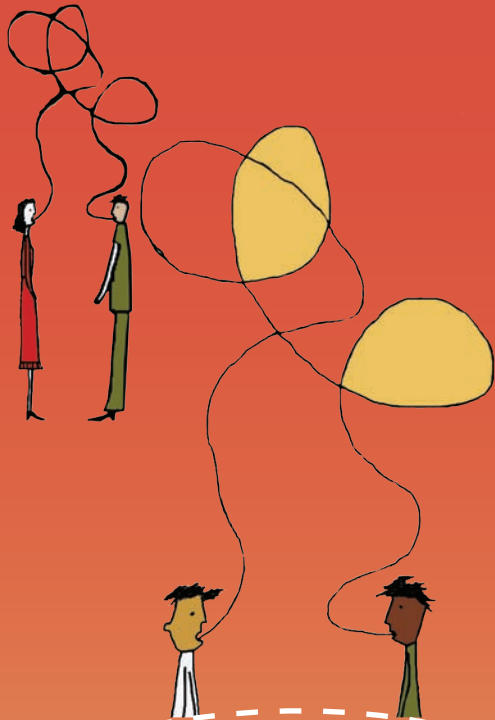


DOES IT RUN IN THE FAMILY?

2

A Guide for Understanding Genetics and Health



URBAN INDIAN HEALTH INSTITUTE

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Why is genetics important to my family and me?



Genetics helps to explain:

- What makes you unique
- Why family members have traits in common
- Why some diseases like diabetes or cancer run in families
- How learning your family health history can help you stay healthy
- Why you should bring your family health history to your healthcare provider

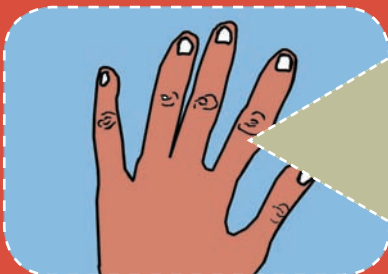
Taking time to learn about health and diseases that run in your family is worth it! It will help you understand your own health and make healthy choices.

What makes me unique?



Every person is unique in many ways. Part of what makes you unique is in your genes. **Genes are the instructions inside each of your cells.** These instructions influence how you look and how your body works. Since everyone has slightly different genes, everyone has a different set of instructions. **Genes are one reason why you are unique!**

1. Hand



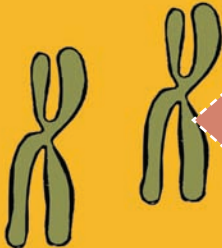
2. Cell



Tell me more about my genes

- A person has two copies of each gene, one from the mother and one from the father.
- Genes carry instructions that tell your cells how to work and grow.
- Cells are the building blocks of the body. Every part of your body is made up of billions of cells working together.
- Genes are arranged in structures called chromosomes. Humans have 23 pairs of chromosomes. Copies of the chromosomes are found in each cell.
- Chromosomes are made up of DNA. DNA is the special code in which the instructions in your genes are written.

3. Chromosomes



4. DNA





Why do family members have things in common?

Children inherit pairs of genes from their parents. A child gets one set of genes from the father and one set from the mother. These **genes can match up in many ways** to make different combinations. This is why many family members look a lot alike and others don't look like each other at all. Genes can determine similarities in appearance, but they may also lead to a risk in the family for developing certain health conditions.

Families also share habits, diet, and environment. These experiences might influence how healthy we are later on in life.

You share a lot with your family—including what can make you sick.



Why do some diseases run in families?

Some diseases are caused when there is a change in the instructions in a gene. This is called a mutation. **Every person has many mutations.** Sometimes these changes have no effect or are even slightly helpful. But sometimes they can cause disease.

Most common diseases are caused by a combination of mutations, lifestyle choices, and your environment. **Even people with similar genes may or may not develop an illness** if they make different choices or live in a different environment.

Common Disease: Diabetes

Changes in your genes passed on by your parents may make you more likely to develop type 2 diabetes. If you are active and eat a healthy diet, you may be able to lower your risk.

Visit page 10 to learn about some



Thousands of diseases are caused by a specific change in the DNA of a single gene. **Many of these diseases are rare.** These conditions usually develop when an individual is born with a mutated gene.

**Single Gene Disorder:
Sickle Cell Anemia**

Sickle cell anemia is caused by a mutation in a single gene passed from each parent.

Even if a rare disease runs in your family, don't forget to learn about more common conditions that affect your family's health.

diseases that run in families.

How can knowing my family health history help me stay healthy?

Family health history gives you an idea of which diseases run in your family. Health problems that develop at a younger age than usual can be a clue that your family has higher risk. Though you can't change your genes, you can change your behavior.

Knowing your family health history will help you:

- Identify risks due to shared genes.
- Understand better what lifestyle and environmental factors you share with your family.
- Understand how healthy lifestyle choices can reduce your risk of developing a disease.
- Talk to your family about your health.
- Summarize your health information to give to your healthcare provider.

Remember

1. Share your family health history with your healthcare provider.
2. Ask if screening is available for a disease in your family.

Why should I take my family health history to my healthcare provider?

Your healthcare provider (doctor, nurse, or physician's assistant) may use your family health history and current health to figure out your risk for developing a disease. Your provider can then help decide which screenings you get and which medicines you might take.

Based on your family health history, a healthcare provider may order a **genetic test** or refer you to a genetic counselor or geneticist. A specific test can show whether you are affected by or at risk for a disease and which mutations you might pass along to your children. Your healthcare provider can help you:

- Understand the results of your tests.
- Learn of any treatments for a disease found by the test.

All newborn babies born in the U.S. and many other countries are tested for certain genetic diseases that may make them sick if not treated. This is called **newborn screening**. If the screening test finds a problem, a healthcare provider or specialist will help you understand what can be done to help the baby.

Diseases that run in the family

In the rest of this booklet, we provide you with examples of some common diseases that affect our communities and families. For each disease, we include information under the following headings:

- What is the disease?
- Who is at risk?
- Hints for health



Heart disease

Heart diseases are the main cause of death in America in both men and women. Two of the most common diseases that involve the heart are coronary artery disease (CAD) and high blood pressure (hypertension).

WHAT IS CORONARY ARTERY DISEASE (CAD)?

- In CAD the arteries that supply blood to the heart muscle can get hard and narrow. The arteries narrow because of a buildup of plaque or cholesterol on the inner walls.
- CAD gets worse over time. As the heart gets less blood, less oxygen is delivered to the heart muscle. When the heart gets very little oxygen, you can develop chest pain or a heart attack.
- CAD is the most common cause of heart attacks among Americans.

Who is at risk?

- Almost 14% of AIAN adults (one in six) have CAD.
- Heart disease is the leading cause of death in the AIAN and general populations. • About 13 million Americans have CAD.
- Everyone has some risk for developing heart disease.
- CAD is caused by a combination of genetic background, lifestyle choices, and your environment.
- For some people, a healthier diet and increased activity can change cholesterol level and lower risk.
- Since your genetic background cannot be changed, some people need additional medical assistance such as medication to lower their risk of having a heart attack.

Hints for health

- Eat healthy, nutritious meals.
- Get active and exercise regularly. Obesity increases your risk.
- Take your prescribed medications to control high cholesterol, high blood pressure, and diabetes.
- If you smoke, talk with your healthcare provider about quitting.

For more information, visit www.nhlbi.nih.gov/health/dci and click on “Coronary Artery Disease” or call the American Heart Association at 800-AHA-USA-1 (800-242-8721).

Heart disease continued

WHAT IS HIGH BLOOD PRESSURE?

- Blood pressure is a measure of how hard your heart is working to push the blood through your arteries.
- There are two numbers in a blood pressure reading. A normal reading is about 120/80 (read as “120 over 80”). The first number measures the force your heart uses to pump the blood. The second number measures the pressure between heartbeats.
- High blood pressure means that your heart is working too hard. Over time, high blood pressure can cause kidney failure, heart attacks, strokes, and other health problems.

Who is at risk?

- Approximately one in three (30%) AIAN adults has high blood pressure. Many do not even know it because there are no clear symptoms.
- A family history of high blood pressure increases your risk for developing it at a younger age.
- Greater risk comes with increasing age, being overweight, or having a family history of hypertension.

Hints for health

- Decrease the amount of salt you eat.
- Maintain a healthy weight.
- Manage your stress.
- Get active and exercise regularly.
- Limit the alcohol you drink.
- Get screening regularly.

For more information, visit www.nhlbi.nih.gov/health/dci and click on “High Blood Pressure” or call the American Heart Association at 800-AHA-USA-1 (800-242-8721).

Heart disease symptoms may not appear until the damage is already done. Talk to your family about heart disease today.

Cirrhosis

WHAT IS CIRRHOSIS?

- Chronic liver disease is when the liver slowly degrades over time. Healthy liver tissue is replaced with scarred tissue, which disrupts the function of the liver. As the normal liver tissue is lost, nutrients, hormones, drugs, and poisons are not processed effectively by the liver.
- Cirrhosis is a chronic liver disease that causes fever, jaundice (abnormal yellowing of the skin, eyeballs, and urine), and abdominal pain.
- The most common cause of cirrhosis is alcohol abuse.
- Other causes include: hepatitis and other viruses, use of certain drugs, chemical exposure, autoimmune diseases, diabetes, and malnutrition

Who's at risk?

- More than 2 million Americans suffer from alcohol-related liver disease.
- About 10 to 20 percent of heavy drinkers develop cirrhosis.
- Genetic factors influence alcoholism. Children whose parents suffer from alcohol abuse are about four times more likely than the general population to develop alcohol problems.
- Alcoholic cirrhosis can cause death if drinking continues.
- Chronic liver disease/cirrhosis is the fourth leading cause of death among AIAN living in urban areas.

Hints for health

- Although cirrhosis is not reversible, if drinking stops, your chances of survival greatly improve.
- Treatment for the complications of cirrhosis is available.

For more information, visit www.nlm.nih.gov/medlineplus/digestive.niddk.nih.gov/ddiseases/pubs/cirrhosis_ez/ or call the Substance Abuse and Mental Health Services Administration's Clearinghouse for Alcohol and Drug Information at 800-729-6686.

Diabetes (sugar disease)

Diabetes is a serious, chronic disease in which blood sugar levels are above normal. Unfortunately, many people learn about their diabetes after complications develop. According to the American Diabetes Association, one-third of those affected by type 2 diabetes are unaware that they have the disease.

Symptoms occur when the body fails to change sugar, starches, and other food into energy. This happens when the body cannot produce or properly use a hormone called insulin. Serious complications from diabetes can include blindness, kidney failure, and death. Diabetes can be detected early and treatment can prevent or delay these serious health problems. A combination of genetics and environmental factors such as diet and exercise plays an important role in developing the disease.

WHAT IS TYPE 1 DIABETES?

- Type 1 diabetes usually develops in young children or young adults.
- People with type 1 diabetes stop producing their own insulin.

WHAT IS TYPE 2 DIABETES?

- Type 2 diabetes usually develops in people over 30 years of age; though in recent years, more young people are developing it due to poor diet.
- Scientists are learning more about the specific genes involved in this type of diabetes.



Who's at risk?

- Diabetes is more common among AIANs than any other major race or ethnic group in the United States.
- AIANs are twice as likely to have diabetes as non-Hispanic whites.
- Diabetes affects approximately one in 14 people in the United States.
- Five to 10 percent of Americans who are diagnosed with diabetes have type 1 diabetes.
- Children or siblings of individuals with diabetes are more likely to develop it themselves.
- Obese people have a greater risk for type 2 diabetes.
- Women who had a baby that weighed more than 9 pounds or who had gestational diabetes while pregnant are at risk.

Hints for health

- Eat more fruits and vegetables, less sugar and fat.
- Get active and exercise regularly.
- Lose weight if necessary.

For more information, visit www.ndep.nih.gov or call 800-860-8747.

Cancer

WHAT IS CANCER?

- There are many types of cancer.
- Cancer is caused by the growth and spread of abnormal cells.
- Your risk of getting cancer increases as you get older.
- Genetic and environmental factors also cause people to be at a higher risk for certain types of cancer.
- Breast and lung cancer are two of the most common cancers.

Who is at risk?

- Almost 9 million people in America are living with cancer.
- Cancer is the second leading cause of death among AIAN both in urban areas and nationwide, particularly among AIAN who are 45 years old and older.
- Breast cancer risk is higher among women whose close blood relatives have had this disease. Both your mother's and father's family history of breast cancer is important.

Hints for health

- Early diagnosis and treatment is essential for cancer survival.
- Ask about genetic testing for high-risk families.
- Eat a healthy, balanced diet.
- Get active and exercise regularly.
- Limit the alcohol you drink.

For more information, visit www.cancer.gov/cancertopics or call 800-4-CANCER (800-422-6237).

WHAT IS LUNG CANCER?

- Lung cancer is the uncontrolled growth of abnormal cells in one or both of the lungs.

Who is at risk?

- Lung cancer is the most common type of cancer among AIAN living in urban areas.
- Almost 40% of Native Americans (4 out of every 10) smoke regularly.
- Nearly 87 percent of lung cancer cases in the United States are smoking-related.

Hints for health

- Do not smoke.
- Avoid secondhand smoke.
- Find out about testing for radon and asbestos in your home and at work.

For more information, visit www.cancer.gov/cancertopics and click on “Lung Cancer” or call 800-4-CANCER (800-422-6237).



Cancer continued

WHAT IS BREAST CANCER?

- Breast cancer is a type of cancer that forms in the tissues of the breast, usually the ducts.
- Breast cancer is one of the most common cancers among women. Although it is rare, men can also get breast cancer.
- Most breast cancer is treatable if found early.

Who is at risk?

- It occurs in both men and women, although male breast cancer is rare.
- Breast cancer is the most frequently diagnosed cancer among women in the United States.
- Breast cancer is the second leading cause of cancer death among AIAN women.
- People with close relatives who have had breast cancer are more likely to develop the disease. Both your mother's and father's family history of breast cancer is important.

Hints for health

- Early detection is the best protection against breast cancer.
- Women should do monthly self breast exams.
- After age 40, women should get annual mammograms.
- Do vigorous weight-bearing physical activity every day (walk, bike, dance).
- Eat foods that are high in dietary fiber, such as vegetables and fruits.
- Choose foods that are low fat/low calorie/low sugar.
- Practice healthy stress relief.
- Every day, spend time doing something you enjoy (dance, weave, bead, sing).

Depression

WHAT IS DEPRESSION?

- Everyone gets the blues sometimes, but depression is very different from the blues.
- Depression affects how you sleep, eat, feel about yourself, and live your life.
- Depression can be treated.
- Discrimination affects your health, too.
- Many AIAN suffer “historical trauma,” an emotional reliving of wrongs against one’s people.
- Historical trauma and ongoing discrimination can produce feelings of sadness, anxiety, depression, anger, and estrangement.
- Your family members may re-experience past wrongs, feel grief over lost languages and traditions, and have reduced self-esteem.
- Loss of access to sacred sites for therapeutic spiritual renewal and traditional food gathering is particularly traumatic.

Who is at risk?

- About one in ten AIAN adults report feeling sad. 7.0% feel sad most of the time; 12.8% feel sad some of the time.
- An individual’s emotional well-being is strongly linked to the mental health of his/her family. Researchers are investigating the links among genes, environment, and depression.
- Depression affects between 10 and 30% of the AIAN population.
- AIAN adults are more likely to have experienced serious psychological distress than any other major race or ethnic group in the United States.
- Although depression can be treated, many Native people do not seek help for depression.

Depression continued

Who is at risk?

- If tradition is ignored or you are unable to practice tradition, the challenge of balancing mainstream and Native values leads to “dis-ease.”
- Participate in inter-tribal cultural events that give you a sense of belonging and healing.
- Share with your family events that make you feel good about your identity, values, ceremonies, and beliefs.
- Promote healthy living. Coming-of-age ceremonies enhance urban Indian teens’ knowledge of and pride in their culture.
- Talk with elders. They have special roles as counselors and teachers.
- Embrace a holistic philosophy of life and health. Take time to nurture all components of total body wellness.

For more information about depression and mental health, visit: www.whatadifference.samhsa.gov and click “Learn” or www.nlm.nih.gov/health/publications/depression/complete-publication.shtml



Resources

The “Does It Run In the Family?” toolkit includes two pieces that can help you summarize your health information for your provider—the family health portrait and healthcare provider card. You may also hear your healthcare provider call a *Family Health Portrait* a “pedigree.”

Each family and individual is unique and may have genetic diseases other than the major diseases listed here.

For more information visit:

Disease InfoSearch

www.geneticalliance.org

National Library of Medicine

www.nlm.nih.gov/services/genetics_resources.html

A list of health resources is available at the Urban Indian Health Institute:

Using the American Indian and Alaska Native Oral Tradition to Record Family History, www.uihi.org/archives/41#more-41



Urban Indian Health Institute

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The Urban Indian Health Institute provides centralized nationwide management of health surveillance, research, and policy considerations regarding the health status deficiencies affecting urban American Indians and Alaska Natives.



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