

The MESA

Newsletter of the Multi-Ethnic
Study of Atherosclerosis

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Messenger



Ancillary Studies in MESA • Diane Bild, MD, MPH MESA Project Officer



From the start of your enrollment in MESA, you have been invited to participate in "ancillary studies." Ancillary studies are ones that are added on to the main MESA study for more focused research in a specific area.

While MESA is collecting a large amount of data on cardiovascular

risk factors and subclinical cardiovascular disease, the ancillary studies dig deeper and greatly enrich the overall study. Examples of MESA ancillary studies include:

- MESA Air Pollution - a study of the relationship between exposure to different types of air pollution and cardiovascular disease
- MESA Family - a study of genetics in MESA, which has also enrolled brothers and sisters of many of the original MESA cohort members
- MESA Lung - a study of asthma, emphysema, and other chronic obstructive pulmonary disease (COPD) which is the 3rd leading cause of death in the United States
- Neighborhoods and CVD - a study of how characteristics of neighborhoods, including safety, access to high quality food, and other social conditions, relate to cardiovascular disease risk factors and conditions.

Along with these large ancillary studies, there are dozens of smaller studies that are examining blood samples, CT scans, blood flow to the heart muscle, genetics, sex hormones, carotid artery disease detected by ultrasound, coronary artery wall thickness detected by MRI, fat deposits in different regions of the body, kidney function, diabetes, and other areas.

The MESA investigators and the NHLBI are extremely pleased that these studies have expanded the research value of MESA. They have allowed many different research areas to be studied at the same time - a great use of taxpayer dollars.

The results have been outstanding: MESA has now published over 300 scientific articles, about half of which have resulted from these ancillary studies.

In the Exam 5, you will again be asked if you will participate in ancillary studies, which will again include measures of lung function, air pollution, MRI of the heart, and other measures. The value of these ancillary studies is enormous, so I hope you will consider participating.



Diane Bild, MD, MPH MESA Project Officer

Air Pollution and Heart Disease - Why are we interested and why is MESA important?

By Joel Kaufman, MD, MPH

MESA participants know that we've been paying a lot of attention to understanding their exposure to air pollution. That's because a number of studies have recently pointed to an important relationship between air pollutants and the development of heart disease--especially atherosclerosis (A condition in which fatty material collects along the walls of arteries), which is being studied carefully in MESA.

A recent study from Southern California highlights the reason for this interest. The researchers put together information from five small studies in which volunteers had repeated measurements of the common carotid artery wall thickness (IMT). This is the same measurement we collect from you in MESA, when we take ultrasound images of the arteries in your neck. They then compared the change in artery wall thickness over time with estimates of air pollution where the people lived. The research was published in an online journal called PLoS One ("Ambient Air Pollution and the Progression of Atherosclerosis in Adults"; Künzli et al. 2010; 5(2):e9096.doi:10.1371). These researchers found a relationship between the estimated air pollution exposure and the amount that the artery wall thickened over time. That is, the arteries of people who lived in more polluted areas got thicker faster than those living in cleaner areas. This suggests that air pollution might contribute to the acceleration of the artery problems (atherosclerosis) that cause most heart attacks and strokes. In other words, this research hints that the more pollution that is in the air you breathe, the greater your risk of a heart attack or stroke. The MESA Air Pollution Study is looking at the same kinds of things, but the information we are collecting in "MESA Air" - including in Exam 5 - will give us a much better picture of the effects of air pollution. In the study just published, the volunteers were not as representative of the general population as MESA participants are, and were only followed for about 2 years. Also, the estimates of air pollution exposure were not nearly as sophisticated as the measurements in MESA Air.



In the MESA Air study, we are interested in the development of heart disease, just like the previous research group. But thanks to the time and cooperation of MESA participants, we are setting a new standard for research on the effects of the environment on health. After Exam 5, we will be able to assess the impacts of air pollution in the diverse setting of MESA, with participants from six states, several races and ethnic groups, and an unprecedented set of information on both health and environmental exposure. Also, MESA Air collected air pollution measurements at the homes of more than 700 participants all across the study cities. We also collected thousands of additional samples throughout your communities, and some of you even wore air monitors in backpacks for several weeks! All of this work should allow us to come up with the best possible understanding of the quality of the air you breathe.

Your participation in MESA and in MESA Air makes it possible for us to understand how the environment might influence heart disease, even if you never develop heart disease. When you come back for Exam 5, it will help us to know more than ever before about what levels of air pollution are safe, and what levels are too high.

Greetings from Columbia University

The MESA personnel are excited to start the MESA Exam 5 and bring all of their participants back.

It will be very nice to see all of you after a couple of years and some after the informative breakfast last summer. This will be the fifth time that MESA will ask you to return to its clinic, and as always MESA appreciates all your time and effort to make this exam possible. The MESA Study is adding important information about the natural history and evolution of cardiovascular disease, and also of other organs such the lungs.

Your participation is very important because we would like to repeat some of the measurements you have had since 2000-2002 when you started at MESA. This will help the scientific community to understand how the cardiovascular disease behaves. MESA is unique because it has a big diversity in demographics. More than 6,000 participants equally distributed among men and women and of different ethnic background is what constitutes the MESA cohort.

Besides repeating some of the components from the past such as anthropometry, seated blood pressure, electrocardiogram, ankle-brachial index, exam of the vision and retina, spirometry, other new procedures for either all or selected participants will be done such as the six-minute-walk, the cognitive assessment and the CT of your lungs.

It's a new year, a new exam, and new staff here at MESA.



The old faces you remember from previous exams alongside the new ones at MESA at Columbia University are ready and stronger than ever for Exam 5! We're excited and anxiously waiting to see you all again. We'd like to take this opportunity to remind you that your participation is very important to us and is greatly appreciated! In the upcoming months you will be receiving calls to schedule an appointment at a time and date that is convenient for you to come see us at the clinic once again.

Bryan Velez de Villa



health and is looking forward to learning more about heart conditions through MESA.

Bryan Velez de Villa, Research Assistant, was born and raised in Queens, NY and now lives with his best friend, his dog, Rocky! He is in the process of becoming a doctor and would like to specialize in emergency medicine. Bryan has worked in various research studies mainly dealing with environmental

Wayna Paulino, Research Assistant, is from the Dominican Republic. She has a medical degree from her country from the Autonomous University of Santo Domingo. She would love to one day become a research scientist.



Wayna Paulino

Wayna has also previously worked in the Smoking Cessation Program research study at Columbia University Medical Center. She is very sensitive to people's needs and loves to help in any way she can. She currently lives in New York City with her husband and her two children, her pride and joy.

Columbia University



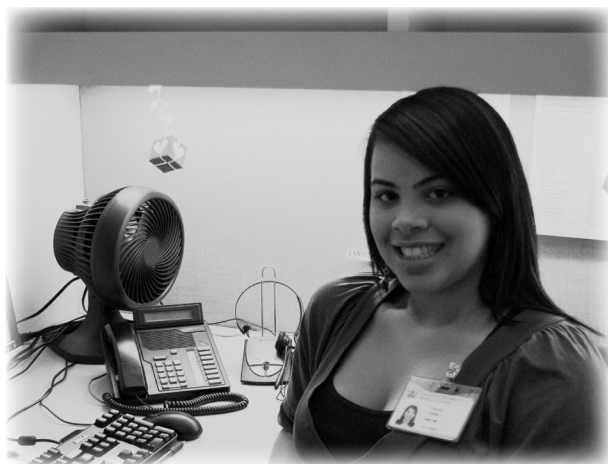
Rosa Lazarte

Rosa Lazarte, Research Assistant is a proud mom of two adorable kids. Rosa considers herself to be a good listener and a good friend. An eternal music lover of all kinds; she loves chocolate, ice cream and is a coffee addict. She is also a big fan of comedy and cartoon movies. A very affectionate person by nature, Rosa loves to hand out hugs at any opportunity.



Kristina Belich

Kristina Belich is one of our lab technicians. She has moved recently to New York from Laurel, Maryland where she studied and worked with non-human primates. Kristina is very interested in the field of public health and epidemiology and is also very much looking forward to learning and experiencing new things at MESA. Kristina really enjoys singing, yoga and of course, horseback riding.



Nathalie Gomez

Nathalie Gomez the Recruitment Coordinator, is from the community and bilingual in Spanish and English. Nathalie is dedicated and devoted to her work which has resulted in accomplishing a great deal. It is this very determination that will not allow her to rest until each task is completed. Her favorite part of the day, the morning, breakfast is a must because it unlocks a bundle of charm and a mind full of ideas. Her love of family and friends is so ideal since it's something she can't live without. She enjoys making anyone's day with a simple "Hey! How are you?" And a big contagious smile. Striving for perfection is always a must whether, it's fulfilling goals, matching the accessory with the outfit, Nathalie will be fierce when challenged but over all will leave footprints of herself everywhere, which highly consist of love for God & life and love for others.

Top left to right: Kristina Belich, Rosa Lazarte, Cecilia Castro, Wayna Paulino, Nathalie Gomez.



Bottom left to right: Bryan Velez de Villa, Vijay Nayudupali

Thank you in advance and hope to see you all very soon!

MESA - Eye Examination

By Tien Yin Wong, MD, PhD • Ronald Klein, MD, MPH • Barbara Klein, MD, MPH



At the MESA 2 examination, we had the opportunity to take a photograph of the back of your eyes (retina). For many years, scientists have been puzzled by the role of small blood vessels in the development of stroke and heart attack. Part of the problem is that it is difficult to evaluate these tiny blood vessels in the brain and heart. In the eyes the situation is different. We have the ability to directly examine the tiny blood vessels and measure changes occurring in them by taking a retinal photograph. Over the past few years, we have measured changes in the small blood vessels in the retina (Figure 1 shows a normal retina and Figure 2 shows one with narrowed arteries, and red and yellow spots due to leaky blood vessels). We have analyzed how these changes may be associated with heart disease, diabetes and high blood pressure. We have found, for example, that narrowed retinal arteries are related to higher blood pressure and stiffening of the large arteries arising from the heart.

In contrast, we have reported that people with diabetes are more likely to have dilated retinal veins. Furthermore, we have linked leaky eye blood vessels with higher calcium levels in the heart. Finally, we have also reported on the relationship of heart disease with another eye condition, age-related macular degeneration or AMD, which is a common cause of vision loss in America.

These investigations provide further clues to the early changes that may occur in heart disease, and the link between disease of the small blood vessels (eye) and larger arteries (heart). The MESA-Eye team is now investigating how eye changes may provide information on future risk of heart disease, stroke and other conditions.

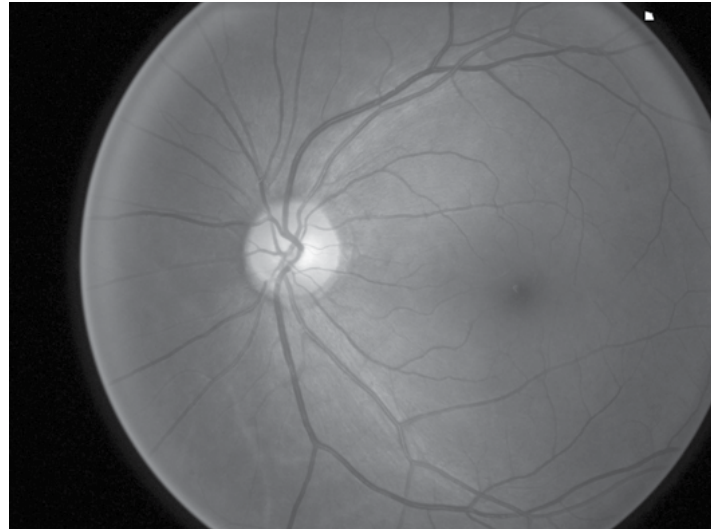


Figure 1. Normal Retinal Photograph

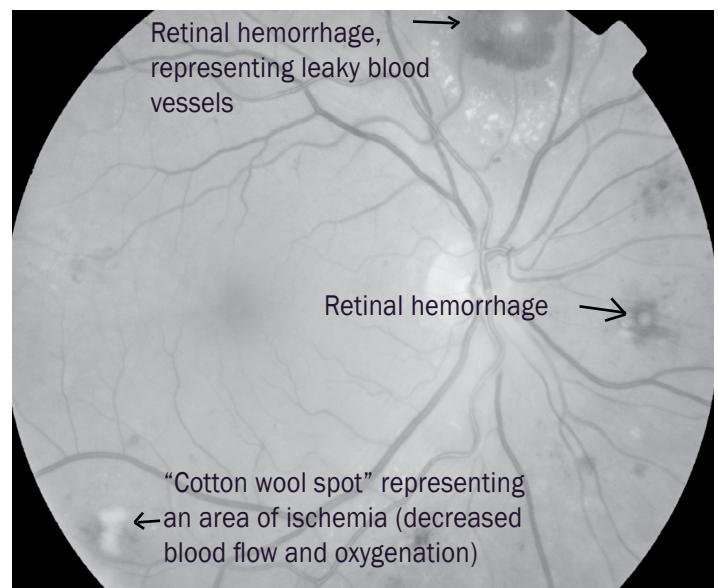


Figure 2. Abnormal Retinal Photograph.

MESA Elasticity Study

By David Jacobs, MD • Daniel Duprez, PhD

High blood pressure is a critical risk factor for heart attack, stroke, kidney disease and vascular disease. Blood pressure changes from moment to moment during each heart beat as the heart pumps the blood out into the arteries and the heart relaxes to be refilled. However, to decide to prescribe blood pressure lowering pills, physicians use only systolic blood pressure (the highest number) and diastolic blood pressure (the lowest number). Knowing the numbers between the systolic and diastolic blood pressures could make better diagnoses of risk.

In the MESA Elasticity ancillary study, we register the pulse at the artery of the wrist. We are getting 250 blood pressure numbers during each heart beat. This information will allow us to go beyond systolic and diastolic blood pressures. Specifically, we estimate the stiffness of the arteries. By participating in MESA Elasticity you contribute enormously to understanding blood pressure, aging of blood vessels, and effects on heart, brain, and kidneys.



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