



STRONG HEART STUDY

NEWSLETTER

INVESTIGATING CARDIOVASCULAR DISEASE IN AMERICAN INDIANS

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At left, SHS Steering Committee and staff gather at Eagle Butte for a group picture. Seen are front row from left: Richard Fabsitz, Helaine Resnick, Bert Lewis, Cherie Kessler, Greg Miller, Jay Kunf. Middle row: Marcia O'Leary, Lillian Brown, Betty Jarvis, Edie Welty, Elisa Lee, Patricia Nez, Jean MacCluer, Lyle Best. Back Row: Wendy Lawrence, Jeunliang Yeh, Tom Welty, Bennett Dyke, Jeff Henderson, Carl Schaefer, Linda Schaefer, Mike Davidson, and Tauqeer Ali.

Strong Heart Family Study Initiated

Strong Heart Study investigators met in Eagle Butte, South Dakota, in the midst of the Cheyenne River Reservation, to plan Phase IV of the study which will focus on families. The three field centers, the cardiology reading center at Cornell Medical School, and the genetics center at the Southwest Foundation for Biomedical Research will continue the pilot study of Phase III into a full-scale family study in Phase IV. In a change of the grantee institution for South Dakota, an Indian-owned corporation, Missouri Breaks Industries Research Inc., will join Medlantic Research Foundation and University of Oklahoma Health Sciences Center as the grantee institutions for the field centers. The previous investigators will continue for Phase IV, although some new investigators will be added to cover new

areas of interest.

Many of the same staff members will continue into the next phase, which will greatly facilitate the planning and start-up of the new study. Recruiters from the previous study, critically important in maintaining communication with the communities and in facilitating the participation of community members, will also include many of the same familiar faces. The staff seems eager to begin, although everyone recognizes planning is important if the examinations are to begin smoothly. The exam will be a bit more complicated because it will include some of the tests that were administered over two exams of the previous study. Some of the most exciting exam components include both an echocardiogram and a carotid ultrasound. Echocardiograms provide images of the heart to deter-

mine its structure and function with no discomfort to the participant. The same high-frequency sound wave technology is also used to image structure and blood flow characteristics of the arteries in the neck (carotid ultrasound).

It is clear to the communities and to the SHS investigators that some diseases tend to run in families. This next Phase of the study will help determine if this tendency for disease to be more common in some families and not others is the result of genetics, lifestyle, the surrounding environment, or a combination of these influences. This information will allow public health and Tribal leaders to determine the best strategy to reduce or prevent disease in future generations.

Human Genome Project

...the second in a series of articles by Lyle Best, MD

You may have heard on the news this past June that the Human Genome Project has finished decoding (or sequencing) all of our human DNA. This announcement might be confusing. One might wonder why we still need to study families and genetics in Phase IV of the Strong Heart Study, now that we seem to know about all of the human genes. To understand, we need to learn a little more about DNA and genetics.

The information that we inherit as babies from our parents (and is stored in each and every one of the cells of our body), is coded for in this chemical called "DNA." DNA is a very long molecule that is a lot like a fine thread strung with beads. The "beads" of DNA come in four different "colors" and the body can "read" the information from the order of these beads, just like we read

meaning from the order of letters in the words and paragraphs of our books. The DNA molecules from each of the cells in our bodies has about 3 billion of these "beads" on it. If you spelled out the same amount of information in letters of the alphabet, it would fill as much space as in a set of encyclopedias!

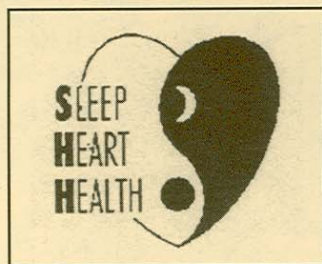
What the Human Genome Project finished this June, was figuring out the **nearly complete** spelling of all 3 billion of these DNA letters from a "**typical**" human. This was a great accomplishment, and it will be very helpful in finding out how genes affect many diseases. It is not the last word in this adventure, though. We are now like a 7 or 8 year old child having his first look at an encyclopedia. This child would know all the letters of the alphabet, and he

would even know quite a few words; but he wouldn't be able to read even one paragraph. To make things more complicated, the "spelling" or sequence is basically all strung out in a single, 3 billion letter word! We really don't understand yet where most of the genes start and where they stop. Scientists do know the location, "spelling" and general purpose of roughly a thousand genes... unfortunately there is good reason to believe that there are as many as 50 to 100,000 genes in the human genome! So we have just started down this road of discovery.

In the next newsletter we will learn more about what a gene is and how scientists try to find out if it has an effect on a certain disease.

Dr. Lyle Best is the new principal investigator for the SHS Dakota center.

Phase 2 of Sleep Study Begins in December



Data gathering for Phase II of the Sleep Heart Health Study is about to begin. Helaine Resnick, Ph.D., principal investigator of the study, explained that the Sleep Heart Health Study will help answer the question of whether "sleep disordered breathing patterns"

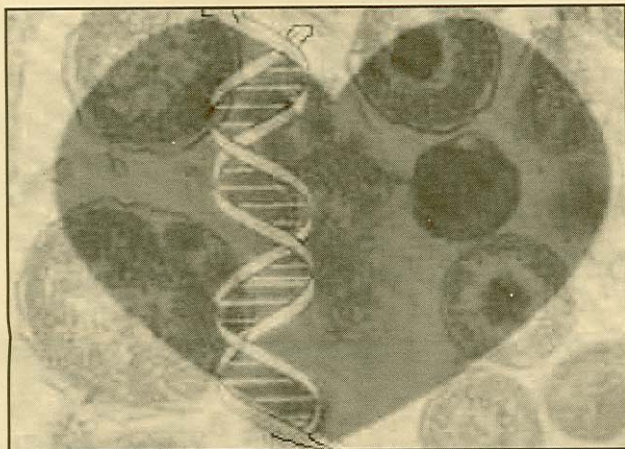
such as snoring are associated with heart attacks and strokes as some scientists now think.

Sleep Heart Health Study includes 6440 participants. Of that number, 602 are Strong Heart Study participants. Dr. Resnick feels that it is important for SHS participants to be represented in the sleep study. Information gained from both studies may be useful in lowering the heart disease and stroke rate among American Indians.

Phase Two of Sleep Heart Health Study includes

- **Polysomnogram**
measures sleeping patterns by information collected by a vest worn during sleep
- **Electrocardiogram (ECG)**
gives information on the function of the heart
- **Health Questionnaires**
collect data on general health, amount of sleep, height, weight, etc.

Infections and Atherosclerosis: Possible Link Between Disease-Causing Agents and Heart Disease Explored in New SHS Study



Graphic used by permission of **Medical Link** (www.medicalink.se).

The risk factors for coronary artery disease are well established, yet many heart patients do not exhibit the typical and recognized traits or characteristics of this disease. People who live in different geographical locations experience differences in their rates of coronary heart disease, and these differences are largely unexplained. One avenue of investigation that shows the potential to solve some of these puzzles involves infectious agents, such as bacteria and viruses. The Strong Heart Study has received funding to look at infectious agents that are suspected to initiate or contribute to atherosclerosis (the blockage of arteries with fatty deposits).

Chlamydia pneumoniae may be a common cause of pneumonia in American Indians. Over the past several years, *Chlamydia pneumoniae* has been shown to initiate blockage of coronary

arteries when given to laboratory animals. Another infectious agent, human cytomegalovirus (CMV), has been identified as being responsible for the rapid-onset atherosclerosis that occurs in some patients after coronary artery bypass surgery or in

others after heart transplantation. Both *Chlamydia pneumoniae* and CMV infections can become chronic and cause inflammation in the arteries, which may also increase the risk of coronary heart disease. Furthermore, both of these infections are very common and their prevalences increase as people age. Investigators need to find out how frequently infections occur prior to the diagnosis of coronary heart disease and how the infections are related to other proven risk factors for heart disease.

Dr. Michael Davidson at the Alaska Native Medical Center in Anchorage is collaborating with SHS to identify and test appropriate stored serum specimens obtained previously from SHS participants. Tests for CMV, *Chlamydia pneumoniae*, *Helicobacter pylori* (a bacterium that causes stomach ulcers), *Herpes simplex* (a virus that causes

cold sores or sexually transmitted disease), and *Hepatitis A* (a virus which is a common cause of liver infections) will be conducted at the University of Washington by Dr. Thomas Grayston, who first discovered *Chlamydia pneumoniae*, and at the MedStar Research Institute by Dr. Steven Epstein, a noted CMV researcher.

The research team is also collaborating with SHS to look at coronary artery disease in relation to the type of immune response individuals develop against these infectious agents. The researchers are investigating markers of inflammation (C-Reactive protein and T-cell stimulation) and other infections common in American Indians. More than 160 SHS participants are being asked to provide fresh blood samples for this special study, which is referred to as a case-control study. As with all SHS findings, the results will remain confidential.

If infectious disease is found to cause coronary heart disease, currently available treatments for infection may provide a new means of prevention of cardiovascular disease. Indeed, studies are already under way in other centers to see if therapy for chronic infections might help prevent development of further heart disease in patients having had a heart attack.

Dr. Tom Welty Honored by Sioux Elders

The Fall Strong Heart Study (SHS) Steering Committee Meeting was held Sept 10th through Sept 12th on the Cheyenne River Reservation. Whenever possible, SHS conducts steering committee meetings in the communities in which the study takes place. This was the first time SHS has held a meeting with the Cheyenne River Sioux Tribe. All of the local papers ran articles about SHS and the involved investigators and invited local participants and local health care providers to attend and give their input to the steering committee.

En route to the meeting, SHS investigators attended a powwow at Brider Reservation and then spent part of the day seeing the Dakota plains and a working cattle ranch. This tour also provided investigators with a new perspective regarding the vast distances traveled by SHS staff in order to conduct a study of this nature. During the course of the meeting, the investigators had lunch at the local elderly nutrition center and visited with community elders, many of whom are SHS participants.

A community supper was

held on Monday, and about 150 local SHS participants and their families attended. This event gave the investigators and participants an opportunity to meet and ask questions. Drs. Tom and Edie Welty were both honored for their long-standing commitment to the health of Native Americans, specifically the Lakota Nation. Burdell Blue-Arm gave an opening blessing in Lakota, asking for thanks and future success of the study. LaVonne Looking-Elk, the executive secretary for the Dakota Center, also gave a blessing. Several community members gave testimonies to clinical, research and educational work done over the years by the Weltys. They expressed their thanks for the years of hard work and gave personal examples of how both their involvement with the Weltys and the SHS had bettered their lives. Richard Moose-Camp honored Tom Welty, by giving him the Native name of Tatujuta-waste (His-medicine-is-good) and by presenting Dr. Welty with an eagle feather. Both Tom and Edie Welty were presented with blankets to express the communities' thanks for years of dedicated service.

SHS Participants Attend National Indian Council on Aging Conference

Thirty-nine SHS participants of the Gila River and Salt River Indian Communities attended a conference for elders sponsored by the National Indian Council on Aging in Duluth, Minnesota on August 19- 23. The theme, "Strengthening the Sacred Circle: 2000 and Beyond" focused on spirituality.

Betty Jarvis, Arizona SHS Coordinator, presented at the mini-conference "Innovations in Elder Care." Jarvis discussed the partnership between the SHS investigators and the Indian Communities, and the benefits of the close relationship to participants, health care providers and communities.

"This conference brought together the very special elders who represent the culture, history, languages, traditions and memories of the First People of our land . . . when they gathered, their power was felt by all attendees," said Jarvis.

SHS

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 73190

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