
Salivary Gland Cancer Causes, Risk Factors, and Prevention

Learn about the risk factors for salivary gland cancer and what you might be able to do to help lower your risk.

Risk Factors

A risk factor is anything that increases your chance of getting a disease such as cancer. Learn more about the risk factors for salivary gland cancer.

- [Risk Factors for Salivary Gland Cancer](#)
- [What Causes Salivary Gland Cancer?](#)

Prevention

There is no sure way to prevent salivary gland cancer. But there are things you can do that might lower your risk. Learn more.

- [Can Salivary Gland Cancer Be Prevented?](#)

Risk Factors for Salivary Gland Cancer

- [Older age](#)
- [Radiation exposure](#)

- [Smoking](#)
- [Other possible risk factors](#)

A risk factor is anything that increases your chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, like smoking, can be changed; others, like a person's age or family history, can't.

But having a risk factor, or even many, does not mean that you will get the disease. And many people who get the disease may have few or no known risk factors.

A few risk factors are known to make a person more likely to develop salivary gland cancer, but most salivary gland cancers start without any clear cause.

Older age

The risk of salivary gland cancer goes up as people get older.

Radiation exposure

Radiation treatment to the head and neck area for other medical reasons increases your risk of salivary gland cancer, especially if your salivary glands were not protected during the radiation.

Workplace exposure to certain radioactive substances may also increase the risk of salivary gland cancer.

Smoking

Smoking cigarettes has been linked to a higher risk of Warthin tumor, a benign salivary gland tumor, but not other types of salivary gland cancers.

Other possible risk factors

Certain workplace exposures

Some studies have suggested that people who work with certain metals (nickel alloy dust) or minerals (silica dust), and people who work in asbestos mining, plumbing, rubber products manufacturing, and some types of woodworking may be at increased

risk for salivary gland cancer, but these links are not certain. The rarity of these cancers makes this hard to study.

Viral infections

Some viral infections might be associated with certain salivary gland tumors.

Certain high-risk types of [human papillomavirus \(HPV\)](#)¹ has been found in some [mucoepidermoid cancers](#)², but more studies are needed to say for sure if there is a link. [Vaccines](#)³ to help prevent HPV infection are available and can help prevent six types of HPV-related cancers.

People with [human immunodeficiency virus \(HIV\)](#)⁴ are also at risk for salivary gland cancers. This could be because people with HIV have weakened immune systems, but more research is needed.

[Lymphoepithelial cancer](#)⁵, a very rare type of salivary gland cancer, is associated with the Epstein-Barr virus.

Diet

Some studies have found that a diet low in vegetables and high in animal fat might increase the risk of salivary gland cancer, but more research is needed to confirm this possible link.

Cell phone use

One study has suggested an increased risk of parotid gland tumors among heavy cell phone users. In this study, most of the tumors seen were benign (not cancer). Other studies looking at this issue have not found such a link. Research is still being done in this area.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/hpv.html
2. www.cancer.org/cancer/types/salivary-gland-cancer/about/what-is-salivary-gland-cancer.html
3. www.cancer.org/cancer/risk-prevention/hpv/hpv-vaccines.html

4. www.cancer.org/cancer/risk-prevention/infections/hiv-infection-aids.html
5. www.cancer.org/cancer/types/salivary-gland-cancer/about/what-is-salivary-gland-cancer.html

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Horn-Ross PL, Morrow M, Ljung BM. Diet and the risk of salivary gland cancer. *Am J Epidemiol*. 1997;146(2):171-176. doi:10.1093/oxfordjournals.aje.a009248.

Laurie SA. Salivary gland tumors: Epidemiology, diagnosis, evaluation, and staging. In: Shah S, ed. *UpToDate*. Waltham, Mass.: UpToDate, 2021. <https://www.uptodate.com>. Accessed April 22, 2021.

National Cancer Institute. Physician Data Query (PDQ). Salivary Gland Cancer: Treatment. 2019. Accessed at <https://www.cancer.gov/types/head-and-neck/hp/adult/salivary-gland-treatment-pdq> on April 22, 2021.

Sadetzki S, Chetrit A, Jarus-Hakak A, et al. Cellular phone use and risk of benign and malignant parotid gland tumors--a nationwide case-control study. *Am J Epidemiol*. 2008;167:457-467.

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What Causes Salivary Gland Cancer?

Although we know a few things that can raise a person's [risk of salivary gland cancer](#), it's not clear exactly what causes most of these cancers. And while there is no clear relationship between certain genes and the development of salivary cancers, here is some information that might be helpful.

DNA is the chemical in our cells that makes up our genes, which control how our cells work. We look like our parents because they are the source of our DNA. But DNA affects more than just how we look. It also can influence our risk for developing certain

diseases, such as some kinds of cancer.

Some genes control when cells grow, divide, and die:

- Genes that help cells grow, divide, and stay alive are called **proto-oncogenes**. If something causes a proto-oncogene to mutate (change), the gene becomes abnormal and is then called an **oncogene**.
- Genes that help keep cell growth under control or make cells die at the right time are called **tumor suppressor genes**.

Cancers can be caused by DNA mutations (gene changes) that turn on oncogenes or turn off tumor suppressor genes. This leads to cells growing out of control. Changes in many different genes are usually needed to cause salivary gland cancer.

Researchers don't yet know all of the DNA changes that result in salivary gland cancer, but they have found some gene changes that are often found in these cancers.

- Most mucoepidermoid cancers have the *MECT1-MAML2* fusion oncogene
- More than half of adenoid cystic salivary gland cancers have the *MYB-NFIB* oncogene

Identifying these gene changes is helping to find new [targeted drug therapies](#)¹ for some salivary gland cancers.

For more about how gene changes can lead to cancer, see [Genes and Cancer](#)².

Inherited and acquired gene mutations: Salivary gland cancer does not usually run in families, so most of the DNA changes that lead to this cancer are not likely to be inherited from a person's parents.

Gene changes related to these cancers usually happen during a person's lifetime, rather than being inherited. These **acquired** mutations often result from exposure to cancer-causing chemicals, like those found in tobacco smoke or chemicals at work, but others might just be random events that happen inside cells, without having an outside cause. Several different gene changes are probably needed for cancer to develop, and not all of these changes are understood at this time.

Inherited mutations of oncogenes or tumor suppressor genes rarely cause these cancers, but some people seem to inherit a poor ability to detoxify (break down) certain types of cancer-causing chemicals. These people are more sensitive to the cancer-

causing effects of tobacco smoke, and certain industrial chemicals.

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/treatment-types/targeted-therapy.html
2. www.cancer.org/cancer/understanding-cancer/genes-and-cancer.html

References

Coxon A, Rozenblum E, Park YS, Joshi N, Tsurutani J, Dennis PA, et al. Mect1-Maml2 Fusion Oncogene Linked to the Aberrant Activation of Cyclic AMP/CREB Regulated Genes. *Cancer Res.* August 15 2005 (65) (16) 7137-7144; DOI: 10.1158/0008-5472.CAN-05-1125.

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Can Salivary Gland Cancer Be Prevented?

- [Avoid exposure to certain infections](#)
- [Avoid tobacco](#)
- [Avoid certain workplace exposures](#)

Because we don't know what causes most salivary gland cancers, we don't yet know how to prevent many of them.

Avoid exposure to certain infections

Certain viral infections, such as Epstein-Barr virus (EBV), human immunodeficiency virus (HIV), and human papillomavirus (HPV), might be linked to an increased risk of salivary gland cancers. Avoiding exposure to these viruses might help lower your risk. And although more research is needed to understand finding HPV in some salivary gland cancers, there are [vaccines available to help prevent 6 HPV-related cancers](#)¹.

Avoid tobacco

Even though smoking cigarettes has been linked to certain types of benign salivary gland tumor, avoiding tobacco might also help lower your risk of other tobacco related cancers including other head and neck cancers and lung cancer, as well as many other diseases.

Avoid certain workplace exposures

For people who work in certain industries linked with an increased risk of salivary gland cancer, taking precautions to protect themselves might help lower their risk.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/hpv/hpv-vaccines.html

References

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