TEMPUS | ONCOLOGY

Patient Guide to Hereditary Cancer Testing

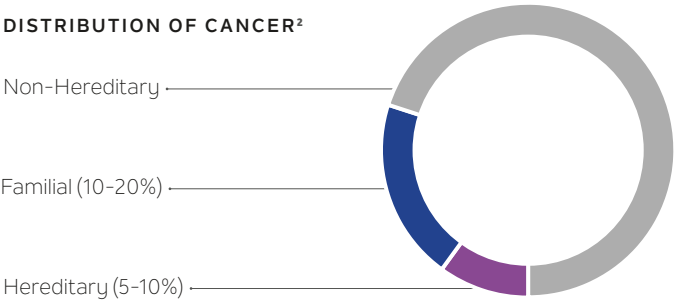
Genetics 101

Genes are the body's instructions that determine how our bodies develop, grow, and function. Most cancers are caused by changes to one's genes that happen by chance or due to environmental factors; these are called **non-hereditary** (sometimes called sporadic) **cancers**.

Some cancers are due to a combination of environmental and genetic factors; these are called "familial cancers". Individuals who have a family history of cancer may have a slightly increased risk to develop that cancer type.

More rarely, gene changes may be inherited (these are called germline variants) from a parent and passed on to one's children and can cause **hereditary cancers**. The most common types of hereditary cancers are breast, ovarian, colorectal, endometrial, prostate, and pancreatic cancer.[1]

DISTRIBUTION OF CANCER[2]

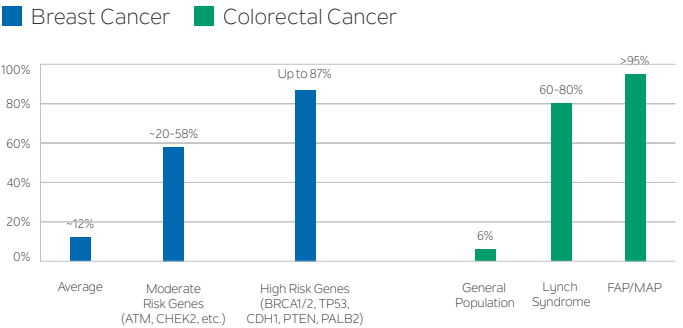


What is Genetic Testing?

Genetic testing is used to look for changes, called variants, in our genes. In cancer, these changes can affect how cells may grow or multiply, and different types of genetic tests are used to look for germline variants (variants a person has had since birth) and somatic variants (variants not passed down from your parents that occur sporadically).

- Tumor testing (or *somatic testing*) looks for genetic variants in the cells of cancers that occur sporadically.
- Germline testing (or *hereditary testing*) looks for genetic variants a person has had since birth that can increase an individual's risk for developing a hereditary cancer.

LIFETIME CANCER RISKS[3,4]



When to consider hereditary cancer testing

To see if a hereditary cancer test is right for you, your provider will ask questions about your personal and family history of cancers.

PERSONAL HISTORY OF CANCER

- Early age at diagnosis (<50y)
- Ovarian, pancreatic, colorectal, or metastatic/high-grade prostate cancer diagnosed at any age
- Rare tumors/cancers diagnosed at any age, including male breast cancer, paragangliomas, pheochromocytomas, medullary thyroid cancer, etc.
- Multiple primary cancers or bilateral tumors
- Ashkenazi Jewish ancestry

FAMILY HISTORY OF CANCER

- Multiple relatives on the same side of the family with the same or related types of cancers:
  - Breast, ovarian, pancreatic and/or prostate
  - Colorectal, endometrial, and/or gastric
- Blood relative with a germline variant associated with a cancer risk

Possible Results

POSITIVE RESULT

A genetic variant was identified in a specific gene that confirms a hereditary cancer syndrome. Your other at-risk relatives may also be tested for the specific variant.

NEGATIVE RESULT

No clinically significant germline variants were identified. There are other environmental, family, or medical factors that could increase your likelihood of developing cancer.

"VARIANT OF UNCERTAIN SIGNIFICANCE" RESULT

A genetic variant was identified, but it is not currently known if the variant increases cancer risk at this time. These variants should not be used to guide your medical care. Updated results will be sent to your healthcare provider when new information is available.

How are results from genetic testing useful?

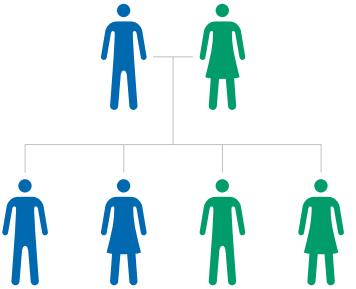
Based on your results your healthcare provider may recommend:

- Increased cancer screening
- Risk reduction measures to help reduce the likelihood that you will ever develop a cancer
- Specific treatments/medications to help treat or prevent cancer
- Testing for family members

If you are tested and found to have a germline variant associated with an increased risk of cancer, then other family members may be at an increased risk of carrying the same variant.

Identification of at-risk family members is an important part of hereditary cancer testing. If your germline test showed a positive result, testing for that specific variant is available for your family members through Tempus. *Please reach out to your provider to request more information about familial variant testing.*

Positive Negative



50%
LIKELIHOOD

This figure shows an example of a common way that genetic disorders might be passed on to your children

Knowing if you have a germline variant in a gene associated with hereditary cancer can help you and your family prepare for the future.

Gene List

COMMON HEREDITARY CANCERS

The list on the following page includes genes associated with common hereditary cancers.[2,3] Your provider will help choose the most appropriate test for you.

- xG+ (CancerNext-Expanded®) includes 77 genes
- xG (CancerNext®) includes 36 genes

ADDITIONAL GENES INCLUDED ON xG+ (CancerNext-Expanded®)

AIP, ALK, BAP1, BLM, CDC73, CDKN1B, CTNNA1, EGFR, EGLN1, FANCC, FH, FLCN, GALNT12, KIF1B, KIT, LZTR1, MAX, MEN1, MET, MITF, NF2, PDGFRA, PHOX2B, POT1, PRKAR1A, PTCH1, RB1, RET, SDHA, SDHAF2, SDHB, SDHC, SDHD, SMARCB1, SMARCE1, SUFU, TMEM127, TSC1, TSC2, VHL, XRCC2

**Other cancer types may include hematologic malignancies (e.g., leukemias and lymphomas), pediatric malignancies, gastric cancers, central nervous system cancers, melanoma, thyroid cancer, renal/urinary tract cancer, and more.*

Gene(s)	Breast	Ovarian	Colorectal	Endometrial	Pancreatic	Prostate	Other*
APC			✓		✓		✓
ATM	✓				✓	✓	
AXIN2			✓				
BARD1	✓						
BMPR1A			✓				✓
BRCA1	✓	✓			✓	✓	
BRCA2	✓	✓			✓	✓	✓
BRIP1	✓	✓					
CDH1	✓						✓
CDK4							✓
CDKN2A							✓
CHEK2	✓		✓			✓	✓
DICER1		✓					✓
EPCAM		✓	✓	✓	✓	✓	✓
HOXB13						✓	
MLH1		✓	✓	✓	✓	✓	✓
MSH2		✓	✓	✓	✓	✓	✓
MSH3			✓				
MSH6		✓	✓	✓	✓	✓	✓
MUTYH			✓				
NBN	✓					✓	✓
NF1	✓						✓
NTHL1			✓				
PALB2	✓	✓			✓	✓	
PMS2		✓	✓	✓	✓	✓	✓
POLD1			✓				
POLE			✓				
PTEN	✓		✓	✓			✓
RAD51C	✓	✓					
RAD51D	✓	✓				✓	
RECQL	✓						
SCG5/ GREM1							✓
SMAD4			✓				✓
SMARCA4		✓					✓
STK11	✓	✓	✓		✓		✓
TP53	✓	✓	✓	✓	✓	✓	✓

Billing Information Step by Step

01

When your physician orders Tempus testing, insurance information is submitted along with the request for testing.

02

Tempus will bill your insurance directly. We accept all insurance plans including Medicare and Medicaid.

03

You may receive an **Explanation of Benefits (EOB)** from your insurance company. **This is not a bill**; it shows the specific Tempus test that was billed and what insurance covered.

04

Tempus will not bill you for any amount not allowed by your insurance. You may receive a bill for out-of-pocket expenses resulting from the application of coinsurance percentage or deductibles in your insurance policy. The financial assistance program is designed to help patients in financial need afford the cost of testing.

Financial Assistance

Tempus is committed to providing easy and affordable access to our tests and services. The Tempus financial assistance program is designed to help patients in financial need afford the cost of testing.

1. Apply for financial assistance online at access.tempus.com or call the Client Services team at **800-739-4137** for immediate review.
2. If approved, you will know immediately about the maximum out of pocket cost of your testing.
3. Please contact billing@tempus.com if you are concerned about out-of-pocket costs and would like to discuss your options.

All U.S.-based patients are eligible to apply for financial assistance regardless of insurance status. Self-pay forms are also available for both domestic and international patients. If you have any questions, please email patients@tempus.com.

For more information, visit tempus.com/patients/oncology/

Frequently Asked Questions

What is the process for hereditary cancer testing?

- Your healthcare provider will collect a sample (either blood or saliva), or will request a saliva kit to be sent to your home.
- Your sample is sent to Tempus for processing. Your testing results are generally available in about two to three weeks.
- Once your result is ready, your healthcare provider will review the results with you and determine next steps.

Will my genetic test results affect my insurance coverage?

Since 2008 a U.S. federal law called the Genetic Information Nondiscrimination Act (GINA) has protected individuals from genetic discrimination in health insurance and employment. Other laws meant to protect against the misuse of genetic information may also be in place depending on where you live in the world. To learn more about GINA visit ginahelp.org.

How will my test results be protected?

In accordance with the Health Insurance Portability and Accountability Act (HIPAA), Tempus is required by law to maintain the confidentiality of your protected health information. To learn more about HIPAA visit HHS.gov.

Who can I talk to about my genetic testing results?

Your healthcare provider will review the results with you. You also may wish to discuss the results with a genetic counselor. Genetic counselors in your area can be found here: findageneticcounselor.nsgc.org.

Tempus is here to help

For all other concerns, our customer service team is available from 7:00am–7:00pm CT, Monday–Friday

Call us at
800-739-4137

Email us a
support@tempus.com

TEMPUS.COM

REFERENCES

1. Eckerle Mize D, Bishop M, Resse E, Sluzevich J. Familial atypical multiple mole melanoma syndrome. In: Riegert-Johnson DL, Boardman LA, Hefferon T, Roberts M, eds. *Cancer Syndromes*. National Center for Biotechnology Information (US); 2009. Accessed February 29, 2024. http://www.ncbi.nlm.nih.gov/books/NBK7030/
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3. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic V.2.2024. © National Comprehensive Cancer Network, Inc. 2023. All rights reserved. Accessed [February 2, 2024]. To view the most recent and complete version of the guideline, go online to NCCN.org.
4. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Genetic/Familial High-Risk Assessment: Colorectal V.2.2023. © National Comprehensive Cancer Network, Inc. 2023. All rights reserved. Accessed [February 2, 2024]. To view the most recent and complete version of the guideline, go online to NCCN.org.

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