

# The MESA

Newsletter of the Multi-Ethnic  
Study of Atherosclerosis

Summer 2011

No. 12

# 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 all of us at Wake Forest

## A Thank You to All Our MESA Participants

By, Gregory L. Burke, MD, MSc  
Principal Investigator, Wake Forest University MESA Field Center



On behalf of all the Wake Forest Multi-Ethnic Study of Atherosclerosis (MESA) team members I want to thank you for your ongoing participation in the MESA Study. Your participation has resulted in MESA becoming one of the top cardiovascular research studies in the world.

Using data collected from more than 6,000 MESA participants, including you, investigators have published over 300 scientific papers that focus on helping both scientists and practicing physicians better understand factors linked to atherosclerosis, also known as "hardening of the arteries."

One very valuable area of ongoing research focuses on using measurement of the silent or "subclinical" signs of atherosclerosis such as coronary (heart) artery calcium or carotid (neck) artery wall thickness to identify patients that need to be treated more (or less) aggressively. MESA scientists also continue to investigate a large number of other factors including dietary patterns, air pollution exposure, genetic factors and neighborhood environments to see how they are related to risk of heart disease and stroke.

While we have learned a great deal during the first ten years of the study, there are many more questions that MESA will be able to answer in the future. Cohort studies like MESA that follow a group of participants for many years to evaluate changes that occur in their health, actually become more valuable over time. MESA is already able to test new risk factors and now has a long enough follow-up period to look for differences across gender (men vs. women), age (middle age vs. older adults) and across the four different race-ethnic groups in the study.

The entire MESA team both locally in the Triad and in collaboration with our scientific colleagues across the country is committed to making a huge contribution to understanding why people develop cardiovascular disease.

Perhaps more importantly we seek to understand how to better prevent heart disease and stroke in our children and grandchildren.

This work is only possible through your generous gift of time and patience as you continue to participate in the MESA examinations and phone calls. For all that you contribute to the study we are extremely grateful.

Thanks again!!!

### Sesame Snap Peas with Carrots & Peppers

4 servings, 3/4 cup each

Preparation time: 20 minutes

#### Ingredients

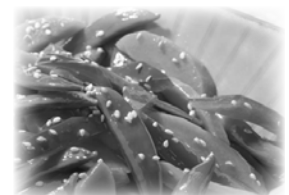
- 8 ounces sugar snap peas, trimmed (about 2 cups)
- 1 small red bell pepper, cut into strips (about 1 cup)
- 1 large carrot, peeled and thinly sliced (about 1 cup)
- 1 tablespoon reduced-sodium soy sauce
- 1 tablespoon toasted sesame oil
- 1 teaspoon sesame seeds
- Freshly ground pepper, to taste

#### Preparation

Place peas, bell pepper and carrot in a steamer basket over 2 inches of boiling water in a saucepan. Cover and steam, stirring once, until crisp-tender, 5 to 7 minutes. Toss with soy sauce, oil, sesame seeds and pepper.

#### Nutrition

Per serving: 82 calories;  
4 g fat (1 g sat, 2 g mono);  
0 mg cholesterol;  
9 g carbohydrates;  
2 g protein;  
3 g fiber;  
168 mg sodium;  
219 mg potassium.





## The Importance of Health Events

By Harriet Weiler • Events Coordinator



In addition to the clinic visits and follow-up telephone calls to keep MESA updated on your health journey, there is another very important section of the study - EVENTS. Your events consist of physician visits as well as hospital admissions and emergency room visits.

MESA collects and evaluates reports of these events and uses the resulting data as another piece of your health "puzzle." Collection and processing of these records makes up a major part of the work that our MESA staff does every day. Your Events staff includes Harriet Weiler and Thania Fagan. Call us with any questions or reports of hospital visits. The MESA number is 336-716-9721. In the meantime we hope you will enjoy good health this year and always.

Reviewing and analyzing the medical records allows researchers to learn how heart and other diseases progress and gives MESA the opportunity to have a positive influence on health care.

At your next clinic visit you will be asked to sign a consent form to allow MESA to request medical records when needed. The same rules that protect your privacy may occasionally deter MESA from collecting medical records for research. Sometimes in out-of-the-area small hospitals, there are consent issues due to different understandings of HIPAA and privacy rules. If this occurs we may ask you to sign a hospital specific consent form.

Remind your family and contacts how important your medical records are for MESA. In case you are not able to give information about yourself, your contacts can feel free to share information about your health with the study staff.

### **Four New Staff Members Join the MESA Team**

By Cathy Nunn • Study Coordinator

I am delighted to introduce to you four new staff members who have joined us for the fifth MESA exam. They are Thania Del Valle-Fagan, Doris Richmond, Vanessa Richardson and Dee Lanning.

Thania is originally from Puerto Rico and is a physician by training. She has been with our department for several years and most recently worked with the GEM (Ginkgo Evaluation of Memory) study. She will spend part of her time working with Harriet Weiler on documentation of health events, but will also serve as a clinic staff member. When not at work Thania's young family and pets keep her very busy.



**Doris**

**Thania**

Doris came to us from the Burlington, NC area. In the past she owned and operated her own day care facility, but most recently she has completed her college degree, and in the process spent time working in Senator Richard Burr's Washington, D.C. office. As the MESA participant navigator she is responsible for either guiding you to your CT, ultrasound and MRI appointments or ensuring that you have adequate directions to get there on your own. When not at work Doris enjoys spending time with her family, especially her grandchildren.



**Vanessa**

**Dee**

Dee became a part of the MESA staff in February. She has worked at this medical center for a number of years and has had quite a bit of experience with research studies in the past. She will also be a part of the clinic staff and will be found most days helping conduct Exam 5 visits. When not at work much of Dee's time is devoted to her teenage daughter.

Vanessa just started working with us at the end of January. Her background is in science and education, and she is also a certified nursing assistant (CNA). She will be working as part of the clinic staff helping to conduct Exam 5 visits. When not working on MESA, Vanessa stays busy with her family or working towards her master's degree in education.

Thania, Doris, Vanessa and Dee are all looking forward to meeting you!

## 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.

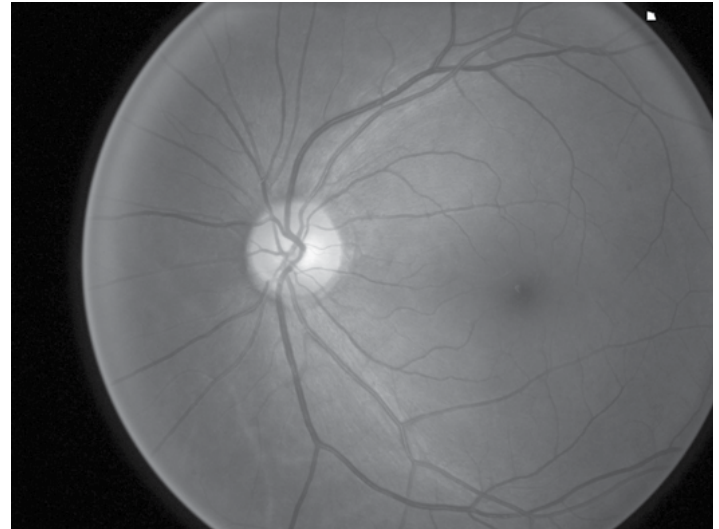


Figure 1. Normal Retinal Photograph

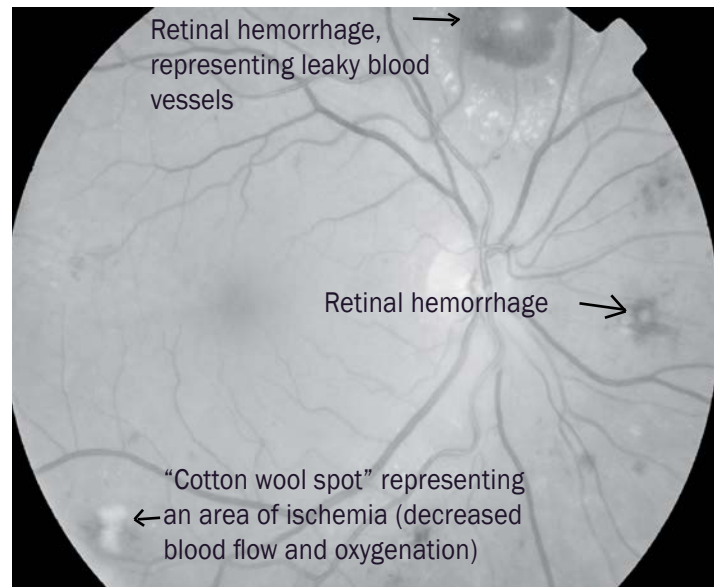


Figure 2. Abnormal Retinal Photograph.

## 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.



**Wake Forest:**

*Catherine Nunn, RN - (336) -716-6650*

**Columbia:**

*Cecilia Castro - (212) 305-9932*

**Johns Hopkins:**

*Imene Benayache  
(410) 614-2488*

**UCLA:**

*Anthony Sosa or Sameh Tadros  
(626) 979-4920*

**Minnesota:**

*Christine Dwight - (612) 625-8560*

**Northwestern:**

*Grace Ho - (312) 503-3298*



The MESA Messenger is produced by the Multi-Ethnic Study of Atherosclerosis (MESA).  
MESA is funded by the National Heart, Lung and Blood Institute (NHLBI).

