



Strong Heart Study Newsletter

Investigating Cardiovascular Disease in American Indians

Spring 2015

An Important Letter to SHS Participants Regarding Cancer Research

Dear Strong Heart Study (SHS) Participant:

We are distributing this special newsletter to update you about the SHS research studies ongoing in your community, particularly SHS Phase VI.

Since 1988, SHS has been working hard to better understand the reasons people develop diseases of the heart and blood vessels (cardiovascular disease or "CVD"), as well as how some conditions, like diabetes or kidney disease, increase the risk of heart disease. Our name includes the word "heart" since that has been our main focus; but the SHS has investigated other conditions, some of them much less directly related to CVD, like diabetic nerve disorders. The consents first used in Phase I were quite general, which was typical for that period of time and gave permission to use "...the results of the examination and any information in my medical record to be used for statistical purposes to further medical knowledge." The samples we have collected and saved from SHS participants continue to allow new discoveries that could improve your health, possibly including cancer prevention and control.

In Phase VI, the SHS will begin studying cancer in the American Indian population. Many things may increase the risk of developing cancer, including diabetes, smoking, or exposure to toxic metals (like arsenic). These possible causes of cancer affect many SHS participants and may contribute to their risk for CVD. Therefore, we have expanded our study of these diseases.

Some of the changes and things you should know about The SHS Phase VI are:

- In Phase VI of the SHS we have expanded our research study to include liver disease, cancer and inflammation in the body along with continuing to study diseases of the heart, lung, and blood vessels;
- SHS investigators will be asking each study participant to sign a new consent document for Phase VI which obtains a person's permission to be in the study and informs them of their rights as a study participant. Participants should always read the consent document very carefully before they sign;
- The SHS investigators will be asking each study participant to sign a new form which authorizes them to use health information from the participant's Indian Health Service (IHS) and non-IHS hospital and clinic medical record for research purposes;
- SHS investigators also have exam data, blood, DNA (genetic material) and urine samples that participants have given them in the past; they will be continuing to use these materials for the study of heart, lung, liver, blood vessel, inflammation, and cancer diseases in Phase VI of the SHS. Participant's DNA, blood and other samples will be saved and studied for many years to come and possibly indefinitely. Sometimes these samples are stored and studied by researchers in other states and countries;
- When filling out the consent document, participants have the right to choose to not to allow specimens collected in previous phases to be used and request to have their specimens and data collected in previous phases to be discarded;
- Research studies involve only individuals who choose to participate, and participants are free to choose not to participate or stop participating at any time without any loss of benefits or rights to which they are otherwise entitled;

(Continued on page 2)

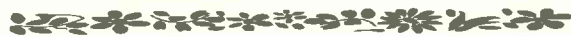
(Continued from page 1)

The SHS always has been, and always will be careful to comply with laws and ethical standards related to protection of study participants; and also to work with the SHS communities to make sure that we are researching health issues that you see as important.

As always, we would like to hear from you about the health problems most important to you, your families, and your communities, so that we may work to help solve them. If you have any questions, please feel free to contact your local SHS investigators or the Principal Investigator, Lyle Best at 605-964-3419, Barbara Howard at 602-277-0488 or Elisa Lee at 405-271-3090.

Sincerely,

The SHS team



ENVIRONMENT AND CANCER: FINDINGS FROM THE STRONG HEART STUDY

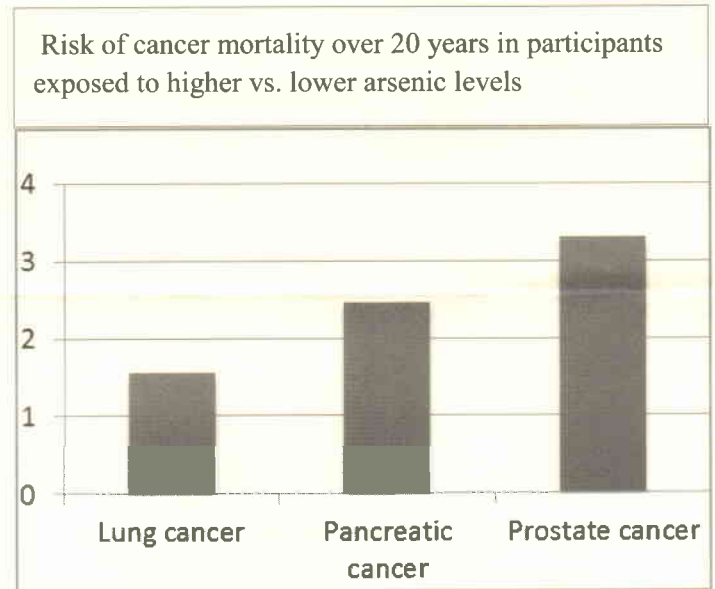
Few studies have evaluated cancer in American Indian communities. As a result, little is known about the burden of cancer and about the main risk factors for cancer in American Indian communities. Exposure to metals such as arsenic and cadmium from drinking water and foods has been shown to be a risk factor for heart disease, and we have investigated the role of metals in the development of heart disease in the Strong Heart Study. But these metals can also be carcinogens. Arsenic minerals are found in groundwater in some parts of the United States, including the Southwest and the Midwest. Arsenic can also be found in some foods such as rice, grains, and some juices (apple juice). Cadmium is found primarily in cigarette smoke and also in some foods (offal, shellfish, and some vegetables). Both arsenic and cadmium are classified as carcinogens by the World Health Organization and the US Environmental Protection Agency. The most common way to determine how much exposure to metals a person has had is to measure the concentrations of these metals in urine samples. In our study of heart disease risk, we previously detected relatively high levels of arsenic and cadmium in the Strong Heart Study. We now propose to investigate if arsenic and cadmium were associated with higher risk of death from cancer in the Strong Heart Study. This information could help us identify preventable risk factors for cancer and guide public health intervention to prevent exposure to metals in the communities.

To conduct the study, we used the rich information that is available in the Strong Heart Study. We included data on known risk factors for cancer such as smoking, data on the levels of metals in the urine from 1989-1991, and data on the cause of death recorded in the death certificates. We identified more than 380 persons who died of cancer between the first Strong Heart Study visit in 1989-1991 and 2008. For individuals who had died of cancer, we evaluated different types of cancer. Overall, arsenic was not associated with increased risk of death from cancer. However, of those Strong Heart Study participants who died from cancer, we found that those with higher arsenic levels were more likely to have died from lung cancer, prostate cancer and pancreatic cancers.

The bar graph shows that the risk of dying from prostate cancer is more than 3 times higher in participants exposed to higher arsenic levels than in those exposed to lower arsenic levels. They also had lower risk of lymphatic and blood cell cancers. For other cancers such as breast cancer, colon and rectum cancer, and stomach cancer, there was no association with arsenic.

Cadmium was associated with higher overall risk of death from cancer. There was also a higher risk of death from lung cancer and pancreatic cancer, even after adjusting for smoking. Because cigarettes contain cadmium, we conducted an analysis to estimate the % of lung cancer deaths that could be attributed to cadmium exposure. This number was estimated to be 9%.

We concluded that low-to-moderate arsenic and cadmium exposures were related to a higher risk of death for certain cancers, especially lung cancer. Preventive measures that decrease arsenic and cadmium exposure in the communities could contribute to reducing the burden of cancer.



How Do We Treat Your Specimens?

Since the very beginning of the Strong Heart Study, all samples of blood and urine have been cared for by our research staff at the field centers and in our centralized storage and lab facilities according to strict and rigorous procedures. These procedures make sure that the samples are labeled and tracked accurately, handled carefully so that any results from laboratory measurements will be accurate, and are stored safely and securely so that they will be available for analysis later when more powerful laboratory methods are developed. Our procedures also make sure that the samples are only used for projects that were agreed to by the participants and that the Strong Heart Study scientists think might give the most important answers to improve health, and that the privacy of participants is protected at every step.

All of the samples are kept frozen in special freezers at -80°C (112 degrees below zero in our usual Fahrenheit temperature scale; for comparison, usual food freezers are set to about 4 degrees below zero). For the past 26 years, blood and urine samples have been stored at MedStar Health Research Institute, in Washington DC and in Maryland. Since 1998, DNA samples have been housed at Texas Biomedical Research Institute in San Antonio, Texas. Samples are stored in specially-designed facilities in which the freezers are locked, the rooms are locked and can only be accessed by Strong Heart personnel. Each freezer is hooked up to two separate alarm systems to make sure the temperature never goes up to endanger the samples inside. The alarms are set to alert three individuals any time of the day or night if there is any problem. In addition, each freezer is hooked up to an

STRONG HEART STUDY COORDINATING CENTER

University of Oklahoma Health Sciences Center

Center for American Indian Health Research

College of Public Health

P.O. Box 26901

Oklahoma City, OK 73126-0901

Non-profit Organization

U.S. Postage

PAID

Oklahoma City, Oklahoma

Permit No. 220

an emergency generator in case of power failures and we keep extra freezers standing by in case any freezer develops mechanical problems. Each sample is kept in a special tube, labeled with coded numbers to tell us what kind of sample is inside (for example, serum or urine), the SHS ID number (no other identifiable information) of the participant who provided the sample, when it was collected, and which Field center it came from. Only the Strong Heart Study Coordinating Center in Oklahoma City, Oklahoma or the Field site that collected your blood and urine can link the code on the tube with your actual identity; nobody in the lab has the key to the code.

Samples can only be taken out of storage for lab tests with written permission from the Strong Heart Study steering committee. If samples will be measured at another lab, the scientists from that lab need to agree to all of the procedures and safeguards of the Strong Heart Study, can only use them for the specific purpose that is authorized, and must return all results and any leftover sample to us for safekeeping. If samples are used in any ancillary study related to the Strong Heart Study, the scientists need to get permission from the Strong Heart steering committee and their project needs to be approved by the IRB and also by appropriate tribal authorities to be sure that it agrees with your original consent. Only then will samples be released for study, and then only with all of the safeguards described above.

Together, these procedures do all that is humanly possible to make sure that your samples, which are still being used to answer important questions to develop new approaches to preventing and treating cardiovascular disease and its risk factors in American Indians, are protected and used only as permitted.