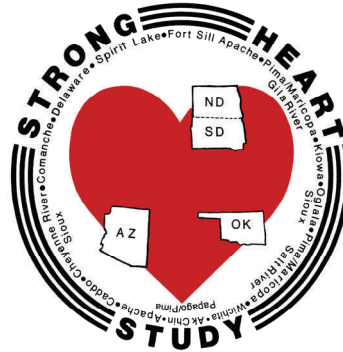


Facts about The Strong Heart Study

- The Strong Heart Study (SHS) is a study of cardiovascular disease and its risk factors among American Indians.
- The SHS has a field center in each of the following areas: Arizona, the Dakotas, and Oklahoma. SHS also has a coordinating center in Oklahoma, Penn Medical Laboratory in Washington DC, an ECG and ultrasound reading center at Weill Medical College of Cornell University in New York, and a genetics center in San Antonio, TX.
- SHS began in 1988 and has continued through five phases of study. SHS added other family members to the study in 1997.
- SHS is the largest, longest longitudinal study in the U.S. of heart disease and its risk factors in individuals with diabetes.
- SHS is a population based study and has a retention rate of 90%. This shows the extraordinary commitment of SHS participants.



Arizona

MedStar Health Research Institute
The Strong Heart Study
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Phoenix, AZ 85016
Phone: (602) 277-0488

Dakotas

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Oklahoma

Center for American Indian Health Research
University of Oklahoma Health Sciences Center
Phone: 1-888-231-4671

Strong Heart Study Field Clinic Lawton, Oklahoma
Lawton Indian Hospital
1515 N.E. Lawrie Tatum Road
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Strong Heart Study Field Clinic Anadarko, Oklahoma
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Phone: (405) 247-2458, ext. 8705

Visit our web site at:
<http://strongheart.ouhsc.edu>

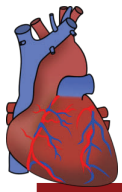
The Strong Heart Study is supported by the National Heart, Lung, and Blood Institute, a component of the National Institutes of Health and the Department of Health and Human Services.



Diabetes and Cardiovascular Disease



RESEARCH RESULTS AND INFORMATION FROM:
STRONG HEART STUDY



Diabetes and Cardiovascular Diseases



What is diabetes?

Diabetes is a disorder of the way our bodies use carbohydrates for growth and energy. The food we eat is broken down into glucose (a form of sugar in the blood). The blood carries glucose to the cells. For glucose to get into cells, insulin must be present. Insulin is a hormone produced by the pancreas, a large gland behind the stomach. The pancreas releases insulin to move glucose from blood into the cells. In people with type 2 diabetes, the cells do not respond properly to insulin—a condition called insulin resistance and as the disease advances, the pancreas begins to fail. Glucose builds up in the blood, overflows into the urine, and passes out of the body in the urine. Risk factors for type 2 diabetes include age, physical inactivity, obesity, and family history.

ADA* Criteria for Diabetes

Category	Milligrams of glucose per deciliter of blood (mg/dl)
Normal	Less than 100
Pre-diabetes	100-125
Diabetes	126 or higher

* American Diabetes Association, based on fasting glucose

Diabetes (%) by age group in the Strong Heart Study (SHS) family members

Age	Women	Men
<20	3.0	2.0
20-29	6.0	9.0
30-39	19.0	18.0
40-49	29.0	27.0
50-59	43.0	36.0
60-69	50.0	46.0
70+	41.0	46.0

Risk factors for coronary heart disease (CHD)

CHD is usually caused by the clogged blood vessels in the heart. It can cause chest pain, shortness of breath, heart attack, and other symptoms.

- Diabetes is a major risk factor for CHD
- Other significant risk factors for CHD in people with diabetes are:

Age

Smoking

High blood pressure (hypertension)

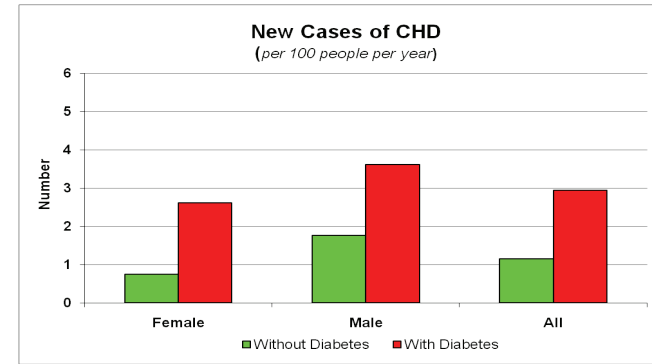
High LDL (“bad” cholesterol)

Low HDL (“good” cholesterol)

Albuminuria (a sign of abnormal kidney function where there is too much albumin, a type of protein, in the urine) and also low GFR (a blood measure of kidney function)

Why does diabetes increase the risk of cardiovascular disease

It is a complex process, but briefly, high glucose and insulin resistance are bad for the circulation and lead to many problems. There is a kind of inflammation that occurs with diabetes that damages the blood vessels, large and small. Damages to the large vessels are made worse because of other risk factors, such as high cholesterol and high blood pressure. These conditions are common in people with diabetes. Diabetes and these other risk factors lead to cardiovascular disease (CVD) which includes heart attack, stroke and leg vessel disease. Damages to the small vessels and other risk factors lead to eye disease and kidney disease.



CVD In Diabetes

CVD in diabetes is responsible for:

- 37% of all deaths. Of these deaths, 80% are from coronary heart disease, and 20% are from stroke or other cardiovascular disease
- Over 75% of all hospitalizations for diabetes complications
- Diabetes increases the risk of stroke by nearly 3 times compared to people without diabetes

Things You Can Do To Prevent CVD in Diabetes

- Lose weight if you are overweight
- Increase your physical activity to at least 30 minutes per day
- Eat a healthy diet - cut calories (lower fat and sweets), eat more vegetables, fruits and grains and use less salt
- Quit smoking
- Have regular checkups, take your medications regularly as prescribed by your doctor, maintain targets for blood pressure and cholesterol, and have your kidney function checked

