

Risk of Kidney Cancer and Other Tumors

INFORMATION ABOUT YOUR GENETIC TEST RESULT

Your Result

Positive for a known pathogenic or likely pathogenic variant in the *VHL* gene

What This Result Means

This result means you have a change (mutation) in the *VHL* gene. Mutations in this gene can cause von Hippel-Lindau (VHL) syndrome. People with VHL syndrome have an increased chance for benign tumors in the eyes, ears, brain, spine, adrenal glands, and pancreas. Some of these may become cancer if they are not treated. There is also a risk for other cancers. The risks for benign tumors and

cancers are shown in the table below.

This result doesn't mean you will get cancer—not everyone with a mutation develops cancer. But you are at higher risk than you would be if you didn't have the mutation. Almost everyone with a VHL mutation will get one or more of the benign tumors though.

Type of Cancer or Tumor	Risk of Cancer or Tumor	
	With a <i>VHL</i> Mutation	Without a <i>VHL</i> Mutation
Cancer		
Kidney	30 – 70%	1.6%
Benign Tumors		
Eye (retinal angioma)	70%	Rare
Eye, brain, spine (hemangioblastoma)	4 – 49%	Rare
Adrenal gland (pheochromocytoma)	16%	Rare
Pancreas (neuroendocrine tumor)	5 – 17%	Rare
Inner ear (endolymphatic sac tumor)	10 – 16%	Rare

Options for Managing Your Cancer Risk

Your test result shows that you have an increased risk for developing a tumor or cancer. There are steps you can take to lower that risk. The options are explained briefly below. Talk with your healthcare provider to learn more and find out which is best for you.

Increased Cancer and Tumor Screening

- Annual physical exam
- Annual blood and/or urine tests

- Annual blood pressure measurement
- Annual eye exam
- Annual hearing exam
- MRI of the brain, total spine, and abdomen

Increased screening cannot prevent you from getting cancer and/or tumors. But it could detect cancer and/or tumors sooner. And, as you know, early detection improves your chances of survival.

What This Result Means for Your Family

You share genes in common with your blood relatives, so some of them may have the same mutation that you have. Your parents, brothers, sisters, and children each have a 50% chance of having it. Other blood relatives also have an increased risk.

Think about sharing your test results with your relatives. They might want to find out if they have the mutation too. If so, they should talk with their doctor and/or genetic counselor about testing. They could be tested just for the mutation that you have. Testing for a single mutation may be the best option, as it may cost less. It will still let them know if they have the same mutation you have. In some cases, testing more genes might be suggested. Either way, testing will help them know more about their risk for cancer.

Relative	Risk of Having the Same Mutation
Identical twin	100%
Fraternal twin	50%
Parent, brother, sister, child	50%
Grandparent, uncle, aunt, niece, nephew	25%
First cousin	12.5%

Your Next Steps

- Get a copy of your test results.
- Talk with your doctor or genetic counselor about things you can do to manage your risk.
- Once you and your doctor have made a plan, set up appointments to start managing your risk.
- Think about sharing copies of your test results with your family members. That way, their doctor will know which test to order if they want to be tested.

- Talk with your doctor or genetic counselor regularly. They can keep you up to date about genetic testing and risk management options.

You can help researchers learn even more about this gene and its link to cancer risk. You can do this by participating in a research registry called PROMPT. If you would like to do this, please visit PROMPTStudy.org to learn more.

Additional Resources

- VHL Family Alliance
VHL.org
- National Society of Genetic Counselors
Find a Genetic Counselor
NSGC.org/p/cm/ld/fid=164

This information is not a substitute for medical advice, diagnosis, or treatment. The diagnosis or treatment of any disease or condition may be based on personal history, family history, symptoms, a physical examination, laboratory test results, and other information considered important by your doctor. Always talk with your doctor about the meaning of your test results and before you stop, start, or change any medication or treatment.

The classification and interpretation of the variant(s) identified reflect the current state of Quest Diagnostics' understanding at the time of the accompanying report. Variant classification and interpretation are subject to professional judgment, and may change for a variety of reasons, including but not limited to, updates in classification guidelines and availability of additional scientific and clinical information. This test result should be used in conjunction with the health care provider's clinical evaluation. Inquiry regarding potential changes to the classification of the variant is strongly recommended prior to making any clinical decision. For questions regarding variant classification updates, please call Quest Diagnostics at 866.GENE.INFO (436.3463) to speak to a genetic counselor or laboratory director.

QuestDiagnostics.com

Quest Diagnostics Incorporated and its subsidiaries (Quest) complies with applicable federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, or sex. ATTENTION: If you speak English, language assistance services, free of charge, are available to you. Call 1.844.698.1022. ATENCIÓN: Si habla español (Spanish), tiene a su disposición servicios gratuitos de asistencia lingüística. Llame al 1.844.698.1022. 注意：如果您使用繁體中文 (Chinese), 您可以免費獲得語言援助服務。請致電 1.844.698.1022.

Quest, Quest Diagnostics, any associated logos, and all associated Quest Diagnostics registered or unregistered trademarks are the property of Quest Diagnostics. All third-party marks—® and ™—are the property of their respective owners. © 2017 Quest Diagnostics Incorporated. All rights reserved. PP5883 11/2017