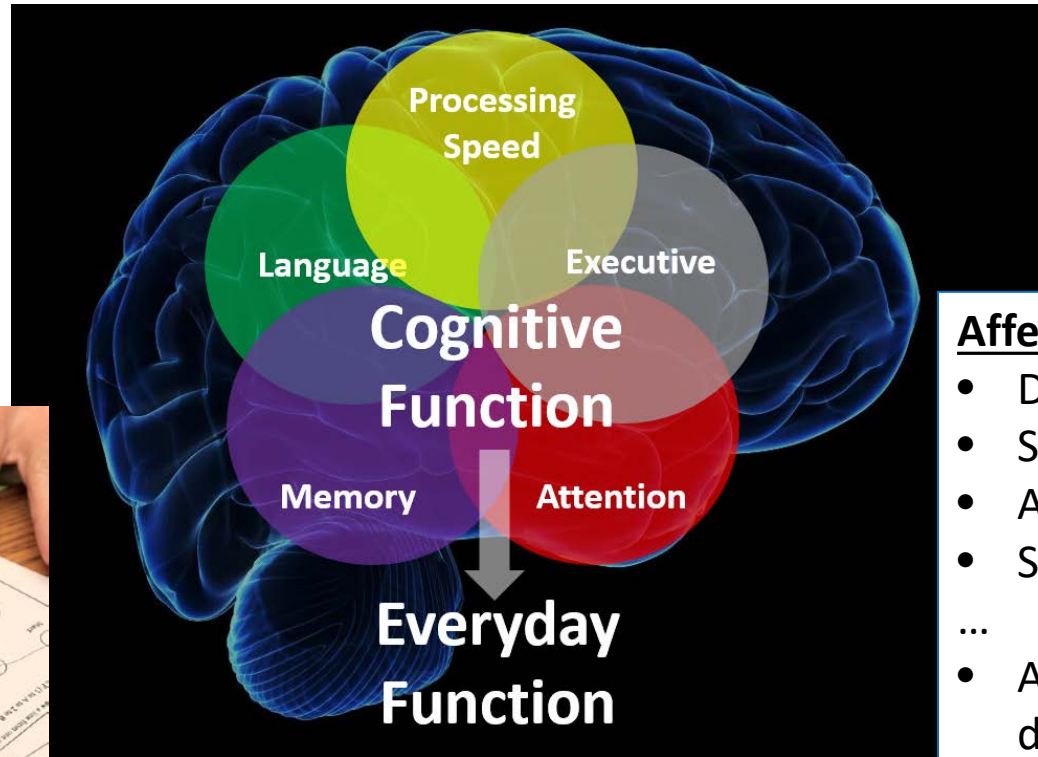
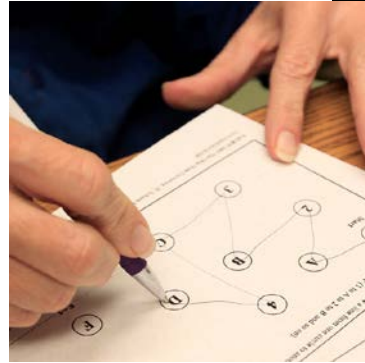
Training Materials

SPPB Training & Certification

- [Extended SBBP Complete Captions](#)
- [SPPB Tips](#)
- [SPPB Certification Video 1](#)
- [SPPB Certification Video 2](#)
- [SPPB Certification Video 3](#)
- [SPPB Certification Video 4](#)
- [SPPB Certification Video 5](#)
- [SPPB Certification Video 6](#)
- [SPPB Certification Video 7](#)



Cognitive Testing



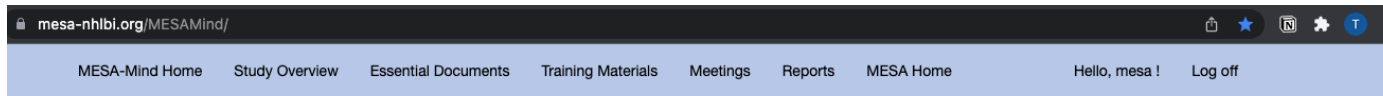
Affected by:

- Depression
- Sleep
- Anxiety
- Stress
- ...
- Age-related dementias

- The essential component of MESA-MIND
- MIND Cognitive battery integrates MESA tests with Uniform Data Set (v3)
- Measures: performance cognitive domains, depression, reading level, etc.
- MESA adaptations:
 - Three versions: in-person, telephone, & video
 - Translations in Spanish and Chinese

MESA-MIND Web Resources Cognitive Testing

<https://www.mesa-nhlbi.org/MESAMind/>, Study materials and Documentation



MESA MIND is a brain health focused ancillary study to [The Multi-Ethnic Study of Atherosclerosis](#). This is the central source of information for Investigators and Clinics involved in MESA-MIND. Prospective collaborators may view the Study Overview page for information about the study.

Study Overview

Improving vascular health to delay the onset of Alzheimer's disease and related dementias is thought to be a critical potential prevention strategy. However, because the links between cardiovascular disease and Alzheimer's disease pathology remain unclear, there are few specific vascular targets for prevention.

[Learn more »](#)

Essential Documents

MESA-Mind essential documents...

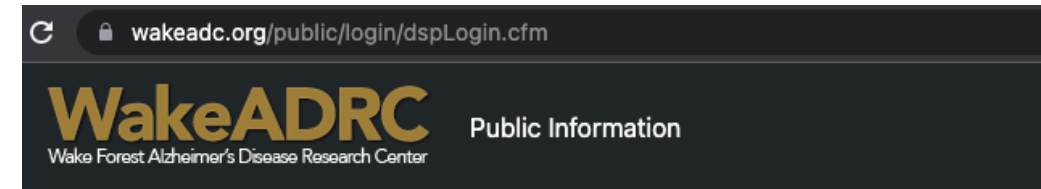
[Learn more \[login required\] »](#)

Meetings

MESA-Mind meeting summaries...

[Learn more \[login required\] »](#)

<https://wakeadc.org/>, cognitive data entry system



Login Links
Sign In
Terms of Service & Privacy Policy
I Forgot My Password
I Need a Login Account
I Need Login Assistance

Secure Login

User Name

Password

*I Accept Terms

Adaptive Cognitive Batteries



Cognitive Tests	MESA-MIND <i>Clinic</i> <i>2019-2021</i>	TCog <i>Telephone</i> <i>Jul-20</i>	VCog <i>Video</i> <i>Feb-21</i>
Participant			
Hearing assessment / instructions	NA	Yes	Yes
MoCA	Yes	Removed	Removed
WRAT	Yes	Removed	Removed
Benson / delayed	Yes	Removed	Yes
Digit symbol	E5, E6, Yes	Removed	Removed
QDRS	Yes	Yes	Yes
CASI	E5, E6, Yes	Yes (non-visual)	Yes
AVLT Immediate Recall	Yes	Yes	Yes
Number Span	E5, E6, Yes	Yes	Yes
Trail Making Test	Yes	Oral Trails	Oral Trails
GDS	Yes	Yes	Yes
Craft Story Immediate Recall	Yes	Yes	Yes
Education, Medical Hx, Medications	E5, E6, Yes	Yes	<i>As needed</i>
AVLT Delay Recall	Yes	Yes	Yes
Category Fluency (A&V)	Yes	Yes	Yes
Verbal Fluency (F&L)	Yes	Yes	Yes
Craft Story Delay Recall	Yes	Yes	Yes
<i>Total Time</i>	62	60-70	60-70

Module C Updates for Exam 7

- TCog reserved for last resort; focus on in-person and VCog
- QC expanded to Spanish and Chinese administration
- Video assessments aided by Zoom and GrandPad devices
- Revised results letters with helpful tips for brain health
- Geriatric Depression Scale (GDS) protocol simplified and integrated



Ensuring Quality Control of Cognitive Data

- Ensure complete administration and CRFs
- Recorded audio uploaded to MESA Coordinating Center
- Timely and accurate scoring
- Timely data entry

Cognitive Testing

Training & Certification

- MOP Module C In-Person (VCog)

<https://www.mesa-nhlbi.org/MESAMind/Account/MESAMindInternal/Documents>

- Virtual Training 1/20 (Dr. Sachs)
- Video submission certification

Training Materials.

Training and Certification Instructions

[Mind Visit B Training Plan](#)
[MESA MIND Visit B Training Log](#)
[VCog Training Slides](#)

Mod C, Cognitive Battery Training Videos

[Mod C: Cognitive Battery Training Video – Administration](#)
[Mod C: Cognitive Battery Training Video – Scores](#)
[Mod C: Cognitive Battery Training Video – Notes](#)

Informant
Interview

Training & Certification

- MOP Module B

<https://www.mesa-nhlbi.org/MESAMind/Account/MESAMindInternal/Documents>

- Virtual Training 1/20 (Dr. Sachs)

Clinician's Physical Exam

Training & Certification

- MOP 7.5
- Exam 7 materials
- Video based training

Exam 7 Materials

Clinician's Physical / Neurological Exam

- [Exam Training Video](#)
- [Neurological Exam Check list](#)
- [Neurological Exam Outline](#)



Brain MRI

Training & Certification

- MOP MRI (Module D)

<https://www.mesa-nhlbi.org/MESAMind/Account/MESAMindInternal/Documents>

- UPenn MRI Center contact with your MRI facility

• Reads & reports

- MRI alert letters (e.g. tumors, bleeds)
- Participant retention letter

Amyloid PET

Training & Certification

- Protocol appendix

<https://www.mesa-nhlbi.org/MESAMind/Account/MESAMindInternal/Documents>

Additional Needs Specific to MESA-MIND

- Recruitment priorities linked to Visit A (2.5 years between visits)
- Limited number of cognitive raters
 - Ideal ratio = 2 per language

Recruitment Priorities for MIND

Stages / Priority	MIND Component
Cognitive	Module C - VCog / in-person Module B - Informant interview
Imaging	Module D – MRI Module E – PET (WFU, Col, JHU)
Clinic	Module A - Blood draw / clinic procedures

A background of deep red, vertically pleated curtains. A thick white curved line starts from the bottom left and arcs towards the top right, separating the curtain area from the dark grey background on the right.

MESA-MIND Behind the Curtains

MESA-MIND

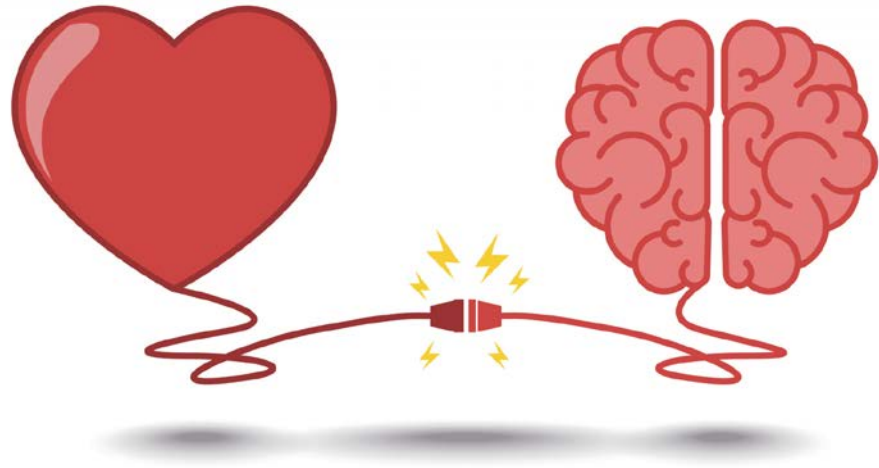
- Cognitive adjudication process
 - Complete cognitive data to perform adjudication
 - Defines status for research
 - May take up to 12 months before reported as a results letter
- Updated results letters with tips on health brain
- Processing labs - Brain MRI (UPenn) and PET (UMich)
- Plasma biomarkers
- Links to Exam 7 ancillary studies


Integrating with MESA Exam 6 & 7 Ancillaries

- MESA **Atrial Fibrillation MRI** (Dr. Heckbert, 1050 MRIs)
- MESA **Epigenetics of AD** (Drs. Ding and Liu)
- MESA **Sleep** (Drs. Redline and Purcell)
- MESA **Glucose Homeostasis** (Dr. Mongraw-Chaffin)
- MESA **Neighborhoods 3** (Dr. Hirsch)
- MESA **24 hour Physical Activity** (Drs. Palta, Gabriel, Diaz)
- MESA **CEND** (Drs. Deep and Hughes, *sample assay only*)



MESA is Especially Important to Understanding Brain Health





Acknowledgements
&
Questions?

MESA Ancillary and Steering Committees

MESA Site PIs, Coordinators, and Staff

MESA Coordinating Center

MESA OSMB

MIND Neurocog Team

MIND Adjudication Committee

MESA MRI Center

MESA PET Center

MESA PWV Lab

Our dedicated MESA Participants!