

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
1616 E. Indian School Road
Suite #250
Phoenix, AZ 85016
Phone: (602) 277-0488

Dakotas

Strong Heart Study – Dakota Center
Missouri Breaks Industries Research Inc.
HCR 64, Box 52
Timber Lake, SD 57656
Phone: (605) 964-3418 or (605)-964-1260

Oklahoma

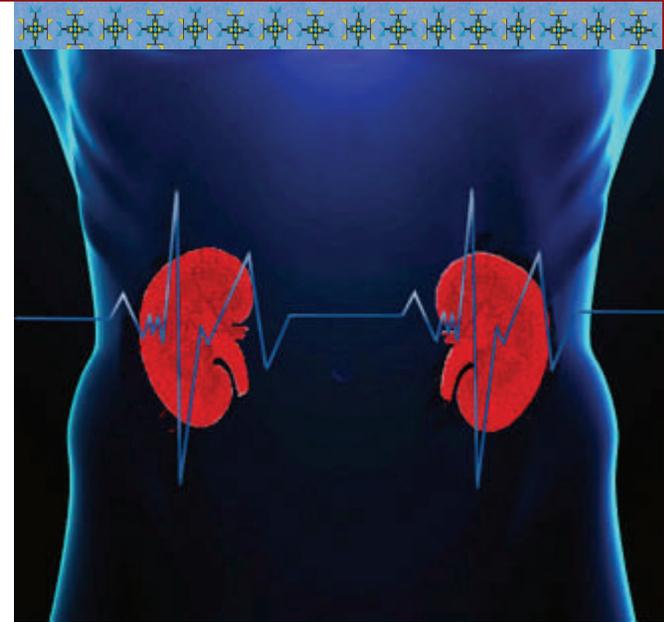
Center for American Indian Health Research
University of Oklahoma Health Sciences Center
Phone: 1-888-231-4671

Strong Heart Study Field Clinic Lawton, Oklahoma
Lawton Indian Hospital
1515 N.E. Lawrie Tatum Road
Lawton, OK 73507
Phone: (580) 248-7715

Strong Heart Study Field Clinic Anadarko, Oklahoma
Anadarko Indian Health Center
115 Northeast Old Town Drive
Anadarko, OK 73005
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.



Kidney (Renal) Disease



RESEARCH RESULTS AND
INFORMATION FROM:
**STRONG HEART
STUDY**



Kidney Disease in American Indians



What Do Healthy Kidneys Do?

Kidneys remove waste products from the body by filtering the blood. The entire blood volume is normally filtered 360 times per day. The kidneys filter about 40 gallons of fluid into urine every day. This fluid is then concentrated, so usually less than half a gallon is excreted as urine. Despite this huge filtration, healthy kidneys leak almost no blood proteins into the urine. Healthy kidneys also are responsible for maintaining normal blood chemistry, normal concentrations of vitamin D and calcium to preserve bone health, and normal production of red blood cells to avoid anemia.

What Happens in Kidney Disease?

When kidney function fails, usually because of diabetes or high blood pressure, wastes can build up in the blood. This abnormal blood chemistry can lead to anemia, bone disease, illness, or death. At that point, dialysis or transplantation can be life-saving. In addition, patients with kidney failure have very high rates of cardiovascular disease (CVD), even higher than those associated with most other risk factors.

How is Kidney Function Measured?

A blood sample is used to assess the health of the kidneys. Kidney function is then estimated as glomerular filtration rate (GFR).

- Normal GFR is 100-125 ml/minute.
- Mild kidney disease is defined as a loss of $\leq 50\%$ of GFR (that is values of 60 ml/minute or greater in a normal size adult).
- Patients with GFR < 15 ml/minute often will need dialysis or a kidney transplant to survive.

Albuminuria Also Reflects Kidney Problems

Albumin is the most abundant protein in the blood. It leaks into urine when the small blood vessels in the filtering units of the kidneys are damaged (as in diabetes, high blood pressure, or other rarer kidney diseases). Normally, only about 1/1000 of an ounce of albumin is excreted into the urine (for an albumin-to-creatinine ratio of < 30 mg/g).

- A leakage of 30-299 mg/day is defined as microalbuminuria.
- A leakage of 300 mg or more/day is defined as macroalbuminuria (also called proteinuria).
- Some harm may even be associated with levels of albumin in the urine that are considered normal.

Dangers Associated with Albuminuria or Decreased Kidney Function

- Heart disease.
- Stroke.
- Vascular disease (in the legs) and amputations.
- High blood pressure.
- Enlargement of the heart.
- Heart failure.

Risk of these outcomes rises with higher levels of albuminuria or lower GFR.

- When GFR decreases to 30-60 ml/minute, risks of developing CVD over the next 5-10 years doubles.
- When GFR worsens (to < 30 ml/minute), risk of CVD over the next 5-10 years increases four-fold.



Risk Factors for Decreased Kidney Function

- High blood pressure.
- Higher normal-range levels of albuminuria.
- Severe diabetes (longer duration, harder to control, higher blood sugar).

Risk in American Indians

The Strong Heart Study has shown that albuminuria and decreased GFR are common in American Indians and most often related to diabetes, hypertension, and other CVD risk factors, including smoking.

Remember, better control of diabetes and hypertension, and quitting smoking may prevent kidney disease or lower the risk of complications and death. Talk to your doctor about medicines that might help protect your kidneys!

