

MESA Messenger

MESA-MIND Opportunity!

By Timothy Hughes, PhD & Kathleen Hayden, PhD, Wake Forest

Did you know that vascular health affects a person's risk for Alzheimer's disease and other dementias?

Dementia is the worst kind of memory and thinking (cognitive) problem in older adults. Dementia is diagnosed when a person's changes in thinking and memory affect their ability to live on their own. The most common cause of dementia is Alzheimer's disease, followed by vascular disease. Many older people who have Alzheimer's have signs of vascular changes in their brain. We think that blood vessel disease might worsen the effects of Alzheimer's. Studies like MESA help us understand how keeping the heart and blood vessels healthy, especially in mid-life, contributes to keeping the brain healthy too. MESA may help us find new ways to prevent or lower our risk of developing Alzheimer's or other dementias as we age.

A new study, "MESA-MIND" is bringing this opportunity to all MESA sites in 2019. "MESA is the perfect study to look at the connections between changes in our heart, blood vessels, and brain in our diverse community. Our MESA participants have already taught us so much

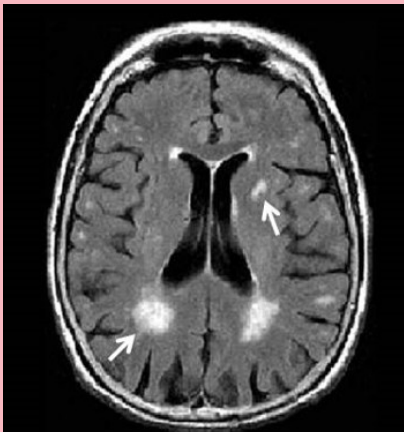


Figure: The arrows are pointing to vascular disease commonly seen on Brain MRI images of older adults. They suggest an increase in someone's risk of getting Alzheimer's disease.

about heart health," said Dr. Timothy Hughes, leader of the MESA-MIND Study, "now MESA can show us how to protect brain health".

MESA-MIND measures include cognitive testing and brain imaging. The cognitive tests are more detailed than the Exam 5 tests. They will show researchers the changes that can happen in our thinking and memory as we age. These tests will help us learn how you are doing compared to others your age.

Brain imaging like MRIs (see Figure) can show signs of possible trouble years before someone has problems with their thinking and memory. Yet, not everyone who has these signs will develop memory loss. MESA-MIND includes MRIs of the brain. After you get an MRI, you will receive a letter with a picture of your brain. We will also tell you if we see something that you may want to discuss with your doctor. MESA participants at three sites (Wake Forest, Johns Hopkins, and Columbia) may also be invited to get PET imaging to look for amyloid plaques (a sign of Alzheimer's) in the brain.

The cognitive testing and brain imaging of MESA-MIND is very important because together with the heart studies you've already completed in MESA, these tests will help us learn how heart and vascular health affects brain health and Alzheimer's risk. This may help us discover ways to treat and prevent Alzheimer's disease in the future.

"This is especially important in our diverse MESA community. Most people don't know that the risk of Alzheimer's disease is higher in some ethnic groups than others. MESA is an ideal place to study what causes these differences in risk." said Dr. Hughes.

Starting in the spring of 2019, you may be invited to be part of MESA-MIND. We hope you will join MESA-MIND and help us make important discoveries in how to protect heart health and brain health as we age.



Heart Failure and Adiposity

By Erin Michos, MD, Johns Hopkins University

A new study by MESA investigated the link between obesity and the development of heart failure, and discovered new information that might assist doctors in identifying people at higher risk for developing heart failure.

Heart failure affects a substantial portion of the US population. An important measurement of heart failure is the “ejection fraction,” which refers to how well the heart squeezes with each beat. Heart failure can be classified into two types: heart failure with preserved ejection fraction (HFpEF) and heart failure with reduced ejection fraction (HFrEF). In HFrEF, the heart suffers from a reduced ability to pump blood, while in HFpEF, the heart still squeezes normally but heart failure occurs because the heart or the major arteries (aorta) are too stiff and cannot relax properly. There are currently no known effective treatments for HFpEF, which is why preventing the disorder from developing in the first place is so important.

Obesity is a condition in which a person has increased body fat, or adiposity. Obesity is a known risk factor for HFpEF. Increased fat within the abdomen contributes to heart muscle stiffness and decreased heart muscle relaxation with each heartbeat. Over time, this excess strain on the heart can increase the risk of HFpEF.

Obesity is commonly measured in the clinic and is based on an individual’s height and weight. Measurements include body mass index (BMI), waist-hip-ratio, and waist circumference. Additionally, blood measurements of certain proteins like insulin can be markers of increased body fat. Computed tomography (CT) scan is a noninvasive imaging technique that can also quantify fat, both within the abdominal cavity (called visceral fat) and outside the abdominal cavity (called subcutaneous fat) (shown in Figure). MESA researchers used all of these different measurements of body fat to investigate how obesity affects the development of heart failure among healthy individuals.

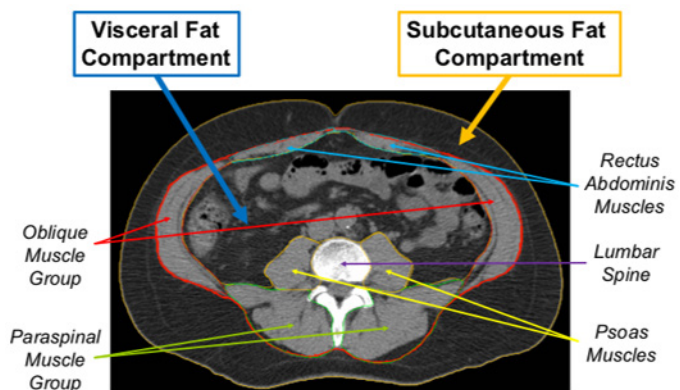


Figure: Abdominal CT Slice

Image: This abdominal CT image shows where the body stores visceral and subcutaneous fat.

Approximately 1800 MESA participants were followed for an average of 11 years, and a total of 70 episodes of hospitalized heart failure events occurred (34 HFpEF and 36 HFrEF). Among the different measures of adiposity, higher BMI, waist circumference, insulin level, and visceral adiposity measures predicted occurrences of heart failure resulting in hospitalization. In particular, BMI, waist circumference, and visceral adiposity predicted HFpEF, but no measure of adiposity predicted HFrEF occurrences. The CT measures of fat demonstrated that it is actually visceral adiposity, but not subcutaneous adiposity, that predicts HFpEF.

Results from this study suggest that in addition to BMI and waist circumference, it is the distribution of body fat that matters in contributing to risk of developing heart failure, and particularly HFpEF. Measuring visceral fat at the time of obtaining a CT scan for other reasons may offer additional information for one’s risk of developing heart failure. By tackling obesity and particularly visceral fat, a person may reduce his or her lifetime risk of developing heart failure. Lifestyle interventions, such as participating in regular physical activity, eating a heart healthy diet, and reducing weight if overweight/obese, can help reduce visceral adiposity. This study sheds light on the fact that measuring the distribution of fat may play a pivotal role in identifying people who are at higher risk of developing heart failure. ❤️

MESA Findings Improve the Way We Prescribe Statins

By Michael Blaha, MD, MPH, Johns Hopkins University

Who should take a statin medication to prevent heart attack and stroke?

Statins are cholesterol-lowering medications that have been shown to reduce cardiovascular risk in high risk people. At first, it might seem easy to select individuals who need to take statins. However, doctors actually find it quite difficult. This is because risk assessment – that process by which people are sorted into “high risk,” “intermediate risk,” and “low risk” groups – is imprecise. The risk factors we measure in the clinic – like blood pressure – only tell part of the story.

Studies from MESA were important in influencing the new 2018 Cholesterol Guidelines from the American Heart Association and American College of Cardiology. MESA showed that a coronary artery calcium score – that is, a CT scan of the heart – can detect early plaque and help sort people into high risk and low risk groups.

Based on studies from MESA, the new guidelines recommend consideration of calcium scoring for people that are “intermediate risk” for developing a heart attack and stroke, especially if they are reluctant to go on long term statin therapy. The presence or absence of calcium in the heart arteries can help determine which of the intermediate risk patients are truly low risk, and which are truly high risk.

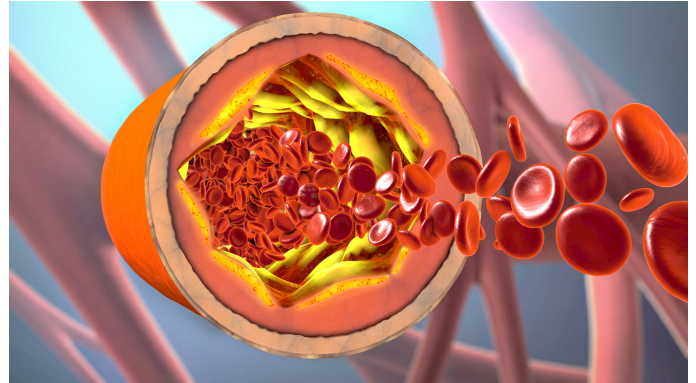


Image: CT scans can help measure the coronary artery calcium score—or the amount of plaque building up inside the heart arteries. People who show calcium in the arteries might be considered higher risk and are more likely to benefit from statins.

MESA taught us that half of the intermediate risk patients have no calcium in their heart arteries. The other half do have calcium, and half of those have very elevated amounts of calcium.

The new guidelines now say that a statin is not needed if the calcium score is zero. However, statins are recommended if the calcium score is elevated, particularly if the score is above certain levels.

This is the first time that the calcium score has been widely recommended in guidelines. It can help a large group of people avoid taking statins. It can also help find the people who will really benefit from statins.

It was the MESA study that helped changed the way we practice medicine! Thank you for your valuable contributions! ❤️

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'Let's Move!' Say New Physical Activity Guidelines

By the NHLBI Project Office

Physical activity is good for just about everyone, including older adults. The Physical Activity Guidelines have been updated (<https://health.gov/paguidelines/second-edition/report/>) and after reviewing the latest research, experts confirm that no matter your health and physical abilities you can gain a lot by getting active and staying active! According to many research studies, adults who are active have a greater chance of living longer than adults who are sedentary or stay still for long periods of time. Physical activity helps to reduce the risk of having a heart attack or stroke, may help to reduce high blood pressure and lower bad cholesterol, and improves your mood and quality of sleep. For older adults, physical activity also lowers the risk of falls.

How much physical activity do you need? The updated Physical Activity Guidelines recommend that adults, including seniors, get **at least 150 minutes of moderate activity per week or about 30 minutes per day, 5 days a week.** Moderate physical activity is anything that gets your heart beating faster. The good news is that you can spread your activity throughout the day--it does not need to be done all at one time. You can choose from a wide range of activities including walking, biking, gardening, dancing, bowling, playing with your children and grandchildren, or anything else that gets you moving. A key point for adults is to move more and sit less. New research shows that being sedentary is associated with increased risk of high blood pressure and heart disease. It is important to check with your health care provider before starting any new physical activity.



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