SLEEP COHORT - CARDIOVASCULAR STUDY
CONSENT FORM TO PARTICIPATE IN RESEARCH

Invitation:
You are invited to participate in some additional tests in the Sleep Cohort Study to look at whether sleep apnea has an effect on cardiovascular disease. Four of the tests are new but the other tests have been part of the overnight sleep study. In the new tests, we will use "ultrasound" to reflect the blood flow in your forearm and temple area of your head, measure the thickness of the carotid artery wall, and will photograph your eyes. We would also like to take a blood sample, take your height, weight, waist and hip measures, do a 10-second electrocardiogram, a brief physical exam and have you complete a questionnaire on physical activity. We expect the tests to take about 8 hours.

The tests will all be done in the area of the Sleep Cohort Study Laboratory at the General Clinical Research Center or in another part of the UW hospital.

Will I be paid for participating?
We will offer you $175.00 to compensate in part for your time and effort in participating.

What will I be asked to do for this research study?

The tests, and any potential risks, are explained below. Each test is done at no cost to you.

1. Forearm Blood Flow. In the first test, we will measure the change in blood flow with Doppler ultrasound imaging in your forearm before and after the blood flow is stopped by inflating a blood pressure cuff on your upper arm. For this, after a 10-minute rest, we will hold the Doppler probe (about the size of a pencil) on your skin over the artery in your forearm and take a reading. We will then inflate the blood pressure cuff to a pressure of 250 mm Hg (approximately the pressure to which a cuff is inflated to take your normal blood pressure) for 4 ½ minutes, and then repeat the Doppler measure. The cuff is then released, and another Doppler measure will be made. The measurement of forearm blood flow may be uncomfortable during the 4.5 minutes of blood pressure cuff inflation; this may cause some pain or tingling in the arm and fingers.

2. Blood flow in temple area of forehead. In the second test, we will measure blood flow in an artery in the area of your temple (forehead) with a similar Doppler probe while you breathe air that contains an increased level of carbon dioxide (CO_2) and an enriched level of oxygen for about 3 minutes. This test will show how the artery reacts to the stress of increased CO_2. CO_2 is a colorless and odorless gas that is normally produced by the cells in your body. The levels of CO_2 will be similar to the increase in CO_2 that occurs during normal sleep. For this, we will have you first breathe through a mouthpiece so that the rate and depth of breathing can be measured. A nose clip will be worn so that all breathing occurs through the mouth. You will wear a headband that maintains the Doppler probe in contact with your head at the temple area, slightly above and in front of your ear. The probe emits sound waves that will then bounce off blood cells as they pass through an artery, and are returned to the probe. A colorless gel will be applied to the probe at the point at which it contacts the skin. The purpose of the gel is to help transmit the sound waves. Electrodes will be pasted on your chest to measure heart rate.

An instrument will be placed on your finger to measure your blood pressure. After a baseline period of breathing ordinary room air though the mouthpiece for 2-3 minutes, you will begin to breathe oxygen-enriched air from a breathing bag. A filter attached to the mouthpiece will make sure the air you breathe is clean and humidified. The air you exhale will be returned to the bag, so that over time the level of CO_2 in the bag and in your body will rise. You will continue to breathe from the bag for about 3 more minutes.

CO_2 will increase your breathing and may cause a temporary sensation of breathlessness similar to what you feel during mild exercise. The CO_2 could also cause lightheadedness, dizziness, flushing and headache. CO_2 will cause a temporary increase in your heart rate and blood pressure similar to what you would experience during slow walking. Because the breathing bag is filled with a higher than normal level of oxygen, you will not at any time, be short of oxygen. The stress and risk of breathing CO_2 is similar to slow walking. You should notify the investigators immediately if any uncomfortable sensations arise. In this case, the tests will be stopped and CO_2 levels will return to normal within a few breaths.

Before this second study, a physician will review your health history questionnaire.

3. Carotid Ultrasound Image. This procedure involves simply passing the Doppler probe over the surface of the neck area after a colorless gel to improve contact with the skin has been applied. The images will allow an estimate of the thickness of the carotid artery walls.

4. Eye Photographs. In this test, we will take a close-up photograph of each of your eyes to see if there is any narrowing in the small blood vessels. We will not use any drops to dilate the pupils, but will ask you to sit in a dark room for 5 minutes to enlarge your pupils. Then, with your head in a holder similar to those used for having an eye exam, 2 photographs of one eye and 3 of the other eye, for a total of 5 photographs, will be taken.

5. Blood Sample. We will take one 5 ml blood sample (i.e., about 1 teaspoon of blood) from the vein in your forearm (i.e., standard blood draw procedure). The needle-stick will be done under sterile conditions by a trained nurse, but it is possible that momentary pain, or some bruising or infection could occur. This sample will be used for routine blood tests including serum lipids, insulin and other chemicals.

In addition, we are asking you for your interest in participating in separate sub-study that involves the collection of an additional 15 ml of blood (about one tablespoon of blood) that will be frozen and stored for future testing. This additional blood sample will not require another needle-stick. Because there may be specific and yet unknown biochemical or genetic factors (DNA markers) for certain types of sleep and cardiovascular disorders, in future studies we may test the blood of people with these disorders and compare it to the blood of people without the disorder.

Participation in this sub-study is entirely optional; if you decline, this will not affect your participation in the rest of the study. If you do agree to participate in this additional blood study, a total of two 10 ml samples (for a total of a little over a tablespoon of blood) will be collected during the same needle-stick procedure described above. Your personal identification number (study number) will be the only identification on the sample. Since this is only a research project and will not be helpful in your medical care, we will not be reporting results from these future studies to you or any health care providers. The research may lead to important health care information in the distant future but the research is in very early stages now.

Even though we will be careful to not tell anyone the results of the future testing on your blood sample, there is a very small chance this information could accidentally become known. Disclosing genetic findings could harm individuals with respect to job security, insurance, and psychological burden among other things. However, your personal identification will be removed from your specimen with only the study coordinator having access to the code that could connect your personal identity to the specimen. These precautions are taken to ensure that there is nearly no risk of disclosure.

It is possible that we or other investigators not affiliated with the current study might be interested in the future in using your stored samples to study other disorders not directly related to the original objectives of this study (sleep and cardiovascular disorders). Before we do this, however, we would seek and obtain permission from our Institutional Review Board; in addition, you have the option to prevent us from using your samples for these other purposes (see below).

Lastly, even if you agree to participate in this substudy today, you may withdraw at any time in the future by contacting one either Dr. Nieto or Dr. Young and having your samples destroyed.

Let us know whether Drs. Nieto, Young may use your blood or DNA for other research by putting your initials by one of the following choices:

_____ We may use your blood or DNA as we wish, without any further restrictions.

_____We may use your blood or DNA only for future research related to sleep and cardiovascular disorders and conducted by investigators associated with this study.

_____ We may not use your blood or DNA for any future research or share it with other researchers.

6. Electrocardiogram (ECG). While lying down, electrodes will be taped to your chest area and the signals will be recorded for 10 minutes to assess your heart rhythm. There may be some minor, temporary irritation where the electrodes are affixed.

7. Measurements. We will take your weight and height, measure your waist and hip girth, and measure 3 skin fold thicknesses.

8. Urine collection. A container has been mailed to you to collect your urine. You have been asked to collect your urine beginning at 8:00 PM the night prior to your study. The collection will continue throughout the day during your study.

9. Seated Blood Pressure. Two readings of blood pressure using a standard arm cuff will be made. In addition we will obtain measures by doppler at your arm and ankle.

10. Physical activity. Two short questionnaires on how much you exercise will be given to complete.

11. **Health history and lifestyle questionnaires**. These include questions about your lifestyle, medical history, mood, and quality of life .

What are the benefits of participating?
You will be notified of any test results that are abnormal; we will also send a copy to your physician if you wish. Keep in mind, however, that this is not a clinical research study and the test results from this study cannot be used for diagnosis and treatment of cardiovascular disorders. If you want to know for certain that you have a health problem, you would need to see your physician and not rely on the study results.

How will my confidentiality be protected?
All data is identified by code number only. Your file will be completely confidential and will not be shared with anyone.

What if I change my mind?
You are free to withdraw at any time and there is no obligation to take part in any further studies. We encourage you to ask any questions you may have before you decide.

What if I am injured during this study?
In the event that you are physically injured as a result of participating in the research, emergency care will be available. You will, however, be responsible for the charges for the emergency care. There is no commitment to provide any compensation for research-related injury. You should realize, however, that you have not released this institution from liability for negligence. Please contact Kathryn Pluff at 265-3045 if you are injured or for further information. If you have questions about the rights of research subjects, please contact the University of Wisconsin Hospital & Clinics patient relations representative at 608-263-8009.

I would like to participate in the sleep study research project described above. My signature indicates that I have read the information in this consent form and have received a copy.

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Signature Date

Investigator in charge: Javier Nieto, M.D., Ph.D. (265-5242)

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