RenalNext

Genetic Testing for Hereditary Kidney Cancer

Because knowing your risk can mean early detection and prevention
Risk factors for developing kidney cancer include cigarette smoking, obesity, chronic high blood pressure, and a family history of kidney cancer.

Know the Basics

Types of Cancer

**Hereditary Cancer**
A clustering of cancer in a family due to inherited gene changes (mutations), which can be passed from parent to child.

**Familial Cancer**
A clustering of cancer in a family that may be due to genes and/or other shared factors, such as environment and lifestyle.

**Sporadic Cancer**
Happens by chance in one or two related family members, typically at older ages.
About half of the people diagnosed with kidney cancer are 66 or older.

Kidney cancer occurs in about 1 in 63 people in the U.S.

**ABOUT HEREDITARY CANCER**

Many people have a family history of cancer, but only 5-10% of kidney cancer is hereditary.

People who have these gene mutations are born with them – they do not develop over time.

Learning if you have an inherited mutation can help you know more about your cancer risks.

People with a higher chance of developing cancer may need screening, like ultrasounds or MRIs, that start at younger ages, and occur more often.
Should You Have Genetic Testing?

**IF YOU ANSWER “YES” TO ANY OF THE QUESTIONS BELOW,** hereditary kidney cancer genetic testing may be something for you and/or your family members to consider.

1. Have you/your family members* been diagnosed with kidney cancer at a young age (<46 years old)?

2. Have you/your family members* been diagnosed with more than one cancer, like 2 kidney cancers or kidney and thyroid cancer?

3. Have 2 or more people on the same side of your family had kidney cancer?

4. Have 3 or more people on the same side of your family had kidney, neuroendocrine tumors, and/or other cancers?

5. Have any of your family members* been found to have a cancer gene mutation?

Your healthcare provider may identify other reasons why you could consider genetic testing.

“Family members” refers to blood relatives, such as brothers/sisters/parents/grandparents/aunts/uncles/cousins
RenalNext includes 19 genes that are linked to an increased lifetime risk for one or more cancers including kidney cancer. The check marks below indicate the associated cancer types for each gene.

<table>
<thead>
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<th>KIDNEY</th>
<th>BREAST</th>
<th>OVARIAN</th>
<th>COLORECTAL</th>
<th>UTERINE</th>
<th>PANCREATIC</th>
<th>PROSTATE</th>
<th>STOMACH</th>
<th>ENDOCRINE*</th>
<th>BRAIN</th>
<th>MELANOMA</th>
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* Endocrine indicates at least one of the following: paraganglioma, pheochromocytoma, thyroid cancer, carcinoid tumors, pancreatic neuroendocrine tumors, and/or adrenal tumors
FOR YOU:

Your healthcare provider can adjust your cancer screening plan (such as age of initial screening, type, and frequency) based on your genetic test results.

- Examples of cancer screening may include imaging of your kidneys, like ultrasounds

Your doctor may discuss the possibility of other personalized treatment options based on your genetic test results.
Men and women have the same chance to inherit a mutation, but their chance to develop cancer may be different.

Typically genetic testing is recommended for adults, but it is important to discuss genetic testing for children under age 18 with your healthcare provider to determine if it may be helpful.

FOR YOUR FAMILY MEMBERS:

If you test positive for a genetic mutation, your close family members (like your parents, brothers, sisters, children) have a 50/50 random chance of also having the same mutation.
Possible Genetic Test Results

**+ POSITIVE**

A mutation was found in at least one of the genes tested
There are increased risks for cancer and may be management recommendations specific to the gene that has a mutation
Genetic testing for certain family members may be recommended

**- NEGATIVE**

No genetic changes were found in any of the genes tested
Cancer risk(s) and management recommendations are based on personal and family history
Talk to your healthcare provider to find out if genetic testing should be considered for your family members

**? VARIANT OF UNKNOWN SIGNIFICANCE (VUS)**

At least one genetic change was found, but it is unclear if this change causes an increased risk for cancer or not
Cancer risk(s) and management recommendations are based on personal and family history
Talk to your healthcare provider to find out if genetic testing should be considered for your family members

It is possible to have a combination of positive and VUS results, since multiple genes are tested.
Resources For You

Ambry’s Patient Education Website
ambrygen.com/patient

American Cancer Society
cancer.org

American Society of Clinical Oncology
cancer.net

Genetic Information Nondiscrimination Act
ginahelp.org

National Society of Genetic Counselors
nsgc.org

Canadian Association of Genetic Counsellors
cagc-accg.ca

Kidney Cancer Association
kidneycancer.org

National Cancer Institute
cancer.gov

American Society of Clinical Oncology
cancer.net
**Frequently Asked Questions**

1. **HOW IS GENETIC TESTING PERFORMED AND HOW LONG DOES IT TAKE?**

   Genetic testing is done using a blood or saliva sample, which is collected using a special kit that is shipped overnight to Ambry (all coordinated by your healthcare provider). Testing looks for mutations that cause an increased risk for cancer. It takes less than three weeks for the testing to be completed and results are sent to your healthcare provider.

2. **WHAT WILL HAPPEN WHEN MY RESULTS ARE READY?**

   Your healthcare provider will receive your results; they will not be sent directly to you. Every healthcare provider may have a different method and time frame to contact you to discuss your results, so it is important to discuss this process with them. Based on your test results, your healthcare provider will discuss any next steps.

3. **WILL MY GENETIC TEST RESULTS AFFECT MY INSURANCE COVERAGE?**

   In the U.S., the Genetic Information Nondiscrimination Act (2008) prohibits discrimination by health insurance companies and employers, based on genetic information. Depending on where you live in the world, you may have different (or fewer) laws in this area. Visit ginahelp.org to learn more.
4 SHOULD I TELL MY FAMILY MEMBERS ABOUT MY GENETIC TEST RESULTS?

It is important to share your results with your family members as they may provide additional information about their cancer risks and management options. Your healthcare provider may be able to guide you on finding the best way to inform family members.

5 WILL GENETIC TESTING BE COVERED BY MY INSURANCE?

Many insurance plans cover genetic testing and Ambry is contracted with the majority of U.S. health plans. Your out-of-pocket cost may vary based on your individual plan; therefore, we offer personalized verification of insurance coverage and financial options for your genetic testing. A team of dedicated specialists is available to help you get access to the genetic testing you need and answer any questions you have about our payment options. Call or email our Billing department at +1.949.900.5795 or billing@ambrygen.com with any questions.

6 WHAT IS AN EXPLANATION OF BENEFITS (EOB)?

Your insurance company sends you an EOB to explain any services paid on your behalf. You can contact us directly to speak with a Billing specialist with any questions or concerns about your EOB. Some genetic tests take weeks to process in order to receive the best results. In addition, insurance companies can take several weeks or even a couple of months to process claims.

STILL HAVE QUESTIONS?

Talk to your doctor or visit our website: ambrygen.com