



STRONG HEART STUDY

INVESTIGATING CARDIOVASCULAR DISEASE
IN AMERICAN INDIANS

newsletter

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SHS Phase V begins re-examinations in May

SHS Phase V re-examinations will begin in May for participants who were previously examined in Phase IV and/or the Phase III Strong Heart Family Study (SHFS). Since the rates of diabetes, obesity, and other risk factors in younger family members are high, all previous SHFS participants will be re-examined so that changes in these cardiovascular risk factors can be analyzed. We will also be examining how different genes may play a role in these risk factors. A very promising route for finding strategies to prevent or treat CVD and diabetes is understanding and identifying genes that we suspect are involved with these diseases.

Since our Phase V examination is limited to only these participants, no new recruits will be accepted into the study. Although we will not be re-examining the original SHS cohort, we will continue with follow-up by checking medical records for possible cardio-

vascular events, such as heart attacks or strokes, as well as following up on causes of death. The original SHS cohort provides almost 20 years of repeated observation. This continued follow-up allows the SHS investigators to study the development and progression of heart disease over time in a population with especially high rates of diabetes. Results will not just be applicable to our American Indian communities, but to diabetic populations throughout the world. A current example of this can be found on page 2 of this newsletter in the article about recent SHS findings on albuminuria. Each time SHS investigators find something new about the process of disease, something new is also understood about the maintenance of good health. Our findings are ultimately due to the SHS participants, who have supported and continue to support this research. **SHS**

Phase V training...a productive and fun week in OKC! March 14-16



Above: Jason G. Umans, MD, of the MedStar Research Institute, demonstrates to the field staff the standard procedures for blood sample processing, sample storage, and sample shipping. Practicing laboratory skills, left to right are: Arie Shiroma, Juanita White Eyes, Tanya Molina, Stephanie Gomez, and Nanette Taho.

Three days of intensive hands-on Phase V training and certification for the SHS field staff were hosted by the SHS Coordinating Center at the University of Oklahoma Health Sciences Center in Oklahoma City. The principal investigators and study coordinators took on dual roles as trainers and participants, volunteering for everything from acting as an interviewee to having blood draws and ECGs. Experts outside of the SHS also participated in the training sessions, for example, HIPAA and consent

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Left: Tom Welty, MD, retired IHS doctor and SHS investigator, supervises as Wendy Lawrence demonstrates proper administration of the ECG exam. Lyle Best, MD, Principal Investigator for the North/South Dakota field center, volunteers in the role of the patient, while Laurie Bickel and Marie Gross observe.

Recent SHS findings have impact on global healthcare research

SHS investigators have published 143 articles in peer-reviewed medical journals, allowing other scientists, medical policy makers, health care workers, community members, and individuals to evaluate our findings. SHS dissemination efforts are ongoing and manuscripts on new research are continually submitted. The *British Journal of Diabetes & Vascular Disease* (2006: 5[6], p334) recently published a SHS research article authored by Dr. Jiaqiong (Susan) Xu (of the SHS Coordinating Center) and her colleagues, whose analysis found a relationship between albuminuria (leakage of protein from the kidneys into the urine) and cardiovascular (blood vessel and heart related) deaths in SHS participants. The journal wrote an editorial following Dr. Xu's article, praising her analysis and calling for a large dedicated interventional trial, looking at how controlling albuminuria might help to prevent cardiovascular disease or even death. This is an example of how SHS research is translated into treatment interventions to benefit SHS participants as well as those around the world.

Although albuminuria has previously been found to be related to cardiovascular disease in other populations, it has never been found as strongly related as it has in the SHS. No one is completely sure why albuminuria is such a strong indicator of potential heart disease. Some researchers feel that when there is blood vessel injury from hardening of the arteries (atherosclerosis), tiny blood vessels, such as those of the kidney, are among the first to be affected. When the blood vessels of the kidney are injured, small amounts of protein leak out into the urine. Other scientists think that albuminuria may just be one of the very first signs of diabetes, since diabetic patients are more likely to develop albuminuria if their diabetes is present long enough. This makes sense since high blood sugar is known to slowly erode the blood vessels. *This is why it is so important to keep your blood sugar as close to normal as possible.*

Previous investigations from SHS have shown this important relationship between albuminuria and cardiovascular disease, but they had often counted *all cardiovascular "events"* (like heart attacks and stroke, as well as deaths from heart disease). This study looked at *deaths only* to determine if albuminuria predicted future deaths from heart and blood vessel diseases. What SHS researchers found was that deaths, even due to non-cardiovascular reasons, were much more likely in people who had albuminuria, than in those without it. Even when statistical methods were used to "adjust" for the fact that many of the people with albuminuria also had diabetes and other risk factors for death, the presence of albuminuria was still a very important risk factor for death.

At first glance, this may seem discouraging in that it tells of the likelihood of death, but it is actually an **important advantage for doctors and patients** to find out if they



Micro albumin uria



... a small amount ... of a protein ... in the urine

When the kidneys begin to fail, higher than normal levels of protein begin to show up in the urine. **Microalbuminuria** is when a very small amount of protein (30-299 mg/g) has passed through the kidneys into the urine. The SHS has found that even *micro* amounts of protein found in the urine indicate the blood vessels of the kidneys have begun to break down.

Microalbuminuria, if left unchecked, can progress to **macroalbuminuria** (larger amounts of protein in the urine, greater than 300 mg/g), which indicates progression of kidney disease to kidney failure. However, the good news is there are measures you can take to protect your kidney health:

- If diabetic, *monitor* your blood sugar and *maintain* it close to "normal."
- If your doctor has prescribed medication to lower your albuminuria, make sure you are taking this medication in the prescribed manner and regularly.
- Have urinary tract infections treated promptly.
- If a smoker, stop smoking immediately (the tiny blood vessels in the kidney and other parts of the body, such as the eyes, are battered by smoking!)
- If diabetic, have your urine tested yearly for albuminuria.

have albuminuria so that they can *intervene* and do something to *lower the risk*. There are a number of medications that seem to help prevent or delay serious complications when albuminuria is present. That is why standards of care for those with diabetes (and some other) patients are now calling for regular testing for microalbuminuria (see box above). The key to preventing kidney damage is early detection of microalbuminuria and careful control of glucose through diet. Remember, high blood sugar levels are known to erode blood vessels. The good news is that if you keep your blood sugar levels close to normal, this sort of erosion will be lessened. For more ways to combat albuminuria, read the information in the box above.

Dr. Xu was also recently awarded the Sandra A. Daugherty Award for Excellence in Cardiovascular Disease Epidemiology for further investigation of this important topic in health, showing that the clinical cut point for microalbuminuria should be lowered to reflect the degree of damaged blood vessels found even below these very lower levels. **SHS**

Phase V training session in OKC...

(Continued from bottom of page 1)

specialist, Angela Silverman, RN of the MedStar Research Institute, Hyattsville, MD presented a program on human protections in research; nutritional expert Dr. Jean Norris of Block Dietary Data Systems, Berkley, CA provided a hands-on session regarding dietary documentation and the Food Frequency Questionnaire; exercise physiologist Dr. Andrea Kriska (by speakerphone) and her assistant Ms. Kristi Storti, MS, MPH, University of Pittsburgh, PA instructed the staff on measurement procedures of physical activity and proper use of the pedometer; and Dr. Jan Beals, Director of Research of Psychiatry for the National Center for American Indian and Alaska Native Mental Health Research of the University of Colorado presented a session on psychosocial issues and forms.

Dr. Jean MacCluer, Genetics specialist and principal investigator (PI) of the SHS genetics center, presented an introduction to the Strong Heart Family Study, in which genes influencing heart disease and its risk factors are examined. Dr. Lyle Best, PI for the North & South Dakota center, presented background information on genes and genetic testing. Dr. Elisa T. Lee, PI of the Oklahoma center presented guidelines for interviewers and afterwards the Phase V interviewers attended a practice session in the laboratory to hone their skills. Dr. Jeunliang Yeh instructed staff on proper data collection and transmittal procedures and conducted a hands-on training session on computers in the Center for American Indian Health Research, which was assisted by Dr. Fawn Yeh, Yiming Wang, SHS Web-

master, Jay Kunf, IT specialist from the Dakota center, and Martha Stoddart and Debra Gates, who developed the SHS data program and data entry forms. Dr. Linda Cowan, Marie Gross, Karen Kimbley, and Mary Rybka trained in surveillance procedures. Drs. Thomas Welty, Tauqeer Ali, Marie Russell, and Lyle Best, and Marcia O'Leary and Callen Hull presented and trained staff in laboratory procedures. Bert Lewis, tribal liaison of the SHS Arizona center provided a training session on recruitment and cultural concerns.

Dr. Ali unveiled the brand new SHS examination vans (two, purchased by the Arizona and Oklahoma centers), built by the leading manufacturer of medical vans, Winnebago (see pictures below). Each van has three exam areas in which to do physical exams, ultrasound exams, echocardiography, and blood draw. Each is equipped with a power wheelchair lift, power levelers, 2 air conditioning units, and a furnace, all of which will make the examinations more comfortable for both investigators and participants.

Our thanks to all of the SHS staff as well as the presenters and trainers for making the Phase V training session such a success! **SHS**



Transforming Findings into Practical Health Interventions

Since the onset of the Strong Heart Study (SHS), investigators have worked to make sure that the information learned from this study is passed on to the American Indian communities in which the study is conducted, as well as to their health care providers. This process is referred to as dissemination of research findings. This past December, the investigators of the SHS shared with the Gila River, Salt River, and Ak Chin community health leaders and health care providers concrete ways the study findings can be used to improve health. The conference was held at the new Gila River Dialysis Center in Sacaton, Arizona. Health related topics were discussed (top right of the next column) and moderated by Dr. Barbara Howard, the principal investigator for the Arizona field center of the SHS. Each presenter showed some data and related the findings to health

care settings. During discussions following each presentation, issues faced by health care officials and providers were discussed.

Heart Disease, *Dr. Devereux*
Dyslipidemia, *Dr. J Howard*
Hypertension, *Dr. Best*
Renal Disease, *Dr. Rhoades*
Metabolic Syndrome, *Dr. Russell*
Diabetes, *Drs. Lee & Wilson*
Obesity, *Dr. Welty*

It is our hope that by providing the information in an interactive environment with tribal/community leaders and health care leaders, that we have helped to facilitate improving the health of the Gila River, Salt River, and Ak Chin Communities.

Similar sessions are planned in the future for the Oklahoma and Dakota sites. Also of interest, the SHS will present findings at a national health dissemination conference in August (see article on page 4). **SHS**

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SAVE-THE-DATE! AUGUST 21-24, 2006

**Reducing Health Disparities in American Indians and Alaska Natives
by Preventing Diabetes Throughout the Life Cycle**

(... at the Cox Convention Center in Oklahoma City, OK)

The Oklahoma Native American EXPORT Center is excited to be hosting this upcoming national diabetes prevention conference with the Indian Health Service Oklahoma City Area Office to provide a forum to exchange information about diabetes and diabetes complications prevention efforts, as well as to explore innovative new prevention strategies.

Many experts from across the nation will present and participate in this conference. Strong Heart Study (SHS) investigators will present their research finding in 3 hours of breakout sessions on epidemiology (the ways in which diseases are showing up in a community) and prevention of diabetes and cardiovascular disease. Some of the SHS investigators who will be presenting are Drs. Lyle Best, W. J. Howard, Richard Devereux, James Galloway, Barbara Howard, and Helaine Resnick. The SHS is very pleased that the conference agenda also includes the important topic of health issues facing American Indian youth. This is so important because the preliminary Strong Heart Family Study Phase IV findings show alarming rates of obesity and diabetes in young family members. However, the good news is that changing dietary and exercise habits has proven to successfully

lower obesity and diabetes. This conference will address these issues in breakout sessions directed at school and community physical activity, as well as school food and drink options. The conference also focuses on empowerment; tribal perspectives play a prominent role in this conference and are incorporated throughout the program. Dr. Everett Rhoades will give a presentation of community capacity building and prevention of diabetes. A plenary session, presented by the Chief of the Choctaw Nation, Gregory Pyle, is followed by a panel discussion on empowerment, which is moderated by H. Sally Smith.

The SHS investigators are grateful to have this opportunity to share the SHS findings in this national forum and it is our goal that these findings will be translated into health improvements for all American Indians. This is why we strongly encourage as many health care providers as possible to attend and participate in this very important conference. Qualifying individuals can receive continuing education credits for attendance. For more information on accreditation, speakers, the agenda, and submission of paper abstracts, please visit the Oklahoma Native American EXPORT Center's website at export.ouhsc.edu. **SHS**