



# STRONG HEART STUDY

INVESTIGATING CARDIOVASCULAR DISEASE  
IN AMERICAN INDIANS

## newsletter

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### Newly launched Oklahoma Native American EXPORT Center partners with SHS

The Center for American Indian Health Research (CAIHR) in the College of Public Health at the Oklahoma University Health Sciences Center (OUHSC), which houses the Strong Heart Study (SHS), received a new National Institutes of Health (NIH) grant through the National Center on Minority Health and Health Disparities to establish an EXPORT Center. The Oklahoma Native American EXPORT Center, launched earlier this year, works closely with the Indian community to improve health and reduce health disparities in the areas of diabetes and obesity. EXPORT stands for **Ex**cellence in **P**artnerships for **C**ommunity **O**utreach, and **R**esearch on Disparities in Health and **T**raining. The EXPORT Center has partnered primarily with the Indian Health Services Lawton Service Unit and the Seven Tribes of Southwest Oklahoma, but a new partnership with the Strong Heart Study is being formed.

In addition to the Administrative Core that oversees the Center, the Oklahoma Native American EXPORT Center has 4 more cores/components: the Research Core, which is currently managing 3 projects designed to prevent obesity and diabetes; the Training Component, which focuses on providing science and health educational and career opportunities to Native American students; the Shared Resources Core, which provides technical resources, such as study design and statistical analysis to all of the other Core areas; and the Community Outreach and Information Dissemination Core, which integrates the Oklahoma EXPORT Center into the Indian communities



Oklahoma Native American  
**EXPORT CENTER**

within the state and across the nation as a resource for health promotion, disease prevention, and health science education. This Community Outreach Core is partnering with SHS by helping with the dissemination (making generally known, "spreading the word") of SHS research findings so that this research may be translated into health improvements. This Core has also helped the Stop Atherosclerosis

in Native Diabetics Study (SANDS) successfully recruit participants for their research and will do the same for the SHS for future research.

The Oklahoma Native American EXPORT Center encourages SHS members and all Native Americans in southwest Oklahoma to take part in EXPORT's various programs. For example, EXPORT funds the Headlands Indian Health Careers Summer Program, which is an intense academic enrichment program designed to encourage Native American youth to pursue health/science careers. The Community Outreach Core of the EXPORT Center welcomes everyone (all ages) to its very successful monthly health promotion programs on diabetes and obesity, providing expert speakers and curriculum along with diabetes support group sessions. These public educational meetings continue being held at different tribal facilities along with new topics each month and require no appointment. For dates and times of meetings, or if you would like to learn more about the Oklahoma Native American EXPORT Center, please call (405) 271-3090 or toll free 1-888-231-4671, or log onto their website at <http://export.ouhsc.edu>. SHS

# Success of the Strong Heart Study leads to “spin-off” studies



The Strong Heart Study (SHS) was funded by the National Heart Lung and Blood Institute (NHLBI) in 1988 as the first large epidemiologic study of cardiovascular disease (CVD) in American Indians. Strong Heart has been collaborating with communities in Arizona, Oklahoma, and the Dakotas and values these successful working relationships. Nationally, the Strong Heart Study has the largest group of people with diabetes who are followed on a regular basis in regard to CVD and its occurrences, and this is due to the unflagging support of the participants, the communities, and the NHLBI. <http://strongheart.ouhsc.edu>

The success of Strong Heart has led to and resulted in “spin-off” studies to address other health problems. Some of these studies include:

**Asthma Study:** In cooperation with the University of Arizona we were able to study diseases of the lung, including asthma. Spirometry tests were used to determine if participants had any problems with breathing. These tests provided information relating to lung conditions such as asthma, damage from heart failure, and chronic (long term or always present) obstructive pulmonary disease (from smoking). Skin tests were also conducted, looking for allergies that may cause people to have wheezing or asthma. The results of this study help scientists, health care professionals, and tribal leaders provide more sound, relevant care and treatment for people with breathing problems.

**Sleep Heart Health Study (SHHS):** A selection of Strong Heart Study participants was part of a multicenter study conducted across the country looking at the relationship between sleep disturbances and



heart disease. Participants were hooked up to a sleep monitor, which recorded several important factors about their sleep habits. One important measurement was the exchange of oxygen during sleep. If a person’s oxygen level drops, this can be very harmful. This drop may be caused by apnea (when someone stops breathing in their sleep), which often occurs with snoring. All participants with apnea were referred for further care, since apnea can lead to heart disease over time. The SHHS repeated these sleep studies with the same participants approximately five years later. The information gained from this study is useful in understanding the changes in our bodies over time in relation to sleep changes. More data will be coming out on sleep studies, as it is an area of great interest.

<http://www.jhucct.com/shhs/default.html>

**Insulin Resistance Study:** Some of the Strong Heart Study participants in the Dakotas and Arizona volunteered for a study called “Frequently Sampled Intravenous Glucose Tolerance Test”. In this study, insulin and glucose are injected into one arm vein and over a three-hour period, blood samples are taken from the other arm. Blood sugar and insulin are measured. Then, by using a computer model, the degree of insulin resistance is measured. This is the most reliable way to measure insulin resistance, which is important in understanding why insulin no longer “works” as it is supposed to, and eventually leads to diabetes. All of this information will lead to better strategies for treating and preventing diabetes.

[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12477138&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12477138&dopt=Abstract)

**Infectious Diseases:** Some of the Strong Heart investigators conducted a study to see if there is a relationship between having had an infectious disease and the chance of having heart disease or a stroke later in life. To check this, blood samples were drawn from SHS volunteers, and were tested for signs of infection. Early results suggest that some chronic or re-occurring infections may increase one’s chances of developing CVD. This study may help in the development of new and better ways to prevent CVD.

*Continued on page 3...*

SHS "spin-off" studies...continued from page 2

### **PATHWAYS Study:**



When the Strong Heart Study found high levels of obesity in American Indians, the NHLBI funded a primary prevention study. PATHWAYS, conducted in school children, had four components: physical activity, healthy diet, school curriculum, and a home component.

The home component reinforced the teaching in school and incorporated healthful diet and increased activity into the home lifestyle. The children learned the importance of a balanced diet for good health, but the study also showed the need for much more intense, long-term efforts to reduce overweight and obesity in the communities. <http://www.csc.unc.edu/path/index.html>

### **Stop Atherosclerosis in Native Diabetics Study (SANDS):**

Strong Heart found that heart disease is rapidly increasing among American Indians, and that diabetes is the biggest risk factor. The SANDS Study is our attempt to address this major finding. SANDS includes only American Indians with type 2 diabetes, 40 and older, and focuses on two other risk factors, high blood pressure and high cholesterol. SANDS participants are being followed over three years to see if lowering blood pressure and cholesterol to levels lower than currently recommended will stop or reverse cholesterol buildup (atherosclerosis, or "plaque") in our blood vessels. This prevention project is currently in progress in four sites and recruitment goals were reached in June 2004 (see article on page 4). In about three years we will look to see if we have an answer to our question. Findings from SANDS may be very important in order to better learn how to prevent heart disease among people with diabetes in our communities.

<http://www.clinicaltrials.gov/ct/show/NCT00047424?order=47>

### **Genetics of Coronary Artery Disease in Alaska Natives (GOCADAN):**



This project is also funded by the NHLBI and is modeled after the Strong Heart Study. It is being conducted in several Eskimo villages in the Norton Sound region of Alaska, looking at the risk factors for heart disease in these communities. This

study successfully examined over 1,200 participants, including the same components as the SHS, and is now looking at the data to understand the findings. This information is vital to these communities as they try to develop prevention programs before disease rates accelerate.

<https://www.sfbr.org/gocadan.secure/aboutgocadan.html>

(Wall hanging by Theresa Kayakavik, Arviat, Nunavut. Courtesy of [www.drumdancer.com](http://www.drumdancer.com))

Photograph by J. Mackenzie-Hirasawa)

### **Education and Research Towards Health (EARTH):**



**EARTH**  
Education and Research Towards Health

Several SHS investigators received funding from the National Cancer Institute (NCI) to examine risk

factors for cancer and other chronic illnesses among a large group of Alaska Natives and American Indians. The main goal of EARTH is to examine how diet, lifestyle, and cultural factors may be associated with both health and illness, with a focus on cancer. This study is being conducted in several SHS communities in the Dakotas and Arizona, in addition to sites on the Navajo Nation and in three Alaska Native regions. If this first pilot project is successful, the NIH may fund a very large expansion of this study, making possible a variety of intervention projects to promote health and prevent illness.

<http://www.southcentralfoundation.com/index.cfm?pg=47>



**Hawai'i EXPORT Center**

**Excellence in Partnerships for Community Outreach, Research on Health Disparities, and Training (EXPORT):**

Again, a Strong Heart investigator is a Co-Principal Investigator on this project, which is being conducted with the Hawaiian people of Moloka'i. This is sponsored by the National Center on Minority Health and Health Disparities. This study is looking for heart disease and risk factors and is designed following procedures used in SHS. By merging some of the results of both studies, we hope to have a clearer understanding of heart disease in these communities.

<http://www.hawaiiexportcenter.hawaii.edu>

SHS



Rapid City, SD

## Stop Atherosclerosis in Native Diabetics Study reaches a milestone!



Lawton, OK

Chinle, AZ

Phoenix, AZ

An offspring of the Strong Heart Study, the **Stop Atherosclerosis in Native Diabetics Study (SANDS)** is investigating whether lowering cholesterol and blood pressure to levels lower than what is currently recommended will help to prevent heart disease in American Indians with diabetes. SANDS has reached a milestone in that the enrollment period has ended. In just 14 months of recruiting participants for this study, 547 people were entered into the study. This is quite a feat. Oftentimes in medical research it is difficult to enroll appropriate, motivated participants in the time allotted. This was not the case with SANDS.



some areas, making shipping of frozen blood specimens problematic. Yet all of these challenges were overcome by hard work and dedication resulting in SANDS staff reaching their recruitment goal ahead of schedule.

The study was presented to Tribal Elders and Leaders many months before the trial started. From there the information was passed down to members of the tribes as well as local physicians. Much effort was spent to educate the communities about the short and long term benefits of participating in this research project.

Many of the participants were recruited by word of mouth. Study staff presented SANDS at local powwows. Signs were posted in the communities. Most centers sent out letters. Many hours were spent on the phone and in clinics explaining the study in order to enroll people who fit the strict entry criteria, and who also would be willing to invest the time and energy in the project.

The success of the SANDS enrollment period has been due to staff and community members who are dedicated to improving health care in this very deserving population. Without patients who are willing to regularly take their medications, live a healthy life style and attend clinic visits, SANDS would not be possible. The SANDS family will continue to support each other during the treatment phase; the results of the study will help to prevent heart disease in all diabetic patients. *SHS*

The SANDS sites, located in Phoenix and Chinle, AZ., Lawton, OK, and Rapid City, SD, overcame many obstacles in reaching their goal. All of these sites are either located in, or treat participants from remote areas. A trailer was purchased in Chinle to house the nurse practitioner who treats the study patients. Some sites purchased All Terrain Vehicles to transport participants to and from clinic visits. Many of the participants in Chinle do not speak English as a first language; a Navajo translator is present at every study visit to ensure that language and cultural barriers are minimized. Communication cables are lacking in some areas, making the transmission of data very difficult. In these cases, measurements such as blood pressure and cholesterol have to be mailed to another location so that they can be entered into a computer. Overnight mailing is sporadic in