

The MESA

Newsletter of the Multi-Ethnic Study
of Atherosclerosis

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Messenger



The MESA Sleep Study Needs Participants!

By Catherine Nunn, RN, Wake Forest University

Thank you so much for your continued contributions to MESA, and thank you especially to all study participants who were able to take part in the Exam 5 Clinic Visit. As you may know, we are now in the middle of a sub-study called MESA Sleep, and only those who took part in Exam 5 are eligible to participate.

Good quality sleep is increasingly being recognized as fundamental to health and influences a wide range of health behaviors and disease risks. Poor sleep may even increase one's appetite and predispose to weight gain. Many people have sleep problems and many are not even aware of them.



Dr. Susan Redline,
MESA Sleep Principal
Investigator

The purpose of MESA Sleep is to specifically examine the relationship between sleep quality and sleep disorders with heart and vascular health. In order to do this, we need to test a very wide range of participants - from those who sleep well to those who do not. The information we collect will help us understand how sleep quality relates to many aspects of health, including risk for heart disease, high blood pressure and diabetes, and will hopefully result in healthier lives for our children, grandchildren and future generations.

So you think you sleep just fine and don't need a sleep test? Perhaps you've already spoken with one of our recruiters and declined to participate in MESA Sleep. We think you might want to reconsider, and here's why. We all know that sleep is a necessary component in our lives, but since we are asleep, it is difficult to personally evaluate how well we are sleeping. As a result, many sleep disorders go undiagnosed and untreated. Our MESA Sleep testing so far has shown exactly that – when participants who say they sleep well are tested, some of them prove to have undiagnosed sleep disorders that may be affecting their overall health.

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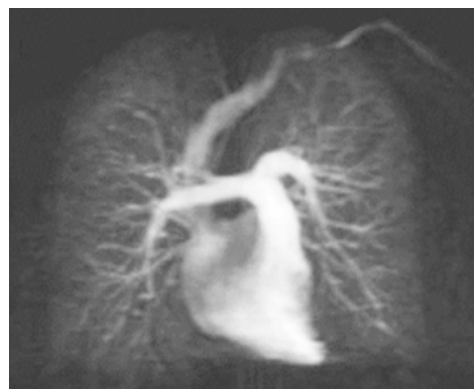
MESA Not Just About Heart Disease

Diane Bild, MD, MPH, MESA Project Officer, NHLBI

While the heart holds a special place (in our hearts!), MESA investigators recognized long ago that many of the measurements made in the study were important for other organs as well. The heart, lungs, kidneys, and liver are dependent on each other, and we are dependent on them for optimal health. You may be among the many MESA participants who have also taken part in studies that led to important scientific discoveries in other organs besides the heart.

For example, MESA's pulmonary function testing (spirometry) and lung imaging (CT scans of the chest) have contributed to one of the largest studies of lung function, health, and disease in years. In 2010, MESA investigators reported that emphysema (a common type of chronic lung disease) was related to the heart's ability to pump blood to the rest of the body. The more lung disease that is found, the lower the heart's pumping ability. While not a complete surprise, what was surprising was that the relationship was found in milder forms of lung disease than researchers had seen before, and in nonsmokers as well as smokers.

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CT image of heart, lungs, and pulmonary arteries

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So far, more than 1,400 MESA participants have had at-home sleep studies. During these visits, we go over the consent form, complete a brief sleep questionnaire on your sleep habits, and prepare you for a home sleep study that is programmed to begin when you go to bed. You will be fully mobile throughout the night and able to use the bathroom as needed. The entire visit takes around one hour, after which we'll leave you to your usual nighttime routine. You will be free to go to bed whenever you wish.

Your participation is vital to the success of MESA Sleep! We will be happy to answer any questions you may have and/or schedule your sleep study on an evening that works for you. Enrollment will continue only until November of this year so please call your local MESA Field Center at your earliest convenience. You will find the phone number on page 4. We look forward to hearing from you! ❤️

Progress in Genetics/Genomics Research in MESA

Kayleen Williams, University of Washington / Catherine Nunn, RN, Wake Forest University

So far, 26 genetics papers have been published using findings from MESA by scientists across the US and around the world. Examples of genetic discoveries include identification of genes related to blood pressure, fasting glucose and fasting insulin levels, coronary artery calcium, lung function and peripheral artery (farthest from the heart) disease. Most of these discoveries resulted from MESA investigators looking at data from the SNP Health Association Resource (SHARe), which allowed them to map millions of common DNA sequences in fine detail.

Several other exciting new genome projects are now underway in MESA. Long sequences of DNA from hundreds of MESA participants are being analyzed by the NHLBI Exome Sequencing Project. The purpose of this analysis is to further uncover genetic causes of cardiovascular diseases, lung and blood diseases and other important medical problems. These discoveries may provide a way for health care providers to identify individuals at risk for disease at an earlier age.

Interestingly, one thing that MESA investigators have already learned from all this genetic analysis is that blood pressure levels and hypertension appear to be, at least in part, inherited. This is just one finding that has resulted from MESA investigators actively participating in efforts by large groups of international scientists to identify genetic influences on blood pressure levels. In addition, the scientists identified sixteen new

(MESA Not Just About Heart Disease Continued from page 1)

The kidneys are also central to good overall health. They filter blood, remove waste, help regulate blood pressure, produce a hormone that supports red blood cell counts, and produce an active form of vitamin D. MESA is running several studies of kidney function. We have found that participants with thicker carotid artery walls tend to have worsening kidney function over time. A few hundred MESA participants are being recruited to take an extensive (5-hour), state-of-the-art measurement of kidney function which will serve as an important standard for future research.

Recent evidence shows that accumulation of fat in the liver is associated with diabetes. MESA investigators found that they could measure liver fat from parts of the liver that were seen on chest CT scans. (They are extracting every bit of useful information they can from the data obtained in MESA exams!) In MESA studies, more liver fat was associated with more resistance to insulin. Insulin resistance means that the body must produce and release more and more insulin into the bloodstream to keep blood sugar levels from getting too high. Persons with insulin resistance may develop diabetes later in life."

Our health depends on an amazing and complex set of organs that function with and relate to each other. The comprehensive nature of the MESA examinations, including its ancillary studies, is providing researchers with ways to better understand how these systems work together and, we hope, lead to better prevention and treatments for a variety of conditions.

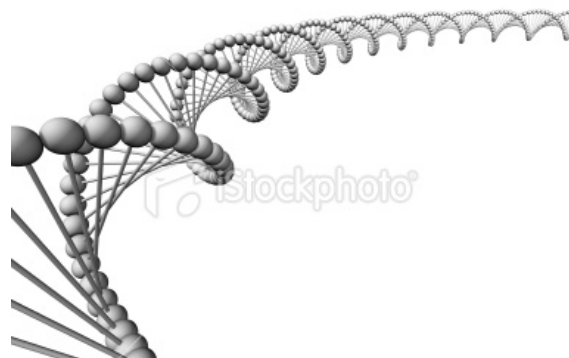
Thank you for the part you are playing in furthering this research!



locations in the DNA that were not previously known to affect blood pressure. Furthermore, these areas of DNA were also associated with blood pressure levels in people of East Asian, South Asian and African ancestry, as well as with a higher risk of stroke and coronary heart disease.

MESA investigators have also been looking at genetic factors related to levels of omega-3 fatty acids in blood. As you may know, eating foods high in omega-3 fatty acids is good for your heart. MESA

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investigators have found that, in addition to the omega-3s that come from diet such as fish oils, the amount of omega-3s in a person's blood is partly inherited. They have found that there are three genetic variants in DNA that influence the amount of omega-3s circulating in a person's blood, which suggests that omega-3 fatty acids levels are influenced by both dietary intake and genetics.

While these results are exciting, all of these genetic studies are only early steps in the process of understanding the genetic basis of common diseases. They will not provide you with information about your own genetic makeup, but they will help researchers identify additional genes that may be important to everyone's health in the future. As always, we want to assure you that your data is being made available to scientists in a manner that protects your privacy and confidentiality. We thank you for your valuable contributions to this exciting, cutting-edge research which will clearly lead to major advances in medical science in the years to come. ❤️

Diabetes and Heart Disease

Alain Bertoni, MD, Wake Forest University

Type 2 diabetes is an important disease in the United States because it has become more common over the past 30 years and it leads to a variety of complications. Most people with diabetes will have complications due to atherosclerosis, that is, the buildup of plaque in arteries that supply blood to the heart, brain, legs, kidneys, and the rest of the body. Diabetes can also lead to kidney, nerve, and eye disease.

While MESA is designed to answer questions about heart disease, it is also helping us better understand type 2 diabetes as well. This is not too unexpected; the risk of developing diabetes increases with age, and is highest among adults over the age of 65. Indeed, at MESA's first exam during 2000-2002, about 12% of participants had diabetes.

Using data from some of the tests performed by MESA including CT scans for coronary calcium, carotid ultrasound, MRI of the heart, and retinal photographs, MESA scientists have written over 30 papers focusing on better understanding of diabetic complications, and the relationship between diabetes and heart disease.

MESA has also contributed to a better understanding of who might develop diabetes. Since the study began, over 400 participants have either started medication for diabetes or had

an increase in their fasting glucose level above the limit that indicates diabetes (126 mg/deciliter). So far, roughly a dozen papers have been written about the development of diabetes in MESA participants.

It is well known that being overweight or obese increases the risk of developing diabetes, and that diabetes is more common among minority groups. In one MESA paper, Dr. Pamela Lutsey and colleagues looked at the relationship between waist measurement and developing diabetes in each of the four race/ethnic groups represented in MESA. In each race/ethnic group, the risk of developing diabetes increased with a higher waist measurement, as expected. However, at any given waist measurement, the risk of diabetes was highest among Chinese adults, followed by black and Hispanic adults, and lowest among white adults. The risk of diabetes also appeared to rise at a different rate in the four race/ethnic groups. Thus, diabetes appears to be more common among non-white ethnic groups not simply because of differences in the proportion of participants who are overweight or obese.

Other factors seem to be influencing the risk as well. These may be differences in diet and exercise patterns and other behaviors, neighborhood characteristics, and/or genetics. MESA scientists are studying each of these possibilities, as we have asked you to fill out surveys about these features and to give consent for genetic studies.

If you have diabetes or are worried about developing diabetes, your doctor can discuss with you the best strategies to help prevent its onset and/or complications. ❤️




“What is MESA and why are you calling me?”

You have provided to MESA the names of people who might be able to help us locate you if we lose touch with you, or who can answer questions about your health if you are not able to. At each phone call with you, we try to keep this information up to date by reviewing the contact information for the people you have named.

We hope you will tell these people that you have provided their names to MESA and encourage them to talk to us if we call. If they do not know they have been named by you as contacts, they may not want to talk to us or tell

us anything about you. Tell them about your visits and the clinic staff. Share the newsletters and the participant website (<http://www.mesa-nhlbi.org/ParticipantWebsite/default.aspx>) with them. They will be interested to hear about your experiences.

Thank you again for your participation in MESA. You can feel extremely proud to be a part of this important and successful study. 

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