



STRONG HEART STUDY

NEWSLETTER

INVESTIGATING CARDIOVASCULAR DISEASE IN AMERICAN INDIANS

June 1997

Volume 9, Number 1

WHY DO WE NEED A THIRD EXAM?

The Strong Heart Study began in 1988. From 1989 to 1991, 4,549 American Indians from 13 communities agreed to devote their time and efforts to attend our first exam. We were able to collect data on heart disease gathered from the physical exam and electrocardio-gram, blood samples and the various questionnaires administered during that first exam. This yielded an extraordinary amount of information on the occurrence of heart disease and a number of its risk factors among American Indians which has been useful for healthcare providers from all areas of Indian country.

A second exam was performed from 1993 to 1995 and 90% of those who participated and were still alive, returned. The second exam was initiated to try to understand how heart disease was changing and whether risk factors were increasing or decreasing as individuals grew older. In addition, study of the relationships between risk factors at the first exam and the later development of heart disease in some of the participants would allow conclusions to be drawn about cause and effect. We were able to add some very important additional measurements to the second exam, including an echocardiogram (a picture of the beating heart) and measures of diet consumption and of lung function. These provided additional information on the health of our participants and a lot more detail about the function of their hearts.

We are just beginning to analyze the results from the second exam. They suggest that several aspects of health are changing rapidly, especially rates of diabetes and high blood pressure and the development of kidney disease. Because of these findings, it will be very valuable to have one more look at the participants after an additional four years. The study group will be between 53 and 84 years-old at this point and problems such as

strokes and other diseases of the circulation system will be more evident. This will provide a more accurate picture of how various blood and lifestyle characteristics are related to these important health problems.

Finally, the results of the echocardiogram showed some very interesting changes, especially among individuals with diabetes. One thing missing, however, is an actual measurement of the atherosclerotic process: the build-up of fatty substances in blood vessels. There is now a very easy way - utilizing ultrasound - to measure this build-up in the arteries of the neck. We will make this measure in the third exam and combine it with the previous information from the echocardiogram. This will help us to understand how people with diabetes develop heart problems.

This will be the third time that we ask the original Strong Heart participants to come for an exam. After that, we may contact them periodically, to determine their health status in order to continue to analyze the cause and effect relationships between risk factors and future health problems.

We are extremely grateful to the original 4,549 individuals who initially volunteered to work with us on this important project and for their patience and willingness to participate in the exams. The first exam has already provided valuable health data for their communities and the health care providers helping American Indian patients. The participants should be very proud of the contributions they have made and will make through the second and third exams. These contributions will provide the information needed to get a better understanding of the problems of heart disease and diabetes in American Indian communities. We are committed to gathering information that may be used by health care providers to improve the health and health care of Native Americans.

SHS

THE STRONG HEART FAMILY STUDY:

QUESTIONS ABOUT NEW FOCUS ANSWERED

Hear disease and diabetes are serious health problems for American Indians and other Americans as well. Medical research has established that both heart disease and diabetes tend to run in families: if you have close relatives with heart disease or diabetes, then you are more likely to develop these diseases yourself.

The reasons why heart disease and diabetes run in families are poorly understood. Family members may live in the same household for at least a part of their lives and, as a result, tend to have similar diets, exercise patterns, exposure to smoking, etc. People also receive genes from their parents and it is thought that some of these genes increase the risk of heart disease and diabetes. When several members of a family have heart disease or diabetes, the most likely cause is a combination of environment and genes.

The goal of the Strong Heart Study's newest research component is to address the patterns of heart disease and diabetes that occur in American Indian families. The hope is that a few large families, including parents, children, and grandchildren, can be recruited from communities in Arizona, Oklahoma, and the Dakotas. If the recruitment is successful, it may be expanded to include additional families. For each participating family, a family tree will be recorded. Family members will be given a physical examination and asked questions about their diet and other lifestyle factors that are thought to be important in causing heart disease and diabetes. All the information on family members will be coded so that individuals and families can't be identified by name and this confidentiality will be strictly maintained.

Traits that are related to risk of heart disease and diabetes (such as levels of cholesterol and

Phase 3 of the Study looks into behavior and family links to heart disease

glucose in the blood) will be measured for each person. The patterns of these traits in families will be analyzed (in other words, which family members have high levels and which have low levels) and an effort will be made to find out whether genes influence each trait. If the effects of a gene can be detected, then an attempt will be made to pinpoint the location of

the gene by studying the DNA obtained from white blood cells. There is more than enough DNA from one tube of blood for all of the analyses and no cells will be saved. The longer-term goal is actually to isolate the genes and determine how they contribute to heart disease and diabetes.

Discovering the genes that contribute to heart disease and diabetes is important for reducing the burden that these diseases impose on families and communities. If these genes can be identified, then new treatments can be developed and new ways of preventing disease can be discovered. People can be helped to modify their environments so that the effects of harmful genes are lessened, leading to longer life and an improved quality of life.

SHS Sets The Pace in Sleep Study

The study of sleep apnea (stopping breathing during sleep) was initiated in 1996. There were 12 centers included with the Strong Heart Study centers providing the only American Indian participants. To date, the three SHS centers are the first and only centers to complete their target samples (200 participants per center). This additional success story for the Strong Heart Study will provide new insights into another life threatening condition in our communities. Thanks to the staff and participants for another job well done.

Although the primary focus of the Strong Heart Study is assessing the burden of cardiovascular disease in American Indians, SHS staff also use their close contact with American Indian students to foster an interest in medical research career opportunities. That effort has paid off for Kurt Schweigman.

Kurt, an enrolled member of the Oglala Sioux Tribe, joined the Strong Heart Study staff at the South Dakota center in 1990. His mother is also Oglala Sioux and his father is enrolled with the Rosebud Reservation. Kurt grew up just off the reservation, in Rapid City, SD.

Dr. Tom Welty hired Kurt through a summer program that expanded into a part-time position over the fall, so he could continue his studies at South Dakota School of Mines and Technology. Kurt then accepted an offer to work on the study full-time for the remainder of the Phase I exam. He spent the next two years conducting interviews, taking blood pressures, and drawing and processing blood samples.

"Dr. Welty has been my mentor in helping me pursue a health profession. My experience working with the Strong Heart Study kept my interest in a career in the medical field, especially in research," Kurt said.

When the first exam ended, Kurt participated in a summer program sponsored by the Indian Health Service to learn more about American Indian health research. Between Phase I and II exams, he worked with SHS data entry/analysis and when the Strong Heart Study was funded for the second examination, Kurt, already experienced and a

valuable part of the team, agreed to help. He expanded his previous responsibilities by administering pulmonary function tests, health risk appraisals and behavioral questionnaires. His frustration with the difficulty of administering some of these questionnaires led him and his colleagues to review how questionnaires for American Indians are developed and how they might be improved. He also collected additional data from communities within the Dakota Center for research to support independent study toward his college degree. His focus was on research which he thought would be of particular interest to the communities in which he was working, including: analyses of risk factor knowledge, cholesterol measurements, alcohol intake, smoking and cultural factors related to depression.

When the second exam ended in July 1995, Kurt returned to college full-time to complete his degree. He earned his bachelor's degree in American Indian Studies at the University of North Dakota. His performance with the Strong Heart Study was instrumental in securing him a 7-month position as an Intramural Research Training Fellow at NIH in Bethesda,

AMERICAN INDIAN STUDENT CHOOSES MEDICAL RESEARCH CAREER

Maryland, where he is learning cardiovascular epidemiology from the central office to complement his training in the field and prepare him for graduate work.

"The experience at NIH has broadened my experience. The interaction with NIH researchers and their projects is incredibly enlightening," Kurt said. "I feel like I have added to that environment by sharing my knowledge of data collection in the field and the American Indian perspective on research projects like the Strong Heart Study."

At NIH, Kurt is completing a scientific paper on response bias in the collection of sensitive data in minority research related to the ethnicity, gender and residency of interviewers. He plans on working toward an MPH/PhD in epidemiology and biostatistics and is submitting applications for graduate studies at the University of California, Berkeley, the University of Hawaii, and the University of Oklahoma.



CHANGE IS A PART OF NATURE

The Strong Heart Study (SHS), a cardiovascular disease (CVD) research project in the Dakotas, has gone through many changes over the past year and the rest of 1997 will be no different. On August 1, 1996, the SHS project in the Dakotas changed its parent organization, moving from the Aberdeen Area Indian Health Service (AAIHS) to the Aberdeen Area Tribal Chairmen's Health Board (AATCHB). This organizational change was the result of redefining the role of IHS, and the desire of AAIHS to concentrate on direct patient care.

How did this change of parent organizations occur? The AATCHB accepted the request by the Dakota SHS project to become its new parent organization. The AATCHB applied for and received the National Institutes of Health's SHS Phase III Research Grant, thus becoming the new parent organization for SHS in the Dakotas. Now, with a new name "Strong Heart Study-Dakota Center" (SHS-DC) the project is working hard to get the SHS field clinics operational, and train new staff in the areas of physical examination, interviewing and data collection and processing.

Dr. Welty, the Principal Investigator of the SHS in the Dakotas, has two primary goals in mind: increase American Indian community involvement in medical and public health research, and

increase the number of American Indians choosing medical and scientific research as a profession. The institutional goals of the SHS-DC remain unchanged: identifying the true rate of CVD and its risks factors in American Indians, and developing workable preventive measures against CVD. The transformation of the SHS-DC will allow increased American Indian involvement in the design, development and operation of research projects on Indian Reservations, and an increased number of American Indians going into research.

The present SHS-DC staff would like to thank all the SHS participants, former SHS staff members, participating Tribes, and all the IHS and NIH personnel who took on the task of starting the Strong Heart Study project and developing it over the past nine years, into a research project that has provided new scientific data on the health of the American Indian. The SHS was greatly affected by the loss of the three physicians/researchers killed in a February, 1994 plane crash. But because others like them, dedicated to our project, stepped forward to continue the work. The belief that our work will some day help others, especially our own people, is what drives the SHS staff. There will always be change, it is demanded by nature, but our goals remain unchanged.

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